Clough Bank B
Drainage Strategy

FOR PLANNING

REVISION HISTORY

REVISION	DATE	PREPARED BY	REVIEWED BY	APPROVED BY
First Issue	27/05/24	Conroy Thomas	Gencay Tuglaci	Vin Bamford

CONTENTS

1.0. Scope 4

2.0. Existing arrangement 4

3.0. Proposed Layout 5

4.0. Surface Water Drainage 5

4.1 Proposed Surface Water Drainage Strategy 5

4.2 Overview of proposed surface water system 5

Consultation with Natural England 5

4.3 Surface Water Drainage Model 6

5.0. Foul Drainage 6

Drawings

60719865-ACM-CBB-XX-DR-CE-000510

Appendices

Appendix A – Surface Water Drainage Calculations

Cloughbank B – Drainage Strategy

This report outlines the proposed drainage strategy for the proposed Clough Bank B car park.

1.0. Scope

This report outlines the proposed strategy for the capture and disposal of surface water drainage in the Clough Bank B car park off Wilmslow Old Rd at Manchester Airport.

2.0. Existing arrangement

The existing site is predominantly green field site but also contains a central paved area which was previously used as a site compound. The paved area was laid out as part of a previous tenant's off-site car parking business - it has been used intermittently as a compound since 2010. The site also contains an existing listed farm building.

The site abuts Cotteril Clough to the north and west, Wilmslow Old Road and the Runway Viewing Park to the east and Badger Brook to the south.

An aerial view of the site is shown in Figure 1. Cotteril Clough is an ecologically sensitive area (SBI/SSSI) which consists of a steep vegetated valley with a non-critical ordinary watercourse running through it. The wooded area to the south is Badger Brook, which is similar in character to Cotteril Clough and is also classified as a SSSI. These watercourses converge at the south western corner of the site and flow westwards beneath the A538. This watercourse flows to the west where it discharges into the River Bollin.



Figure 1 – the site – aerial view

3.0. Proposed Layout

The current proposal is to provide a long-stay public car park primarily for Meet and Greet parking, cars being dropped at and collected from the airport terminals and stored in the car park until collection. The surface of the car park is mainly made up of porous gravel with only main circulatory routes being hard-surfaced.

Refer to drawing 60719865-ACM-CBB-XX-DR-CE-000510 which shows the proposed arrangement.

4.0. Surface Water Drainage

Possible discharge locations for surface water were considered. Discharge to ground (soakaway) is not achievable due to the ground conditions. The site is typically underlain by a predominantly clay layer to significant depth with occasional pockets of saturated sand. Discharge to MAG surface water sewer network was also considered, but due to the location of the site this was not viable without introducing pumping. There are no United Utilities surface water sewers in the vicinity of the site.

It was therefore determined that the only viable discharge location was the watercourses on the site boundary.

To the west of Cotteril Clough and the east of the A538 is the Clough Bank A car park which was constructed in 2016, although upgrade works are currently in progress. This scheme is directly on the opposite side of Cotterill Clough and the same approach was applied to this scheme as a starting point for the design. This also discharges to Cotteril Clough.

4.1 Proposed Surface Water Drainage Strategy

The existing topography was reviewed to determine how the existing site was currently draining. It was determined that there was no positive drainage and that runoff from the site was flowing across the greenfield areas into the surrounding watercourses.

On that basis the site was divided into 6 sub catchments and a maximum allowable discharge of 5 litres/second/hectare was applied to reflect greenfield runoff rate. Table 1 shows the areas and maximum flow rates.

Catchment	Catchment area (ha)	Max discharge rate (l/s)
A	1.377	9.4
B	1.215	7.2
C	1.084	8.1
D	1.645	9.4
E	1.233	7.7
F	1.497	8.4

Table 1 – Catchment areas and maximum allowable discharge rates

4.2 Overview of proposed surface water system

Consultation with Natural England

Due to the ecologically sensitive nature of Cotteril Clough several meetings have been held with Natural England since 2018 when the scheme was initially developed to discuss the surface water strategy. A short summary of the outcome of these meetings is provided below:

- Aecom presented the proposed drainage scheme for Clough Bank B, highlighting that the design approach was the same as used for Clough Bank A:
    - Restrict discharge rates to greenfield runoff rates (maximum 5 litres/second/hectare)
    - The intention is to mimic discharge arrangements from the existing site and avoid concentrating flow to minimise washout of the bank (ie a less ‘engineered’ solution)
    - The drainage is designed such that all flood water for a 1 in 100 year rainfall event (+45% allowance for climate change) is held within the car park/hardstanding areas (ie flood water does not overflow into the watercourse in an uncontrolled manner)

- A walkover of Clough Bank A was held to see this approach in operation. Natural England were happy with the existing arrangement and commented that it was working well.

- Natural England agreed that the proposed approach was acceptable.

4.3 Surface Water Drainage Model

An Infodrainage model was prepared to determine the outline design for the surface water drainage system, broadly to determine pipe and tank sizes and attenuation volumes stored in the various locations identified above.

Appendix A contains the details of this assessment.

In summary – the model and associated calculations demonstrate that for a 1 in 30 year storm event all runoff can be stored in the attenuation system,

For a 1 in 100 year event +45% climate change all runoff can be stored in the attenuation system or in a controlled manner on the finished surface.

5.0. Foul Drainage

There is no proposed foul drainage for the site. An existing foul drainage system is in operation for the buildings that are being retained on the site, although these are not presently occupied and an existing rising main passes through the site taking foul flows from the adjacent Runway Viewing Park, this will not be effected by the proposed works.

ISO A1 594mm x 841mm
Last saved by: CONROY.THOMAS (2024-05-29) Last Plotted: 2024-05-29
File name: \\emea.aecomnet.com\LF\SIEMEA\Manchester-UKMCR5\DCS\Projects\BP\01_MAG_FRAMEWORK_CIVILS_23241900_CAD_GIS\60578226 - CBB\910_CAD\911_CivilsCAD (Drawings)\912_1_WIP\60719865-ACM-CBB-XX-DR-CE-000510 - PROPOSED DRAINAGE



THIRD PARTY INFORMATION	ISSUED BY	REFERENCE	DATE RECEIVED
TOPOGRAPHICAL SURVERY	ATLANTIC GEOMATICS	3543P06-P11	JUNE 2018
OS MASTERPLAN	MAG	ASSET TEAM	18/02/2024

THIRD PARTY INFORMATION	ISSUED BY	REFERENCE	DATE RECEIVED

0 25 50 m
1:1000

NOTES CONTINUED

10. OUTFALL PIPES INTO THE PROPOSED SWALE WILL OUTFALL DIRECTLY ONTO A CONCRETE SLAB 0.5m BY 0.5m WITH A DEPTH OF 0.15m.
11. OUTFALL PIPES SURROUND WILL BE BEDDING TYPE Z FOR ALL COVER DEPTHS 0.6m AND LOWER UNTIL THE POINT WHERE THE PIPE INTERSECTS WITH THE SWALE SIDE SLOPE.

KEY

- EXISTING WATERCOURSE
- PROPOSED SWALE
- PROPOSED MODULAR ATTENUATION TANK
- PROPOSED CARRIER DRAIN
- PROPOSED FILTER DRAIN
- INT PROPOSED INTERCEPTOR
- PROPOSED KERB DRAIN
- RE PROPOSED RODDING EYE
- PROPOSED OUTFALL TO SWALE
- PROPOSED CASCADE LOCATION
- PROPOSED CHAMBER

AECOM

PROJECT

CLOUGH BANK B

CLIENT

MAG

CONSULTANT

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5. ANY DISCREPANCIES IN DIMENSIONS OR DETAILS ON OR BETWEEN THESE DRAWINGS SHALL BE DRAWN TO THE ATTENTION OF THE PROJECT MANAGER FOR CLARIFICATION.
6. ATTENUATION TANK SYSTEMS SHALL BE DESIGNED BY THE SUPPLIER AND DETAILS SUBMITTED TO THE DESIGNER TO REVIEW. ATTENUATION TANKS SHALL INCLUDE A POLYSTORM ACCESS TURRET FOR CLEANSING AND INSPECTION. FOR ASSEMBLY DETAILS REFER TO POLYPIPE DRAWING NO. PSM_SD_007.
7. ALL INTERCEPTORS SHALL BE KLARGESTER OIL FUEL SEPARATORS, UNIT NSBE010, OR SIMILAR APPROVED INTERCEPTOR.
8. WHERE PERFORATED PIPES ARE SHOWN CROSSING CRATES, THESE ARE TO BE INSTALLED ABOVE ATTENUATION SYSTEMS
9. THE CHAMBER DIRECTLY UPSTREAM OF THE ATTENUATION TANK WILL BE SILT TRAP, FOR DETAIL REFER TO 60719865-ACM-CBB-XX-DR-CE-000520.

ISSUE/REVISION

I/R	DATE	DESCRIPTION	BY	CK	AP
P05	28/05/2024	UPDATED AS PER MAG REQUIREMENTS ON 22.05.24	CT	GT	VB
P04	17/05/2024	NOTES UPDATED AS PER CLIENT COMMENT	NM	GT	VB
P03	03/05/2024	LANDSCAPE UPDATE	CT	GT	VB
P02	25/04/2024	UPDATED DRAINAGE LAYOUT	CT	RG	VB
P01	22/03/2024	TENDER ISSUE	NM	RG	VB

SUITABILITY

D2 - Suitable for Tender

PROJECT NUMBER

60719865

SHEET TITLE

CLOUGH BANK B
PROPOSED SURFACE
WATER DRAINAGE

SHEET NUMBER

60719865-ACM-CBB-XX-DR-CE-000510

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REVISION P04

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Appendix A – Proposed Drainage Calculations

Appendix A – Proposed Drainage Calculations

The proposed surface water drainage network was modelled in Info Drainage software.

The system was designed to accommodate :

- a 1 in 30 year storm event with no flooding
- a 1 in 100 year storm event + 45% climate change with all floodwater attenuated on site

The Figures below show the modelled networks.

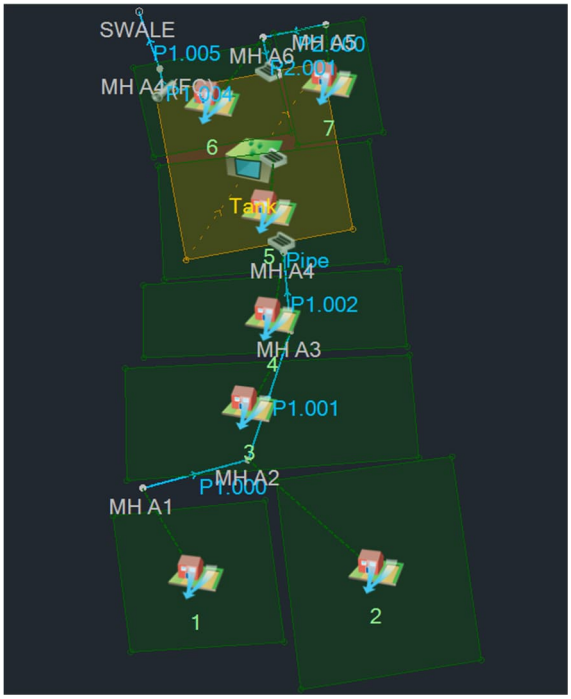


Figure A1 – Catchment A

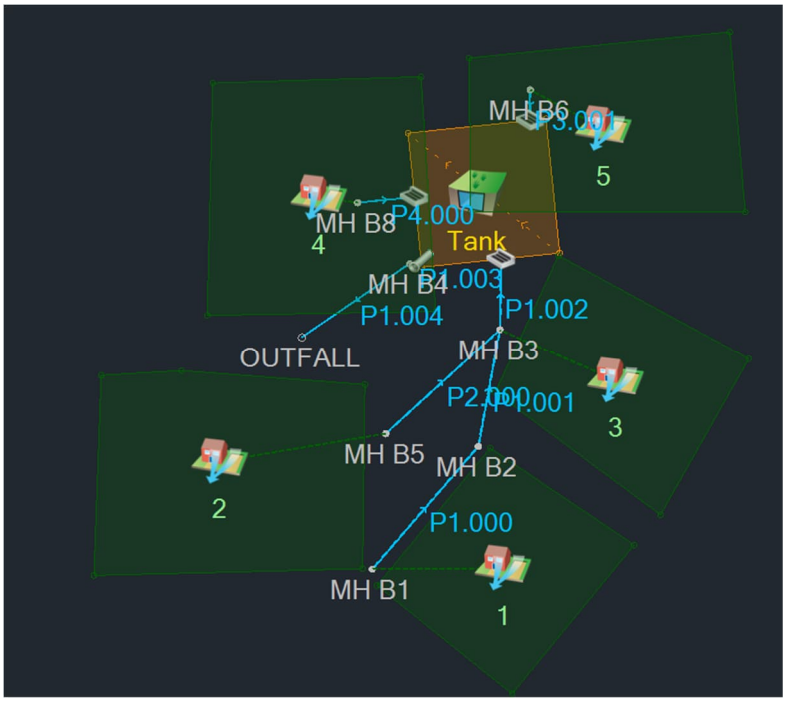


Figure A2 – Catchment B

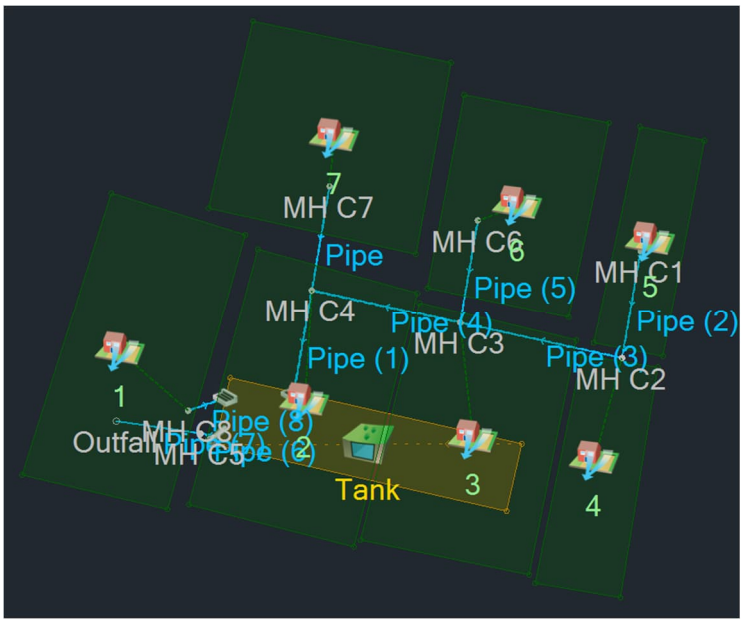


Figure A3 – Catchment C

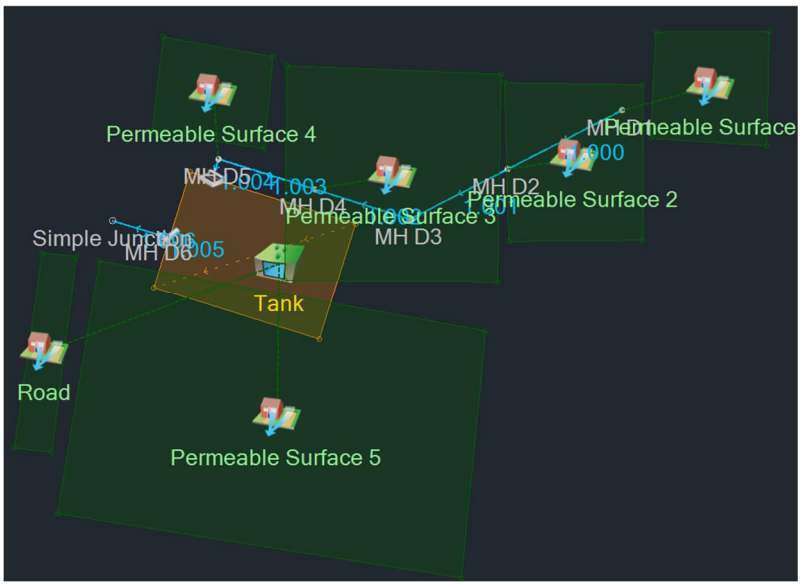


Figure A4 – Catchment D

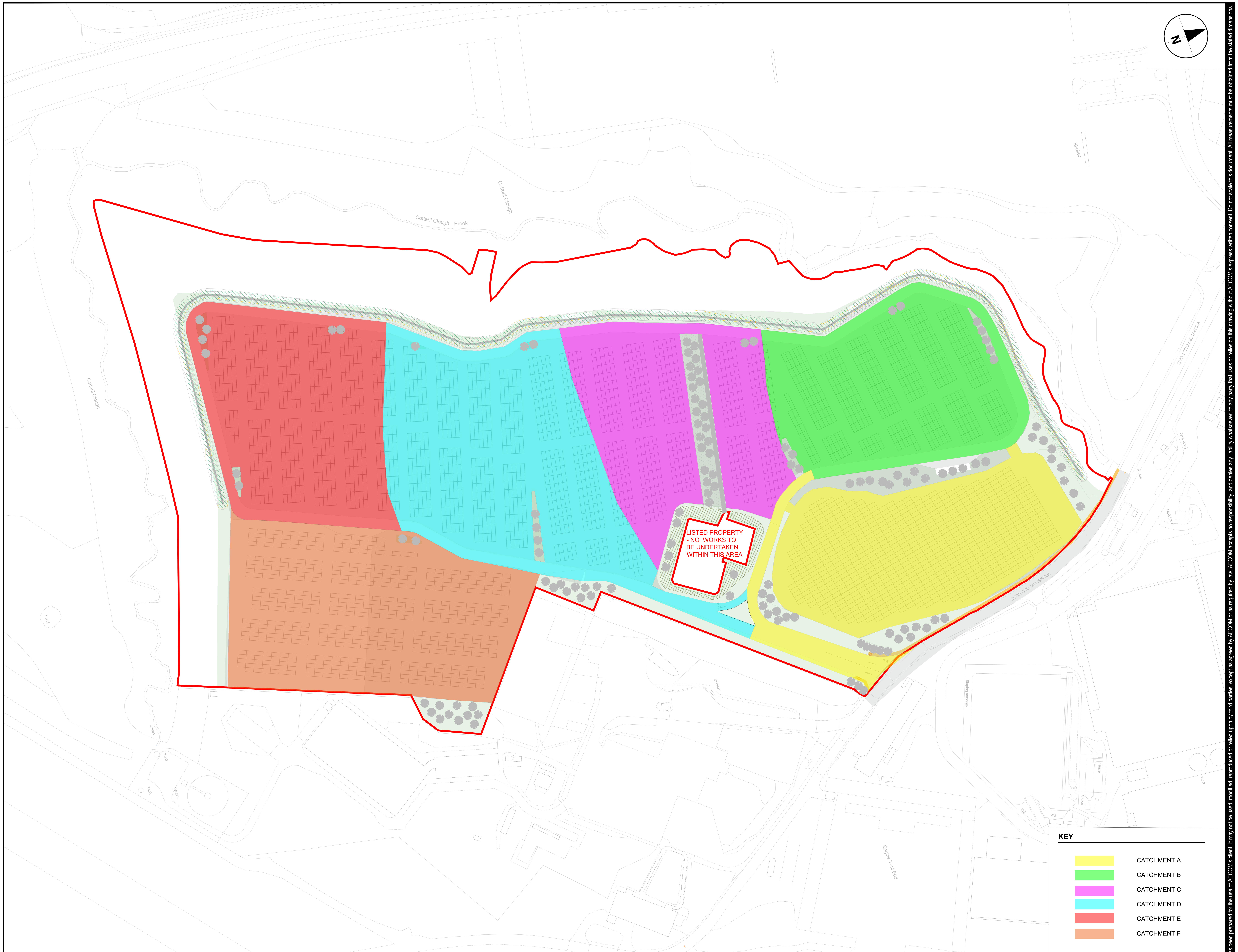


Figure A5 – Catchment E



Figure A6 – Catchment F

Catchment Area Plan:



KEY

- CATCHMENT A
- CATCHMENT B
- CATCHMENT C
- CATCHMENT D
- CATCHMENT E
- CATCHMENT F

THIRD PARTY INFORMATION	ISSUED BY	REFERENCE	DATE RECEIVED
TOPOGRAPHICAL SURVERY	ATLANTIC GEOMATICS	3543P06-P11	JUNE 2018
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0 25 50 m
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CATCHMENT A : 1.357 HA
CATCHMENT B : 1.216 HA
CATCHMENT C : 1.085 HA
CATCHMENT D : 1.641 HA
CATCHMENT E : 1.232 HA
CATCHMENT F : 1.497 HA
TOTAL CATCHMENT AREA : 8.028 HA

ISSUE/REVISION

I/R	DATE	DESCRIPTION	BY	CK	AP
P03	17/05/2024	NOTES UPDATED AS PER CLIENT COMMENT	NM	GT	VB
P02	10/05/2024	REVISED SHEET TITLE	CT	GT	VB
P01	07/05/2024	TENDER ISSUE	CT	GT	VB

SUITABILITY

D2 - Suitable for Tender

PROJECT NUMBER

60719865

SHEET TITLE

CLOUGH BANK B
PROPOSED CATCHMENT
AREA PLAN

SHEET NUMBER

60719865-ACM-CBB-XX-DR-CE-000560

SCALE **REVISION**

1:1000 @ A1 P03

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The swale has been analysed in a different InfoDrainage model shown below in figure A7

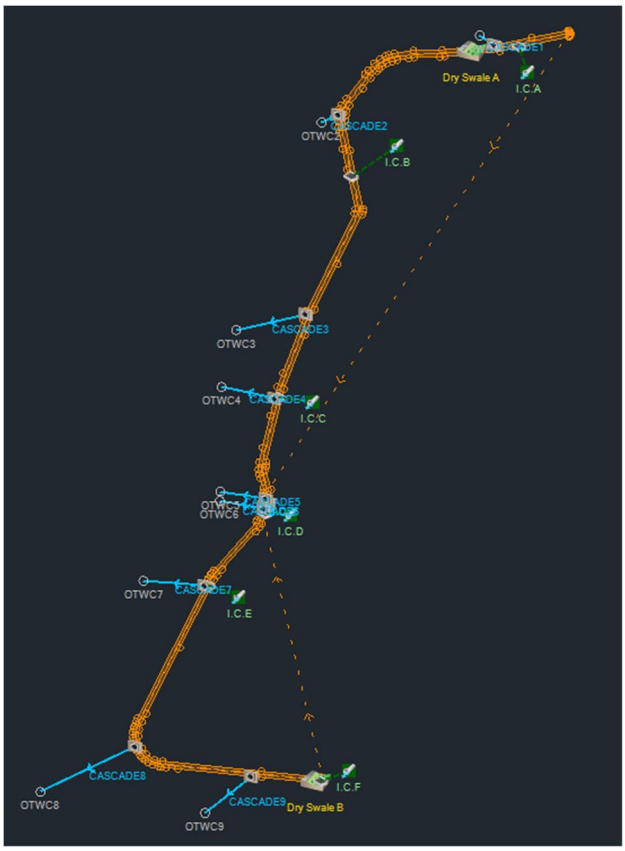


Figure A7 – InfoDrainage Swale

Modelling Results for all Catchments:

Project:	Date:		
CBB - Area A	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Inflows Storm Phase: Phase	AECOM		



Permeable Surface 2

Type : Catchment Area

Area (ha)	0.134

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80



Permeable Surface 1

Type : Catchment Area

Area (ha)	0.199

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80



Permeable Surface 3

Type : Catchment Area

Area (ha)	0.27

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80

Permeable Surface 4

Type : Catchment Area

Area (ha)	0.171

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80

Permeable Surface 5

Type : Catchment Area

Area (ha)	0.223

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80

Permeable Surface 6

Type : Catchment Area

Area (ha)	0.112

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80

Project:	Date:		
CBB - Area A	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Inflows Storm Phase: Phase	AECOM		



Permeable Surface 7

Type : Catchment Area

Area (ha)	0.088

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80



Road 2

Type : Catchment Area

Area (ha)	0.127

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Road 1

Type : Catchment Area

Area (ha)	0.053

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project:	Date:		
CBB - Area A	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Junctions Storm Phase: Phase	AECOM		

Name	Junction Type	Easting (m)	Northing (m)	Cover Level (m)	Depth (m)	Invert Level (m)	Chamber Shape	Diameter (m)
MH A2	Manhole	381122.188	384350.134	67.000	2.260	64.740	Circular	1.800
MH A3	Manhole	381134.662	384388.145	66.850	2.220	64.630	Circular	1.800
MH A4	Manhole	381132.710	384411.343	66.570	2.005	64.565	Circular	1.800
MH A7 (FC)	Manhole	381096.120	384465.496	65.750	1.247	64.503	Circular	1.800
SWALE	Simple Junction	381090.089	384482.318					
MH A6	Manhole	381126.573	384474.743	65.660	1.095	64.565	Circular	1.500
MH A1	Manhole	381091.134	384341.852	66.850	2.020	64.830	Circular	1.500
MH A5	Manhole	381145.080	384478.536	65.820	64.630	64.630	Circular	1.500

Name	Lock
MH A2	None
MH A3	None
MH A4	None
MH A7 (FC)	None
SWALE	
MH A6	None
MH A1	None
MH A5	None

Inlets

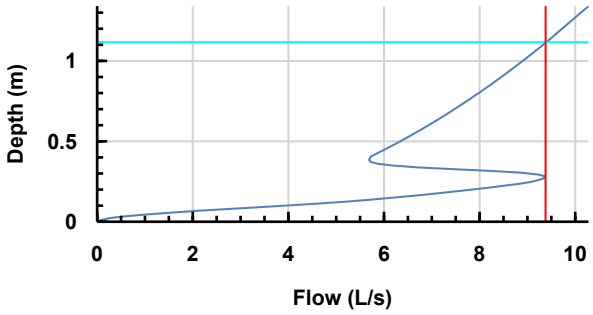
Junction	Inlet Name	Incoming Item(s)	Bypass Destination	Capacity Type
MH A2	Inlet	P1.000	(None)	No Restriction
	Inlet (1)	Permeable Surface 1	(None)	No Restriction
	Inlet (2)	Road 2	(None)	No Restriction
MH A3	Inlet	Permeable Surface 3 P1.001	(None)	No Restriction
MH A4	Inlet	P1.002 Permeable Surface 4	(None)	No Restriction
MH A7 (FC)	Inlet	P1.004	(None)	No Restriction
SWALE	Inlet	P1.005	(None)	No Restriction
MH A6	Inlet	P2.000	(None)	No Restriction
	Inlet (1)	Permeable Surface 6	(None)	No Restriction
MH A1	Inlet	Permeable Surface 2	(None)	No Restriction
	Inlet (1)	Road 1	(None)	No Restriction
MH A5	Inlet	Permeable Surface 7	(None)	No Restriction

Project:	Date:		
CBB - Area A	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Junctions Storm Phase: Phase	AECOM		

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
MH A2	Outlet	P1.001	Free Discharge
MH A3	Outlet	P1.002	Free Discharge
MH A4	Outlet	Pipe	Free Discharge
MH A7 (FC)	Outlet	P1.005	Hydro-Brake®
MH A6	Outlet	P2.001	Free Discharge
MH A1	Outlet	P1.000	Free Discharge
MH A5	Outlet	P2.000	Free Discharge

Invert Level (m)	64.503
Design Depth (m)	1.117
Design Flow (L/s)	9.4
Objective	Minimise Upstream Storage Requirements
Application	Surface Water Only
Sump Available	☐
Unit Reference	CHE-0132-9400-1117-9400



Project:	Date:		
CBB - Area A	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Stormwater Controls Storm Phase: Phase	AECOM		



Tank

Type : Tank

Dimensions

Exceedance Level (m)	65.770
Depth (m)	1.240
Base Level (m)	64.530
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	684.840

Depth (m)	Area (m²)	Volume (m³)
0.000	1800.00	0.000
0.400	1800.00	684.000

Inlets

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	P2.001
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (3)

Inlet Type	Point Inflow
Incoming Item(s)	Permeable Surface 5
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Pipe
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	P1.004
Outlet Type	Free Discharge

Advanced

Perimeter	Circular
Length (m)	61.612

Project:	Date:		
CBB - Area A	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Manhole Schedule Storm Phase: Phase	AECOM		

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
MH A2	67.000 64.740	Diameter / Length: 1.800	{1} P1.000	Pipe	64.740	Diam/Width:375	Manhole
E:381122.188 N:384350.134	2.260		{a} P1.001	Pipe	64.740	Diam/Width:375	Not Applicable
MH A3	66.850 64.630	Diameter / Length: 1.800	{1} P1.001	Pipe	64.630	Diam/Width:375	Manhole
E:381134.662 N:384388.145	2.220		{a} P1.002	Pipe	64.630	Diam/Width:375	Not Applicable
MH A4	66.570 64.565	Diameter / Length: 1.800	{1} P1.002	Pipe	64.565	Diam/Width:375	Manhole
E:381132.710 N:384411.343	2.005		{a} Pipe	Pipe	64.565	Diam/Width:375	Not Applicable
MH A7 (FC)	65.750 64.503	Diameter / Length: 1.800	{1} P1.004	Pipe	64.503	Diam/Width:375	Manhole
E:381096.120 N:384465.496	1.247		{a} P1.005	Pipe	64.503	Diam/Width:150	Not Applicable
SWALE		Diameter / Length: 1.200	{1} P1.005	Pipe	64.387	Diam/Width:150	Simple Junction
E:381090.089 N:384482.318							Not Applicable

Project:	Date:		
CBB - Area A	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Manhole Schedule Storm Phase: Phase	AECOM		

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
MH A6	65.660 64.565	Diameter / Length: 1.500	{1} P2.000	Pipe	64.565	Diam/Width:300	Manhole
E:381126.573 N:384474.743	1.095		{a} P2.001	Pipe	64.565	Diam/Width:300	Not Applicable
MH A1	66.850 64.830	Diameter / Length: 1.500					Manhole
E:381091.134 N:384341.852	2.020		{a} P1.000	Pipe	64.830	Diam/Width:375	Not Applicable
MH A5	65.820 64.630	Diameter / Length: 1.500					Manhole
E:381145.080 N:384478.536	64.630		{a} P2.000	Pipe	64.630	Diam/Width:300	Not Applicable

Project:	Date:		
CBB - Area A	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Inflow Summary Storm Phase: Phase	AECOM		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Permeable Surface 1	MH A2		Time of Concentration	0.199	80	0	80	0.159
Permeable Surface 2	MH A1		Time of Concentration	0.134	80	0	80	0.107
Permeable Surface 3	MH A3		Time of Concentration	0.270	80	0	80	0.216
Permeable Surface 4	MH A4		Time of Concentration	0.171	80	0	80	0.137
Permeable Surface 5	Tank		Time of Concentration	0.223	80	0	80	0.178
Permeable Surface 6	MH A6		Time of Concentration	0.112	80	0	80	0.090
Permeable Surface 7	MH A5		Time of Concentration	0.088	80	0	80	0.070
Road 1	MH A1		Time of Concentration	0.053	100	0	100	0.053
Road 2	MH A2		Time of Concentration	0.127	100	0	100	0.127
TOTAL		**0.0**		**1.377**				**1.138**

Project:	Date:		
CBB - Area A	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Network Design Criteria Storm Phase: Phase	AECOM		

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

Project:	Date:		
CBB - Area A	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Network Design Criteria Storm Phase: Phase	AECOM		

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

Project:	Date:		
CBB - Area A	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Outfall Details Storm Phase: Phase	AECOM		

Outfalls

Outfall	Outfall Type	Fixed Surcharged Level (m)	Level Curve
SWALE	Free Discharge		

Project:	Date:		
CBB - Area A	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Title:	Company Address:		
Rainfall Analysis Criteria	AECOM		

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

Rainfall

FSR

Type: FSR

Region	England And Wales
M5-60 (mm)	18.3
Ratio R	0.396
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
100.0	45.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

Project: CBB - Area A	Date: 15/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: AECOM		

Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
Permeable Surface 2	FSR: 100 years: +45 %: 15 mins: Winter	0.13	62.9	29.122
Permeable Surface 1	FSR: 100 years: +45 %: 15 mins: Winter	0.20	93.5	43.241
Permeable Surface 3	FSR: 100 years: +45 %: 15 mins: Winter	0.27	126.8	58.671
Permeable Surface 4	FSR: 100 years: +45 %: 15 mins: Winter	0.17	80.3	37.163
Permeable Surface 5	FSR: 100 years: +45 %: 15 mins: Winter	0.22	104.7	48.461
Permeable Surface 6	FSR: 100 years: +45 %: 15 mins: Winter	0.11	52.6	24.340
Permeable Surface 7	FSR: 100 years: +45 %: 15 mins: Winter	0.09	41.3	19.120
Road 2	FSR: 100 years: +45 %: 15 mins: Winter	0.13	74.6	34.496
Road 1	FSR: 100 years: +45 %: 15 mins: Winter	0.05	31.1	14.398

Project:	Date:		
CBB - Area A	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Junctions Summary Storm Phase: Phase	AECOM		

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
MH A2	FSR: 100 years: +45 %: 15 mins: Winter	67.000	64.740	66.793	2.053	245.7	5.224	0.000	222.6	121.290	Flood Risk
MH A3	FSR: 100 years: +45 %: 15 mins: Winter	66.850	64.630	66.228	1.598	349.4	4.067	0.000	332.9	179.297	Surcharged
MH A4	FSR: 100 years: +45 %: 480 mins: Winter	66.570	64.565	65.660	1.095	52.6	2.788	0.000	52.4	601.245	Surcharged
MH A7 (FC)	FSR: 100 years: +45 %: 480 mins: Winter	65.750	64.503	65.660	1.157	9.7	2.944	0.000	9.4	380.407	Flood Risk
SWALE	FSR: 100 years: +45 %: 480 mins: Winter		64.387	64.475	0.088	9.4			9.4	380.300	OK
MH A6	FSR: 100 years: +45 %: 480 mins: Winter	65.660	64.565	65.660	1.095	10.4	1.935	0.000	10.2	116.845	Flood Risk
MH A1	FSR: 100 years: +45 %: 15 mins: Winter	66.850	64.830	66.849	2.019	94.1	3.577	0.008	77.7	43.555	Flood Risk
MH A5	FSR: 100 years: +45 %: 480 mins: Winter	65.820	64.630	65.660	1.030	4.7	1.820	0.000	4.5	52.435	Flood Risk

Project: CBB - Area A	Date: 15/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: AECOM		

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 %: 480 mins: Winter	65.660	65.660	1.130	1.130	74.4	685.276	0.000	0.000	9.7	384.380	-0.064	OK

Project:	Date:		
CBB - Area A	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Connections Summary Storm Phase: Phase	AECOM		

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
P1.002	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH A3	MH A4	66.850	66.228	0.375	179.258	3.0	3.17	332.9	Surcharged
P1.004	FSR: 100 years: +45 %: 480 mins: Winter	Pipe	Tank	MH A7 (FC)	65.770	65.660	0.375	381.504	0.2	0.08	9.7	Surcharged
P1.005	FSR: 100 years: +45 %: 480 mins: Winter	Pipe	MH A7 (FC)	SWALE	65.750	65.660	0.091	380.300	0.8	0.66	9.4	Flood Risk
P2.001	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH A6	Tank	65.660	64.815	0.161	42.466	2.5	1.52	96.9	OK
P2.000	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH A5	MH A6	65.820	64.848	0.234	18.883	0.7	0.61	39.6	OK
Pipe	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH A4	Tank	66.570	65.387	0.375	215.496	3.7	3.55	407.2	Surcharged
P1.000	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH A1	MH A2	66.850	66.849	0.375	43.555	0.7	0.74	77.7	Flood Risk
P1.001	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH A2	MH A3	67.000	66.793	0.375	121.290	2.0	2.13	222.6	Flood Risk

Project:	Date:		
CBB AREA B	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Inflows Storm Phase: Phase	AECOM		



Permeable Surface 1

Type : Catchment Area

Area (ha)	0.174

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80



Permeable Surface 2

Type : Catchment Area

Area (ha)	0.112

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80



Permeable Surface 3

Type : Catchment Area

Area (ha)	0.112

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80

Permeable Surface 4

Type : Catchment Area

Area (ha)	0.239

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80

Permeable Surface 5

Type : Catchment Area

Area (ha)	0.205

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80

Road 1

Type : Catchment Area

Area (ha)	0.049

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project:	Date:		
CBB AREA B	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Inflows Storm Phase: Phase	AECOM		



Road 2

Type : Catchment Area

Area (ha)	0.033

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Road 4

Type : Catchment Area

Area (ha)	0.007

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Road 3

Type : Catchment Area

Area (ha)	0.018

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project:	Date:		
CBB AREA B	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Inflows Storm Phase: Phase	AECOM		



Road 5

Type : Catchment Area

Area (ha)	0.054

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Road 6

Type : Catchment Area

Area (ha)	0.049

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Permeable Surface 6

Type : Catchment Area

Area (ha)	0.163

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80

Project:	Date:		
CBB AREA B	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Junctions Storm Phase: Phase	AECOM		

Name	Junction Type	Easting (m)	Northing (m)	Cover Level (m)	Depth (m)	Invert Level (m)	Chamber Shape	Diameter (m)
MH B6	Manhole	381041.506	384460.579	66.090	1.845	64.245	Circular	1.800
MH B3	Manhole	381037.826	384403.858	66.220	1.960	64.260	Circular	1.800
MH B2	Manhole	381030.619	384375.796	66.260	1.890	64.370	Circular	1.800
MH B1	Manhole	381005.364	384346.624	66.020	1.500	64.520	Circular	1.200
MH B5	Manhole	381008.595	384378.807	66.020	1.500	64.520	Circular	1.200
MH B4 (FC)	Manhole	381014.323	384419.336	66.140	1.960	64.180	Circular	1.800
OUTFALL	Simple Junction	380988.654	384401.808					
MH B8	Manhole	381001.889	384433.831	66.120	1.350	64.770	Circular	1.800

Name	Lock
MH B6	None
MH B3	None
MH B2	None
MH B1	None
MH B5	None
MH B4 (FC)	None
OUTFALL	
MH B8	None

Inlets

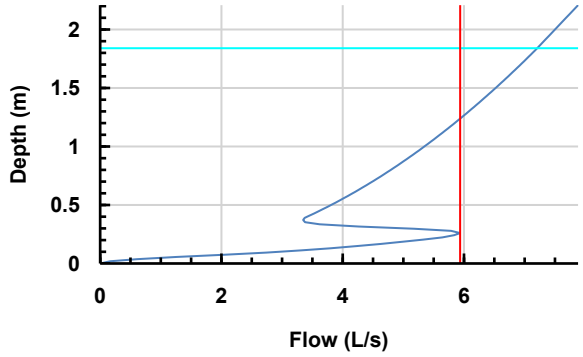
Junction	Inlet Name	Incoming Item(s)	Bypass Destination	Capacity Type
MH B6	Inlet	Permeable Surface 5 Road 1	(None)	No Restriction
MH B3	Inlet	P1.001 Road 2	(None)	No Restriction
	Inlet (1)	P2.000	(None)	No Restriction
MH B2	Inlet	P1.000	(None)	No Restriction
	Inlet (1)	Permeable Surface 3	(None)	No Restriction
	Inlet (2)	Road 3	(None)	No Restriction
MH B1	Inlet	Permeable Surface 1	(None)	No Restriction
	Inlet (1)	Road 4	(None)	No Restriction
MH B5	Inlet	Permeable Surface 2	(None)	No Restriction
	Inlet (1)	Road 5	(None)	No Restriction
MH B4 (FC)	Inlet	P1.003	(None)	No Restriction
OUTFALL	Inlet	P1.004	(None)	No Restriction
MH B8	Inlet	Permeable Surface 4	(None)	No Restriction
	Inlet (1)	Road 6	(None)	No Restriction

Project:	Date:		
CBB AREA B	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Junctions Storm Phase: Phase	AECOM		

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
MH B6	Outlet	P3.001	Free Discharge
MH B3	Outlet	P1.002	Free Discharge
MH B2	Outlet	P1.001	Free Discharge
MH B1	Outlet	P1.000	Free Discharge
MH B5	Outlet	P2.000	Free Discharge
MH B4 (FC)	Outlet	P1.004	Hydro-Brake®

Invert Level (m)	64.180
Design Depth (m)	1.840
Design Flow (L/s)	7.2
Objective	Minimise Upstream Storage Requirements
Application	Surface Water Only
Sump Available	☐
Unit Reference	CHE-0106-7200-1840-7200



MH B8	Outlet	P4.000	Free Discharge

Project:	Date:		
CBB AREA B	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Stormwater Controls Storm Phase: Phase	AECOM		



Tank

Type : Tank

Dimensions

Exceedance Level (m)	66.100
Depth (m)	1.910
Base Level (m)	64.190
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	662.310

Depth (m)	Area (m²)	Volume (m³)
0.000	870.00	118.000
0.800	870.00	118.000

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	P1.002
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	P3.001
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (2)

Inlet Type	Point Inflow
Incoming Item(s)	P4.000
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (3)

Inlet Type	Point Inflow
Incoming Item(s)	Permeable Surface 6
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	P1.003
Outlet Type	Free Discharge

Advanced

Perimeter	Circular
Length (m)	41.725

Project: CBB AREA B	Date: 15/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Manhole Schedule Storm Phase: Phase	Company Address: AECOM		

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
MH B6	66.090 64.245	Diameter / Length: 1.800					Manhole
E:381041.506 N:384460.579	1.845						
			{a} P3.001	Pipe	64.245	Diam/Width:300	Not Applicable
MH B3	66.220 64.260	Diameter / Length: 1.800	{1} P1.001	Pipe	64.260	Diam/Width:375	Manhole
E:381037.826 N:384403.858	1.960		{2} P2.000	Pipe	64.260	Diam/Width:375	
			{a} P1.002	Pipe	64.260	Diam/Width:375	Not Applicable
MH B2	66.260 64.370	Diameter / Length: 1.800	{1} P1.000	Pipe	64.370	Diam/Width:375	Manhole
E:381030.619 N:384375.796	1.890						
			{a} P1.001	Pipe	64.370	Diam/Width:375	Not Applicable
MH B1	66.020 64.520	Diameter / Length: 1.200					Manhole
E:381005.364 N:384346.624	1.500						
			{a} P1.000	Pipe	64.520	Diam/Width:375	Not Applicable
MH B5	66.020 64.520	Diameter / Length: 1.200					Manhole
E:381008.595 N:384378.807	1.500						
			{a} P2.000	Pipe	64.520	Diam/Width:375	Not Applicable

Project:	Date:		
CBB AREA B	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Manhole Schedule Storm Phase: Phase	AECOM		

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
MH B4 (FC)	66.140 64.180	Diameter / Length: 1.800	{1} P1.003	Pipe	64.180	Diam/Width:375	Manhole
E:381014.323 N:384419.336	1.960		{a} P1.004	Pipe	64.180	Diam/Width:150	Not Applicable
OUTFALL		Diameter / Length: 1.200	{1} P1.004	Pipe	63.972	Diam/Width:150	Simple Junction
E:380988.654 N:384401.808							Not Applicable
MH B8	66.120 64.770	Diameter / Length: 1.800					Manhole
E:381001.889 N:384433.831	1.350		{a} P4.000	Pipe	64.770	Diam/Width:300	Not Applicable

Project:	Date:		
CBB AREA B	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Inflow Summary Storm Phase: Phase	AECOM		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Permeable Surface 1	MH B1		Time of Concentration	0.174	80	0	80	0.139
Permeable Surface 2	MH B5		Time of Concentration	0.112	80	0	80	0.090
Permeable Surface 3	MH B2		Time of Concentration	0.112	80	0	80	0.090
Permeable Surface 4	MH B8		Time of Concentration	0.239	80	0	80	0.191
Permeable Surface 5	MH B6		Time of Concentration	0.205	80	0	80	0.164
Permeable Surface 6	Tank		Time of Concentration	0.163	80	0	80	0.130
Road 1	MH B6		Time of Concentration	0.049	100	0	100	0.049
Road 2	MH B3		Time of Concentration	0.033	100	0	100	0.033
Road 3	MH B2		Time of Concentration	0.018	100	0	100	0.018
Road 4	MH B1		Time of Concentration	0.007	100	0	100	0.007
Road 5	MH B5		Time of Concentration	0.054	100	0	100	0.054
Road 6	MH B8		Time of Concentration	0.049	100	0	100	0.049
TOTAL		**0.0**		**1.215**				**1.014**

Project:	Date:		
CBB AREA B	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Network Design Criteria Storm Phase: Phase	AECOM		

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	☐

Manhole Options

Apply Offset	☐

Project:	Date:		
CBB AREA B	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Outfall Details Storm Phase: Phase	AECOM		

Outfalls

Outfall	Outfall Type	Fixed Surcharged Level (m)	Level Curve
OUTFALL	Free Discharge		

Project:	Date:		
CBB AREA B	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Title:	Company Address:		
Rainfall Analysis Criteria	AECOM		

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

Rainfall

FSR

Type: FSR

Region	England And Wales
M5-60 (mm)	18.4
Ratio R	0.398
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
100.0	45.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

Project: CBB AREA B	Date: 15/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: AECOM		

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 (m^3)
Permeable Surface 1	FSR: 100 years: +45 %: 15 mins: Winter	0.17	82.4	38.106
Permeable Surface 2	FSR: 100 years: +45 %: 15 mins: Winter	0.11	53.0	24.528
Permeable Surface 3	FSR: 100 years: +45 %: 15 mins: Winter	0.11	53.0	24.528
Permeable Surface 4	FSR: 100 years: +45 %: 15 mins: Winter	0.24	113.1	52.338
Permeable Surface 5	FSR: 100 years: +45 %: 15 mins: Winter	0.21	97.0	44.895
Road 1	FSR: 100 years: +45 %: 15 mins: Winter	0.05	29.0	13.410
Road 2	FSR: 100 years: +45 %: 15 mins: Winter	0.03	19.5	9.033
Road 4	FSR: 100 years: +45 %: 15 mins: Winter	0.01	4.1	1.917
Road 3	FSR: 100 years: +45 %: 15 mins: Winter	0.02	10.7	4.926
Road 5	FSR: 100 years: +45 %: 15 mins: Winter	0.05	32.0	14.781
Road 6	FSR: 100 years: +45 %: 15 mins: Winter	0.05	29.0	13.410
Permeable Surface 6	FSR: 100 years: +45 %: 15 mins: Winter	0.16	77.2	35.694

Project: CBB AREA B	Date: 15/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: AECOM		

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
MH B6	FSR: 100 years: +45 %: 960 mins: Winter	66.090	64.245	65.414	1.169	8.2	2.975	0.000	8.1	184.280	Surcharged
MH B3	FSR: 100 years: +45 %: 960 mins: Winter	66.220	64.260	65.414	1.154	15.3	2.937	0.000	14.9	362.997	Surcharged
MH B2	FSR: 100 years: +45 %: 960 mins: Winter	66.260	64.370	65.414	1.044	9.4	2.657	0.000	8.9	216.264	Surcharged
MH B1	FSR: 100 years: +45 %: 960 mins: Winter	66.020	64.520	65.414	0.894	5.6	1.011	0.000	5.3	126.402	Surcharged
MH B5	FSR: 100 years: +45 %: 960 mins: Winter	66.020	64.520	65.414	0.894	5.5	1.011	0.000	5.2	123.940	Surcharged
MH B4 (FC)	FSR: 100 years: +45 %: 960 mins: Winter	66.140	64.180	65.414	1.234	6.0	3.140	0.000	5.9	439.152	Surcharged
OUTFALL	FSR: 100 years: +45 %: 1440 mins: Summer		63.972	64.038	0.066	5.9			5.9	614.742	OK
MH B8	FSR: 100 years: +45 %: 960 mins: Winter	66.120	64.770	65.414	0.644	9.2	1.639	0.000	9.2	209.591	Surcharged

Project: CBB AREA B	Date: 15/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: AECOM		

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 %: 960 mins: Winter	65.414	65.414	1.224	1.224	37.1	661.887	0.000	0.000	6.0	441.387	0.064	OK

Project: CBB AREA B	Date: 15/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address: AECOM		

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
P1.000	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH B1	MH B2	66.020	65.106	0.375	40.088	0.7	0.64	79.7	Surcharged
P1.001	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH B2	MH B3	66.260	65.017	0.375	68.005	1.2	1.08	132.6	Surcharged
P1.002	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH B3	Tank	66.220	64.849	0.375	111.687	1.9	1.79	213.6	Surcharged
P1.003	FSR: 100 years: +45 %: 60 mins: Winter	Pipe	Tank	MH B4 (FC)	66.100	64.711	0.375	23.914	0.3	0.06	6.9	Surcharged
P1.004	FSR: 100 years: +45 %: 1440 mins: Summer	Pipe	MH B4 (FC)	OUTFALL	66.140	64.888	0.067	614.742	0.8	0.41	5.9	Surcharged
P2.000	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH B5	MH B3	66.020	64.944	0.375	39.411	0.7	0.45	73.7	Surcharged
P3.001	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH B6	Tank	66.090	64.688	0.300	57.013	1.7	1.82	123.3	Surcharged
P4.000	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH B8	Tank	66.120	65.282	0.300	65.739	2.0	1.63	138.0	Surcharged

Project:	Date:		
CBB AREA C	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Inflows Storm Phase: Phase	AECOM		



Permeable Surface 1

Type : Catchment Area

Area (ha)	0.145

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80



Permeable Surface 2

Type : Catchment Area

Area (ha)	0.209

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80



Permeable Surface 3

Type : Catchment Area

Area (ha)	0.191

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80

Permeable Surface 4

Type : Catchment Area

Area (ha)	0.09

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80

Permeable Surface 5

Type : Catchment Area

Area (ha)	0.071

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80

Permeable Surface 6

Type : Catchment Area

Area (ha)	0.136

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80

Project: CBB AREA C	Date: 15/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Inflows Storm Phase: Phase	Company Address: AECOM		

Permeable Surface 7 Type : Catchment Area

Area (ha)	0.166

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80

Road 1 Type : Catchment Area

Area (ha)	0.023

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Road 2 Type : Catchment Area

Area (ha)	0.053

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project:	Date:		
CBB AREA C	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Junctions Storm Phase: Phase	AECOM		

Name	Junction Type	Easting (m)	Northing (m)	Cover Level (m)	Depth (m)	Invert Level (m)	Chamber Shape	Diameter (m)
MH C5 (FC)	Manhole	380961.466	384259.244	65.410	1.680	63.730	Circular	1.800
MH C2	Manhole	381053.076	384275.694	67.270	1.830	65.440	Circular	1.800
MH C3	Manhole	381017.871	384283.425	66.525	1.570	64.955	Circular	1.800
MH C4	Manhole	380985.615	384290.521	65.889	1.999	63.890	Circular	1.800
MH C8	Manhole	380960.102	384268.939	65.400	1.500	63.900	Circular	1.500
Outfall	Simple Junction	380943.142	384261.913					
MH C6	Manhole	381021.705	384305.726	66.868	1.758	65.110	Circular	1.200
MH C7	Manhole	380989.500	384313.119	65.868	1.818	64.050	Circular	1.200
MH C1	Manhole	381057.106	384299.141	67.100	1.550	65.550	Circular	1.200

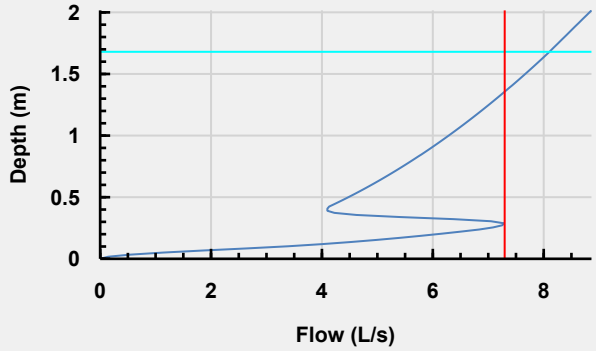
Name	Lock
MH C5 (FC)	None
MH C2	None
MH C3	None
MH C4	None
MH C8	None
Outfall	
MH C6	None
MH C7	None
MH C1	None

Inlets

Junction	Inlet Name	Incoming Item(s)	Bypass Destination	Capacity Type
MH C5 (FC)	Inlet	Pipe (6)	(None)	No Restriction
MH C2	Inlet	Pipe (2) Permeable Surface 4	(None)	No Restriction
MH C3	Inlet	Pipe (3) Pipe (5) Permeable Surface 3	(None)	No Restriction
MH C4	Inlet	Pipe Pipe (4) Permeable Surface 2	(None)	No Restriction
MH C8	Inlet	Permeable Surface 1 Road 2	(None)	No Restriction
Outfall	Inlet	Pipe (7)	(None)	No Restriction
MH C6	Inlet	Permeable Surface 6	(None)	No Restriction
MH C7	Inlet	Permeable Surface 7 Road 1	(None)	No Restriction
MH C1	Inlet	Permeable Surface 5	(None)	No Restriction

Project:	Date:		
CBB AREA C	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Junctions Storm Phase: Phase	AECOM		

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
MH C5 (FC)	Outlet	Pipe (7)	Hydro-Brake®
	Invert Level (m)	63.730	
	Design Depth (m)	1.680	
	Design Flow (L/s)	8.1	
	Objective	Minimise Upstream Storage Requirements	
	Application	Surface Water Only	
	Sump Available	☐	
	Unit Reference	CHE-0115-8100-1680-8100	
			
MH C2	Outlet	Pipe (3)	Free Discharge
MH C3	Outlet	Pipe (4)	Free Discharge
MH C4	Outlet	Pipe (1)	Free Discharge
MH C8	Outlet	Pipe (8)	Free Discharge
MH C6	Outlet	Pipe (5)	Free Discharge
MH C7	Outlet	Pipe	Free Discharge
MH C1	Outlet	Pipe (2)	Free Discharge

Project:	Date:		
CBB AREA C	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Stormwater Controls Storm Phase: Phase	AECOM		



Tank

Type : Tank

Dimensions

Exceedance Level (m)	65.460
Depth (m)	1.710
Base Level (m)	63.750
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	525.310

Depth (m)	Area (m²)	Volume (m³)
0.000	690.00	0.000
0.800	690.00	524.400

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Pipe (1)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Pipe (8)
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe (6)
Outlet Type	Free Discharge

Advanced

Perimeter	Circular
Length (m)	48.384

Project:	Date:		
CBB AREA C	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Manhole Schedule Storm Phase: Phase	AECOM		

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
MH C5 (FC)	65.410 63.730	Diameter / Length: 1.800	{1} Pipe (6)	Pipe	63.730	Diam/Width:375	Manhole
E:380961.466 N:384259.244	1.680		{a} Pipe (7)	Pipe	63.730	Diam/Width:150	Not Applicable
MH C2	67.270 65.440	Diameter / Length: 1.800	{1} Pipe (2)	Pipe	65.440	Diam/Width:300	Manhole
E:381053.076 N:384275.694	1.830		{a} Pipe (3)	Pipe	65.440	Diam/Width:300	Not Applicable
MH C3	66.525 64.955	Diameter / Length: 1.800	{1} Pipe (3) {2} Pipe (5)	Pipe Pipe	65.030 65.030	Diam/Width:300 Diam/Width:300	Manhole
E:381017.871 N:384283.425	1.570		{a} Pipe (4)	Pipe	64.955	Diam/Width:375	Not Applicable
MH C4	65.889 63.890	Diameter / Length: 1.800	{1} Pipe {2} Pipe (4)	Pipe Pipe	63.965 63.890	Diam/Width:300 Diam/Width:375	Manhole
E:380985.615 N:384290.521	1.999		{a} Pipe (1)	Pipe	63.890	Diam/Width:375	Not Applicable
MH C8	65.400 63.900	Diameter / Length: 1.500					Manhole
E:380960.102 N:384268.939	1.500		{a} Pipe (8)	Pipe	63.900	Diam/Width:375	Not Applicable

Project: CBB AREA C	Date: 15/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Manhole Schedule Storm Phase: Phase	Company Address: AECOM		

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
Outfall		Diameter / Length: 1.200	{1} Pipe (7)	Pipe	63.200	Diam/Width:150	Simple Junction
E:380943.142 N:384261.913							
							Not Applicable
MH C6	66.868 65.110	Diameter / Length: 1.200					Manhole
E:381021.705 N:384305.726	1.758						
			{a} Pipe (5)	Pipe	65.110	Diam/Width:300	Not Applicable
MH C7	65.868 64.050	Diameter / Length: 1.200					Manhole
E:380989.500 N:384313.119	1.818						
			{a} Pipe	Pipe	64.050	Diam/Width:300	Not Applicable
MH C1	67.100 65.550	Diameter / Length: 1.200					Manhole
E:381057.106 N:384299.141	1.550						
			{a} Pipe (2)	Pipe	65.550	Diam/Width:300	Not Applicable

Project:	Date:		
CBB AREA C	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Inflow Summary Storm Phase: Phase	AECOM		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Permeable Surface 1	MH C8		Time of Concentration	0.145	80	0	80	0.116
Permeable Surface 2	MH C4		Time of Concentration	0.209	80	0	80	0.167
Permeable Surface 3	MH C3		Time of Concentration	0.191	80	0	80	0.153
Permeable Surface 4	MH C2		Time of Concentration	0.090	80	0	80	0.072
Permeable Surface 5	MH C1		Time of Concentration	0.071	80	0	80	0.057
Permeable Surface 6	MH C6		Time of Concentration	0.136	80	0	80	0.109
Permeable Surface 7	MH C7		Time of Concentration	0.166	80	0	80	0.133
Road 1	MH C7		Time of Concentration	0.023	100	0	100	0.023
Road 2	MH C8		Time of Concentration	0.053	100	0	100	0.053
TOTAL		**0.0**		**1.084**				**0.882**

Project:	Date:		
CBB AREA C	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Network Design Criteria Storm Phase: Phase	AECOM		

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	☐

Manhole Options

Apply Offset	☐

Project:	Date:		
CBB AREA C	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Outfall Details Storm Phase: Phase	AECOM		

Outfalls

Outfall	Outfall Type	Fixed Surcharged Level (m)	Level Curve
Outfall	Free Discharge		

Project:	Date:		
CBB AREA C	15/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Title:	Company Address:		
Rainfall Analysis Criteria	AECOM		

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

Rainfall

FSR

Type: FSR

Region	England And Wales
M5-60 (mm)	18.4
Ratio R	0.398
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
100.0	45.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

Project: CBB AREA C	Date: 15/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: AECOM		

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 (m^3)
Permeable Surface 1	FSR: 100 years: +45 %: 15 mins: Winter	0.15	68.6	31.752
Permeable Surface 2	FSR: 100 years: +45 %: 15 mins: Winter	0.21	98.9	45.771
Permeable Surface 3	FSR: 100 years: +45 %: 15 mins: Winter	0.19	90.4	41.829
Permeable Surface 4	FSR: 100 years: +45 %: 15 mins: Winter	0.09	42.6	19.710
Permeable Surface 5	FSR: 100 years: +45 %: 15 mins: Winter	0.07	33.6	15.549
Permeable Surface 6	FSR: 100 years: +45 %: 15 mins: Winter	0.14	64.4	29.781
Permeable Surface 7	FSR: 100 years: +45 %: 15 mins: Winter	0.17	78.6	36.354
Road 1	FSR: 100 years: +45 %: 15 mins: Winter	0.02	13.6	6.294
Road 2	FSR: 100 years: +45 %: 15 mins: Winter	0.05	31.4	14.505

Project: CBB AREA C	Date: 15/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: AECOM		

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
MH C5 (FC)	FSR: 100 years: +45 %: 480 mins: Winter	65.410	63.730	65.200	1.470	7.7	3.742	0.000	7.5	272.744	Flood Risk
MH C2	FSR: 100 years: +45 %: 15 mins: Summer	67.270	65.440	65.612	0.172	71.2	0.439	0.000	72.2	31.270	OK
MH C3	FSR: 100 years: +45 %: 15 mins: Winter	66.525	64.955	65.451	0.496	207.2	1.262	0.000	177.5	106.900	Surcharged
MH C4	FSR: 100 years: +45 %: 480 mins: Winter	65.889	63.890	65.201	1.311	46.9	3.336	0.000	45.9	532.539	Surcharged
MH C8	FSR: 100 years: +45 %: 480 mins: Winter	65.400	63.900	65.200	1.300	11.2	2.298	0.000	11.0	126.401	Flood Risk
Outfall	FSR: 100 years: +45 %: 480 mins: Winter		63.200	63.251	0.051	7.5			7.5	272.695	OK
MH C6	FSR: 100 years: +45 %: 15 mins: Winter	66.868	65.110	65.532	0.422	64.4	0.478	0.000	43.9	29.759	Surcharged
MH C7	FSR: 100 years: +45 %: 15 mins: Winter	65.868	64.050	65.281	1.231	92.2	1.392	0.000	86.3	42.645	Surcharged
MH C1	FSR: 100 years: +45 %: 15 mins: Winter	67.100	65.550	65.700	0.150	33.6	0.170	0.000	32.4	15.556	OK

Project: CBB AREA C	Date: 15/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: AECOM		

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 %: 480 mins: Winter	65.200	65.200	1.450	1.450	56.9	525.244	0.000	0.000	7.7	275.071	0.013	OK

Project: CBB AREA C	Date: 15/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address: AECOM		

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: Winter	Pipe	MH C7	MH C4	65.868	65.281	0.300	42.367	1.2	1.28	86.3	Surcharged
Pipe (1)	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH C4	Tank	65.889	65.114	0.375	191.419	3.2	2.82	350.3	Surcharged
Pipe (2)	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH C1	MH C2	67.100	65.700	0.161	15.556	0.8	0.43	32.4	OK
Pipe (3)	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH C2	MH C3	67.270	65.611	0.296	35.077	1.4	0.61	72.9	OK
Pipe (4)	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH C3	MH C4	66.525	65.451	0.375	106.900	1.6	0.49	177.5	Surcharged
Pipe (5)	FSR: 100 years: +45 %: 15 mins: Summer	Pipe	MH C6	MH C3	66.868	65.350	0.263	26.568	0.9	0.87	57.2	OK
Pipe (6)	FSR: 100 years: +45 %: 30 mins: Winter	Pipe	Tank	MH C5 (FC)	65.460	64.210	0.375	14.393	0.3	0.06	8.7	Surcharged
Pipe (7)	FSR: 100 years: +45 %: 480 mins: Winter	Pipe	MH C5 (FC)	Outfall	65.410	65.200	0.051	272.695	1.4	0.25	7.5	Flood Risk
Pipe (8)	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH C8	Tank	65.400	64.170	0.250	45.523	1.3	0.76	98.2	OK

Project:	Date:		
CBB AREA D	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Inflows Storm Phase: Phase	AECOM		



Road1

Type : Catchment Area

Area (ha)	0.077

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Permeable Surface 2

Type : Catchment Area

Area (ha)	0.153

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80



Permeable Surface 3

Type : Catchment Area

Area (ha)	0.374

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80

Project:	Date:		
CBB AREA D	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Inflows Storm Phase: Phase	AECOM		



Permeable Surface 4

Type : Catchment Area

Area (ha)	0.087

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80



Permeable Surface 5

Type : Catchment Area

Area (ha)	0.784

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80



Road 4

Type : Catchment Area

Area (ha)	0.059

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project: CBB AREA D	Date: 16/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Inflows Storm Phase: Phase	Company Address: AECOM		

Permeable Surface 1

Type : Catchment Area

Area (ha)	0.029

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80

Road 2

Type : Catchment Area

Area (ha)	0.026

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Road 3

Type : Catchment Area

Area (ha)	0.056

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project:	Date:		
CBB AREA D	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Junctions Storm Phase: Phase	AECOM		

Name	Junction Type	Easting (m)	Northing (m)	Cover Level (m)	Depth (m)	Invert Level (m)	Chamber Shape	Diameter (m)
MH D1	Manhole	381080.974	384224.227	67.520	1.500	66.020	Circular	1.200
MH D2	Manhole	381048.002	384207.261	66.630	1.280	65.350	Circular	1.800
MH D4	Manhole	380992.392	384201.423	65.700	1.460	64.240	Circular	1.800
MH D5	Manhole	380964.659	384210.134	65.300	1.590	63.710	Circular	1.800
MH D6 (FC)	Manhole	380947.837	384188.190	65.010	1.490	63.520	Circular	1.800
MH D3	Manhole	381019.791	384192.817	66.070	1.300	64.770	Circular	1.800
Simple Junction	Simple Junction	380934.103	384192.431					

Name	Lock
MH D1	None
MH D2	None
MH D4	None
MH D5	None
MH D6 (FC)	None
MH D3	None
Simple Junction	

Inlets

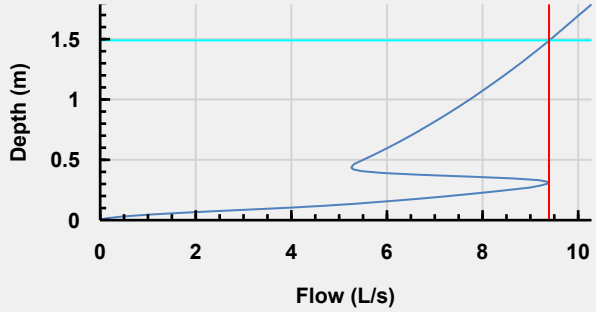
Junction	Inlet Name	Incoming Item(s)	Bypass Destination	Capacity Type
MH D1	Inlet	Road1 Permeable Surface 1	(None)	No Restriction
MH D2	Inlet	1.000 Permeable Surface 2 Road 2	(None)	No Restriction
MH D4	Inlet	1.002	(None)	No Restriction
	Inlet (1)	Permeable Surface 3	(None)	No Restriction
MH D5	Inlet	1.003	(None)	No Restriction
	Inlet (1)	Permeable Surface 4	(None)	No Restriction
MH D6 (FC)	Inlet	1.005	(None)	No Restriction
MH D3	Inlet	1.001	(None)	No Restriction
Simple Junction	Inlet	1.006	(None)	No Restriction

Project:	Date:		
CBB AREA D	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Junctions Storm Phase: Phase	AECOM		

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
MH D1	Outlet	1.000	Free Discharge
MH D2	Outlet	1.001	Free Discharge
MH D4	Outlet	1.003	Free Discharge
MH D5	Outlet	1.004	Free Discharge
MH D6 (FC)	Outlet	1.006	Hydro-Brake®

Invert Level (m)	63.520
Design Depth (m)	1.490
Design Flow (L/s)	9.4
Objective	Minimise Upstream Storage Requirements
Application	Surface Water Only
Sump Available	☐
Unit Reference	CHE-0127-9400-1490-9400



MH D3	Outlet	1.002	Free Discharge



Tank

Type : Tank

Dimensions

Exceedance Level (m)	65.070
Depth (m)	1.540
Base Level (m)	63.530
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	878.540

Depth (m)	Area (m²)	Volume (m³)
0.000	1155.00	0.000
0.800	1155.00	877.800

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	1.004
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Permeable Surface 5
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (2)

Inlet Type	Point Inflow
Incoming Item(s)	Road 4
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (3)

Inlet Type	Point Inflow
Incoming Item(s)	Road 3
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	1.005
Outlet Type	Free Discharge

Advanced

Perimeter	Circular
Length (m)	48.104

Project:	Date:		
CBB AREA D	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Manhole Schedule Storm Phase: Phase	AECOM		

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
MH D1	67.520 66.020	Diameter / Length: 1.200					Manhole
E:381080.974 N:384224.227	1.500		{a} 1.000	Pipe	66.020	Diam/Width:300	Not Applicable
MH D2	66.630 65.350	Diameter / Length: 1.800	{1} 1.000	Pipe	65.350	Diam/Width:300	Manhole
E:381048.002 N:384207.261	1.280		{a} 1.001	Pipe	65.350	Diam/Width:300	Not Applicable
MH D4	65.700 64.240	Diameter / Length: 1.800	{1} 1.002	Pipe	64.240	Diam/Width:375	Manhole
E:380992.392 N:384201.423	1.460		{a} 1.003	Pipe	64.240	Diam/Width:375	Not Applicable
MH D5	65.300 63.710	Diameter / Length: 1.800	{1} 1.003	Pipe	63.710	Diam/Width:375	Manhole
E:380964.659 N:384210.134	1.590		{a} 1.004	Pipe	63.710	Diam/Width:375	Not Applicable
MH D6 (FC)	65.010 63.520	Diameter / Length: 1.800	{1} 1.005	Pipe	63.520	Diam/Width:375	Manhole
E:380947.837 N:384188.190	1.490		{a} 1.006	Pipe	63.520	Diam/Width:150	Not Applicable

Project:	Date:		
CBB AREA D	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Manhole Schedule Storm Phase: Phase	AECOM		

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
MH D3	66.070 64.770	Diameter / Length: 1.800	{1} 1.001	Pipe	64.845	Diam/Width:300	Manhole
E:381019.791 N:384192.817	1.300		{a} 1.002	Pipe	64.770	Diam/Width:375	Not Applicable
Simple Junction		Diameter / Length: 1.200	{1} 1.006	Pipe	63.420	Diam/Width:150	Simple Junction
E:380934.103 N:384192.431							Not Applicable

Project:	Date:		
CBB AREA D	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Inflow Summary Storm Phase: Phase	AECOM		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Permeable Surface 1	MH D1		Time of Concentration	0.029	80	0	80	0.023
Permeable Surface 2	MH D2		Time of Concentration	0.153	80	0	80	0.122
Permeable Surface 3	MH D4		Time of Concentration	0.374	80	0	80	0.299
Permeable Surface 4	MH D5		Time of Concentration	0.087	80	0	80	0.070
Permeable Surface 5	Tank		Time of Concentration	0.784	80	0	80	0.627
Road1	MH D1		Time of Concentration	0.077	100	0	100	0.077
Road 2	MH D2		Time of Concentration	0.026	100	0	100	0.026
Road 3	Tank		Time of Concentration	0.056	100	0	100	0.056
Road 4	Tank		Time of Concentration	0.059	100	0	100	0.059
TOTAL		**0.0**		**1.645**				**1.360**

Project:	Date:		
CBB AREA D	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Network Design Criteria Storm Phase: Phase	AECOM		

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	☐

Manhole Options

Apply Offset	☐

Project:	Date:		
CBB AREA D	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Outfall Details Storm Phase: Phase	AECOM		

Outfalls

Outfall	Outfall Type	Fixed Surcharged Level (m)	Level Curve
Simple Junction	Free Discharge		

Project:	Date:		
CBB AREA D	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Title:	Company Address:		
Rainfall Analysis Criteria	AECOM		

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

Rainfall

FSR

Type: FSR

Region	England And Wales
M5-60 (mm)	18.4
Ratio R	0.398
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
100.0	45.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

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 (m^3)
Road1	FSR: 100 years: +45 %: 15 mins: Winter	0.08	45.6	21.081
Permeable Surface 2	FSR: 100 years: +45 %: 15 mins: Winter	0.15	72.4	33.504
Permeable Surface 3	FSR: 100 years: +45 %: 15 mins: Winter	0.37	177.0	81.906
Permeable Surface 4	FSR: 100 years: +45 %: 15 mins: Winter	0.09	41.2	19.050
Permeable Surface 5	FSR: 100 years: +45 %: 15 mins: Winter	0.78	371.1	171.689
Road 4	FSR: 100 years: +45 %: 15 mins: Winter	0.06	34.9	16.149
Permeable Surface 1	FSR: 100 years: +45 %: 15 mins: Winter	0.03	13.8	6.372
Road 2	FSR: 100 years: +45 %: 15 mins: Winter	0.03	15.4	7.116
Road 3	FSR: 100 years: +45 %: 15 mins: Winter	0.06	33.1	15.327

Project: CBB AREA D	Date: 16/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: AECOM		

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
MH D1	FSR: 100 years: +45 %: 15 mins: Winter	67.520	66.020	66.149	0.129	59.3	0.146	0.000	58.3	27.457	OK
MH D2	FSR: 100 years: +45 %: 15 mins: Winter	66.630	65.350	65.628	0.278	146.1	0.707	0.000	133.8	67.807	OK
MH D4	FSR: 100 years: +45 %: 15 mins: Winter	65.700	64.240	65.024	0.784	283.6	1.996	0.000	272.0	149.765	Surcharged
MH D5	FSR: 100 years: +45 %: 960 mins: Winter	65.300	63.710	64.960	1.250	23.7	3.182	0.000	23.3	537.979	Surcharged
MH D6 (FC)	FSR: 100 years: +45 %: 960 mins: Winter	65.010	63.520	64.960	1.440	9.5	3.665	0.000	9.4	642.125	Flood Risk
MH D3	FSR: 100 years: +45 %: 15 mins: Winter	66.070	64.770	65.127	0.357	133.8	0.908	0.000	106.5	67.872	OK
Simple Junction	FSR: 100 years: +45 %: 1440 mins: Winter		63.420	63.506	0.086	9.4			9.4	981.181	OK

Project: CBB AREA D	Date: 16/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: AECOM		

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 %: 960 mins: Winter	64.960	64.960	1.430	1.430	51.7	878.775	0.000	0.000	9.5	644.455	-0.027	OK

Project: CBB AREA D	Date: 16/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address: AECOM		

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
1.000	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH D1	MH D2	67.520	66.149	0.204	27.457	1.1	0.39	58.3	OK
1.001	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH D2	MH D3	66.630	65.628	0.280	67.807	1.9	0.95	133.8	OK
1.002	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH D3	MH D4	66.070	65.127	0.375	67.872	1.4	0.39	106.5	OK
1.003	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH D4	MH D5	65.700	65.024	0.375	149.765	2.5	1	272.0	Surcharged
1.004	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH D5	Tank	65.300	64.332	0.375	167.624	2.8	1.33	308.9	Surcharged
1.005	FSR: 100 years: +45 %: 60 mins: Winter	Pipe	Tank	MH D6 (FC)	65.070	64.071	0.375	35.074	0.2	0.08	9.8	Surcharged
1.006	FSR: 100 years: +45 %: 1440 mins: Winter	Pipe	MH D6 (FC)	Simple Junction	65.010	64.330	0.089	981.181	0.9	0.63	9.4	Surcharged

Project:	Date:		
CBB AREA E	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Inflows Storm Phase: Phase	AECOM		



Permeable Surface 1

Type : Catchment Area

Area (ha)	0.226

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80



Permeable Surface 2

Type : Catchment Area

Area (ha)	0.286

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80



Permeable Surface 3

Type : Catchment Area

Area (ha)	0.531

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80

Project:	Date:		
CBB AREA E	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Inflows Storm Phase: Phase	AECOM		



Road 3

Type : Catchment Area

Area (ha)	0.089

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Road 2

Type : Catchment Area

Area (ha)	0.04

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Road 1

Type : Catchment Area

Area (ha)	0.061

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project:	Date:		
CBB AREA E	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Junctions Storm Phase: Phase	AECOM		

Name	Junction Type	Easting (m)	Northing (m)	Cover Level (m)	Depth (m)	Invert Level (m)	Chamber Shape	Diameter (m)
MH E1	Manhole	380964.654	384069.015	65.420	1.560	63.860	Circular	1.800
MH E2	Manhole	380933.622	384080.485	65.170	1.405	63.765	Circular	1.800
MH E3	Manhole	380915.494	384136.778	64.870	1.170	63.700	Circular	1.800
Simple Junction	Simple Junction	380898.622	384142.769					

Name	Lock
MH E1	None
MH E2	None
MH E3	None
Simple Junction	

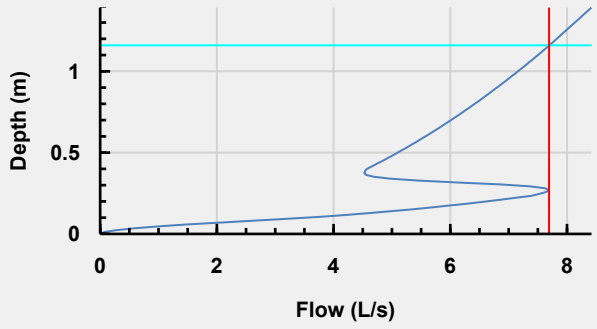
Inlets

Junction	Inlet Name	Incoming Item(s)	Bypass Destination	Capacity Type
MH E1	Inlet	Permeable Surface 1	(None)	No Restriction
	Inlet (1)	Road 1	(None)	No Restriction
MH E2	Inlet	P1.000	(None)	No Restriction
	Inlet (1)	Permeable Surface 2	(None)	No Restriction
	Inlet (2)	Road 2	(None)	No Restriction
MH E3	Inlet	P1.002	(None)	No Restriction
Simple Junction	Inlet	P1.003	(None)	No Restriction

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
MH E1	Outlet	P1.000	Free Discharge
MH E2	Outlet	P1.001	Free Discharge
MH E3	Outlet	P1.003	Hydro-Brake®

Invert Level (m)	63.700
Design Depth (m)	1.160
Design Flow (L/s)	7.7
Objective	Minimise Upstream Storage Requirements
Application	Surface Water Only
Sump Available	☐
Unit Reference	CHE-0120-7700-1160-7700



Project:	Date:		
CBB AREA E	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Stormwater Controls Storm Phase: Phase	AECOM		



Tank

Type : Tank

Dimensions

Exceedance Level (m)	64.860
Depth (m)	1.135
Base Level (m)	63.725
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	661.935

Depth (m)	Area (m²)	Volume (m³)
0.000	1740.00	176.000
0.400	1740.00	176.000

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	P1.001
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Permeable Surface 3
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (2)

Inlet Type	Point Inflow
Incoming Item(s)	Road 3
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	P1.002
Outlet Type	Free Discharge

Advanced

Perimeter	Circular
Length (m)	65.299

Project:	Date:		
CBB AREA E	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Manhole Schedule Storm Phase: Phase	AECOM		

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
MH E1	65.420 63.860	Diameter / Length: 1.800					Manhole
E:380964.654 N:384069.015	1.560		{a} P1.000	Pipe	63.860	Diam/Width:375	Not Applicable
MH E2	65.170 63.765	Diameter / Length: 1.800	{1} P1.000	Pipe	63.765	Diam/Width:375	Manhole
E:380933.622 N:384080.485	1.405		{a} P1.001	Pipe	63.765	Diam/Width:375	Not Applicable
MH E3	64.870 63.700	Diameter / Length: 1.800	{1} P1.002	Pipe	63.700	Diam/Width:375	Manhole
E:380915.494 N:384136.778	1.170		{a} P1.003	Pipe	63.700	Diam/Width:150	Not Applicable
Simple Junction		Diameter / Length: 1.200	{1} P1.003	Pipe	63.574	Diam/Width:150	Simple Junction
E:380898.622 N:384142.769							Not Applicable

Project:	Date:		
CBB AREA E	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Inflow Summary Storm Phase: Phase	AECOM		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Permeable Surface 1	MH E1		Time of Concentration	0.226	80	0	80	0.181
Permeable Surface 2	MH E2		Time of Concentration	0.286	80	0	80	0.229
Permeable Surface 3	Tank		Time of Concentration	0.531	80	0	80	0.425
Road 1	MH E1		Time of Concentration	0.061	100	0	100	0.061
Road 2	MH E2		Time of Concentration	0.040	100	0	100	0.040
Road 3	Tank		Time of Concentration	0.089	100	0	100	0.089
TOTAL		**0.0**		**1.233**				**1.024**

Project:	Date:		
CBB AREA E	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Network Design Criteria Storm Phase: Phase	AECOM		

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	☐

Manhole Options

Apply Offset	☐

Project:	Date:		
CBB AREA E	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Outfall Details Storm Phase: Phase	AECOM		

Outfalls

Outfall	Outfall Type	Fixed Surcharged Level (m)	Level Curve
Simple Junction	Free Discharge		

Project:	Date:		
CBB AREA E	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Title:	Company Address:		
Rainfall Analysis Criteria	AECOM		

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

Rainfall

FSR

Type: FSR

Region	England And Wales
M5-60 (mm)	18.4
Ratio R	0.398
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
100.0	45.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

Project: CBB AREA E	Date: 16/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: AECOM		

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 (m^3)
Permeable Surface 1	FSR: 100 years: +45 %: 15 mins: Winter	0.23	107.0	49.491
Permeable Surface 2	FSR: 100 years: +45 %: 15 mins: Winter	0.29	135.4	62.628
Permeable Surface 3	FSR: 100 years: +45 %: 15 mins: Winter	0.53	251.3	116.283
Road 3	FSR: 100 years: +45 %: 15 mins: Winter	0.09	52.7	24.363
Road 2	FSR: 100 years: +45 %: 15 mins: Winter	0.04	23.7	10.950
Road 1	FSR: 100 years: +45 %: 15 mins: Winter	0.06	36.1	16.698

Project:	Date:		
CBB AREA E	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Junctions Summary Storm Phase: Phase	AECOM		

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
MH E1	FSR: 100 years: +45 %: 15 mins: Winter	65.420	63.860	64.689	0.829	143.1	2.109	0.000	135.5	66.192	Surcharged
MH E2	FSR: 100 years: +45 %: 960 mins: Winter	65.170	63.765	64.656	0.891	19.4	2.267	0.000	19.2	445.440	Surcharged
MH E3	FSR: 100 years: +45 %: 960 mins: Winter	64.870	63.700	64.656	0.956	7.7	2.432	0.000	7.7	588.779	Flood Risk
Simple Junction	FSR: 100 years: +45 %: 960 mins: Summer		63.574	63.650	0.076	7.7			7.7	586.052	OK

Project: CBB AREA E	Date: 16/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: AECOM		

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 %: 960 mins: Winter	64.656	64.656	0.931	0.931	38.9	662.268	0.000	0.000	7.7	590.325	-0.050	OK

Project: CBB AREA E	Date: 16/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address: AECOM		

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
P1.000	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH E1	MH E2	65.420	64.689	0.375	66.093	1.2	1.27	135.5	Surcharged
P1.001	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH E2	Tank	65.170	64.492	0.375	138.416	2.6	2.71	289.0	Surcharged
P1.002	FSR: 100 years: +45 %: 360 mins: Winter	Pipe	Tank	MH E3	64.860	64.111	0.375	226.317	0.2	0.06	7.8	Surcharged
P1.003	FSR: 100 years: +45 %: 960 mins: Summer	Pipe	MH E3	Simple Junction	64.870	64.066	0.078	586.052	0.8	0.52	7.7	Surcharged

Project:	Date:		
CBB AREA F	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Inflows Storm Phase: Phase	AECOM		



Permeable Surface 1

Type : Catchment Area

Area (ha)	0.187

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80



Permebale Surface 2

Type : Catchment Area

Area (ha)	0.263

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80



Permeable Surface 3

Type : Catchment Area

Area (ha)	0.28

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80

Project:	Date:		
CBB AREA F	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Inflows Storm Phase: Phase	AECOM		



Permeable Surface 4

Type : Catchment Area

Area (ha)	0.767

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	80
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	80

Project:	Date:		
CBB AREA F	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Junctions Storm Phase: Phase	AECOM		

Name	Junction Type	Easting (m)	Northing (m)	Cover Level (m)	Depth (m)	Invert Level (m)	Chamber Shape	Diameter (m)
MH F1	Manhole	381082.859	384128.040	66.870	1.500	65.370	Circular	1.800
MH F2	Manhole	381067.735	384099.579	66.590	1.600	64.990	Circular	1.800
MH F3	Manhole	381052.579	384071.055	66.370	1.500	64.870	Circular	1.800
MH F5 (FC)	Manhole	380984.127	384027.844	65.670	1.400	64.270	Circular	1.800
OUTFALL	Simple Junction	380968.405	384022.681					
MH F4	Manhole	381015.826	384010.427	65.710	1.390	64.320	Circular	1.800

Name	Lock
MH F1	None
MH F2	None
MH F3	None
MH F5 (FC)	None
OUTFALL	
MH F4	None

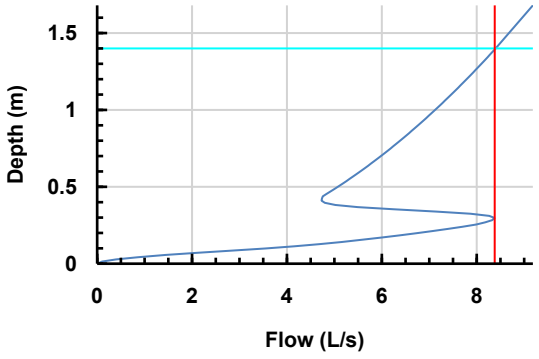
Inlets

Junction	Inlet Name	Incoming Item(s)	Bypass Destination	Capacity Type
MH F1	Inlet	Permeable Surface 1	(None)	No Restriction
MH F2	Inlet	P1.000	(None)	No Restriction
	Inlet (1)	Permebale Surface 2	(None)	No Restriction
MH F3	Inlet	P1.001	(None)	No Restriction
	Inlet (1)	Permeable Surface 3	(None)	No Restriction
MH F5 (FC)	Inlet	P1.003	(None)	No Restriction
OUTFALL	Inlet	P1.004	(None)	No Restriction
MH F4	Inlet	Permeable Surface 4	(None)	No Restriction

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
MH F1	Outlet	P1.000	Free Discharge
MH F2	Outlet	P1.001	Free Discharge
MH F3	Outlet	P1.002	Free Discharge
MH F5 (FC)	Outlet	P1.004	Hydro-Brake®

Invert Level (m)	64.270
Design Depth (m)	1.400
Design Flow (L/s)	8.4
Objective	Minimise Upstream Storage Requirements
Application	Surface Water Only
Sump Available	☐
Unit Reference	CHE-0122-8400-1400-8400



MH F4	Outlet	Pipe	Free Discharge

Project:	Date:		
CBB AREA F	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Stormwater Controls Storm Phase: Phase	AECOM		



Tank

Type : Tank

Dimensions

Exceedance Level (m)	65.685
Depth (m)	1.395
Base Level (m)	64.290
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	760.600

Depth (m)	Area (m²)	Volume (m³)
0.000	1000.006581	130.000
0.800	1000.006581	130.000

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	P1.002
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (2)

Inlet Type	Point Inflow
Incoming Item(s)	Pipe
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	P1.003
Outlet Type	Free Discharge

Advanced

Perimeter	Circular
Length (m)	47.170

Project:	Date:		
CBB AREA F	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Manhole Schedule Storm Phase: Phase	AECOM		

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
MH F1	66.870 65.370	Diameter / Length: 1.800					Manhole
E:381082.859 N:384128.040	1.500		{a} P1.000	Pipe	65.370	Diam/Width:375	Not Applicable
MH F2	66.590 64.990	Diameter / Length: 1.800	{1} P1.000	Pipe	64.990	Diam/Width:375	Manhole
E:381067.735 N:384099.579	1.600		{a} P1.001	Pipe	64.990	Diam/Width:375	Not Applicable
MH F3	66.370 64.870	Diameter / Length: 1.800	{1} P1.001	Pipe	64.870	Diam/Width:375	Manhole
E:381052.579 N:384071.055	1.500		{a} P1.002	Pipe	64.870	Diam/Width:375	Not Applicable
MH F5 (FC)	65.670 64.270	Diameter / Length: 1.800	{1} P1.003	Pipe	64.270	Diam/Width:375	Manhole
E:380984.127 N:384027.844	1.400		{a} P1.004	Pipe	64.270	Diam/Width:150	Not Applicable
OUTFALL		Diameter / Length: 1.200	{1} P1.004	Pipe	64.150	Diam/Width:150	Simple Junction
E:380968.405 N:384022.681							Not Applicable

Project:	Date:		
CBB AREA F	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Manhole Schedule Storm Phase: Phase	AECOM		

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
MH F4	65.710 64.320	Diameter / Length: 1.800					Manhole
E:381015.826 N:384010.427	1.390		{a} Pipe	Pipe	64.320	Diam/Width:375	Not Applicable

Project:	Date:		
CBB AREA F	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Inflow Summary Storm Phase: Phase	AECOM		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Permeable Surface 1	MH F1		Time of Concentration	0.187	80	0	80	0.150
Permeable Surface 3	MH F3		Time of Concentration	0.280	80	0	80	0.224
Permeable Surface 4	MH F4		Time of Concentration	0.767	80	0	80	0.614
Permebale Surface 2	MH F2		Time of Concentration	0.263	80	0	80	0.210
TOTAL		**0.0**		**1.497**				**1.198**

Project:	Date:		
CBB AREA F	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Network Design Criteria Storm Phase: Phase	AECOM		

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	☐

Manhole Options

Apply Offset	☐

Project:	Date:		
CBB AREA F	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Details:	Company Address:		
Type: Outfall Details Storm Phase: Phase	AECOM		

Outfalls

Outfall	Outfall Type	Fixed Surcharged Level (m)	Level Curve
OUTFALL	Free Discharge		

Project:	Date:		
CBB AREA F	16/05/2024		
	Designed by:	Checked by:	Approved By:
	GT	GT	VB
Report Title:	Company Address:		
Rainfall Analysis Criteria	AECOM		

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

Rainfall

FSR

Type: FSR

Region	England And Wales
M5-60 (mm)	18.4
Ratio R	0.398
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
100.0	45.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

Project: CBB AREA F	Date: 16/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: AECOM		

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 (m^3)
Permeable Surface 1	FSR: 100 years: +45 %: 15 mins: Winter	0.19	88.5	40.953
Permebale Surface 2	FSR: 100 years: +45 %: 15 mins: Winter	0.26	124.5	57.597
Permeable Surface 3	FSR: 100 years: +45 %: 15 mins: Winter	0.28	132.5	61.320
Permeable Surface 4	FSR: 100 years: +45 %: 15 mins: Winter	0.77	363.0	167.967

Project: CBB AREA F	Date: 16/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: AECOM		

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
MH F1	FSR: 100 years: +45 %: 15 mins: Winter	66.870	65.370	66.102	0.732	88.5	1.862	0.000	64.9	41.004	Surcharged
MH F2	FSR: 100 years: +45 %: 15 mins: Winter	66.590	64.990	66.055	1.065	189.4	2.711	0.000	167.0	98.510	Surcharged
MH F3	FSR: 100 years: +45 %: 15 mins: Winter	66.370	64.870	65.773	0.903	299.5	2.298	0.000	279.0	158.652	Surcharged
MH F5 (FC)	FSR: 100 years: +45 %: 960 mins: Winter	65.670	64.270	65.517	1.247	8.5	3.172	0.000	8.4	589.983	Flood Risk
OUTFALL	FSR: 100 years: +45 %: 1440 mins: Summer		64.150	64.229	0.079	8.4			8.4	861.192	OK
MH F4	FSR: 100 years: +45 %: 960 mins: Winter	65.710	64.320	65.517	1.197	23.5	3.046	0.000	23.4	533.846	Flood Risk

Project: CBB AREA F	Date: 16/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: AECOM		

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 %: 960 mins: Winter	65.517	65.517	1.227	1.227	45.8	760.737	0.000	0.000	8.5	592.772	-0.018	OK

Project: CBB AREA F	Date: 16/05/2024		
	Designed by: GT	Checked by: GT	Approved By: VB
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address: AECOM		

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
P1.000	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH F1	MH F2	66.870	66.102	0.375	41.004	0.7	0.3	64.9	Surcharged
P1.001	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH F2	MH F3	66.590	66.055	0.375	98.510	1.5	1.37	167.0	Surcharged
P1.002	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH F3	Tank	66.370	65.773	0.375	158.652	2.5	1.31	279.0	Surcharged
P1.003	FSR: 100 years: +45 %: 60 mins: Winter	Pipe	Tank	MH F5 (FC)	65.685	64.839	0.375	32.844	0.3	0.07	9.2	Surcharged
P1.004	FSR: 100 years: +45 %: 1440 mins: Summer	Pipe	MH F5 (FC)	OUTFALL	65.670	64.993	0.081	861.192	0.9	0.56	8.4	Surcharged
Pipe	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	MH F4	Tank	65.710	65.040	0.375	166.881	3.2	2.65	358.5	Surcharged

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