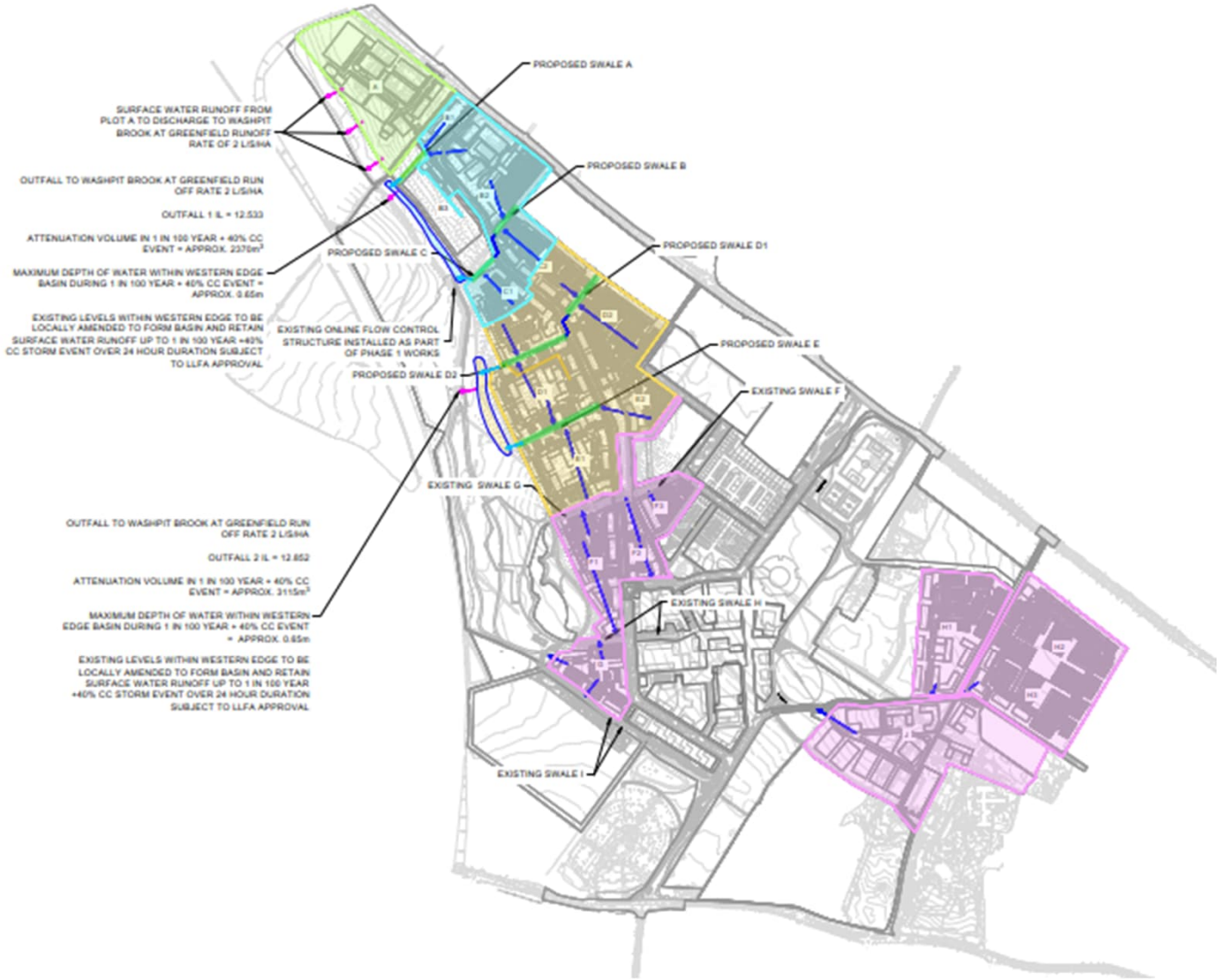
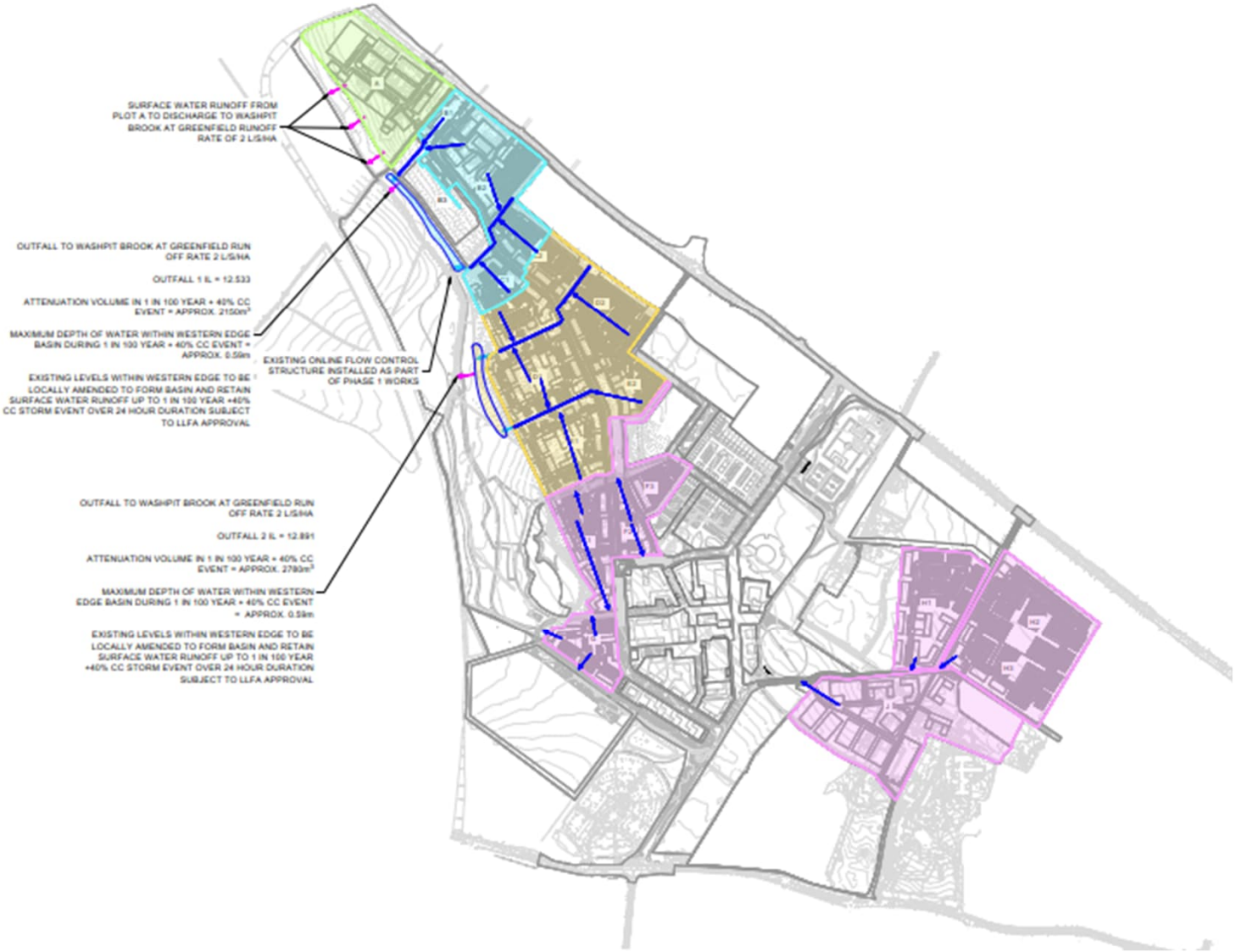
Proposed Surface Water Drainage Strategy



Proposed Surface Water Drainage Strategy

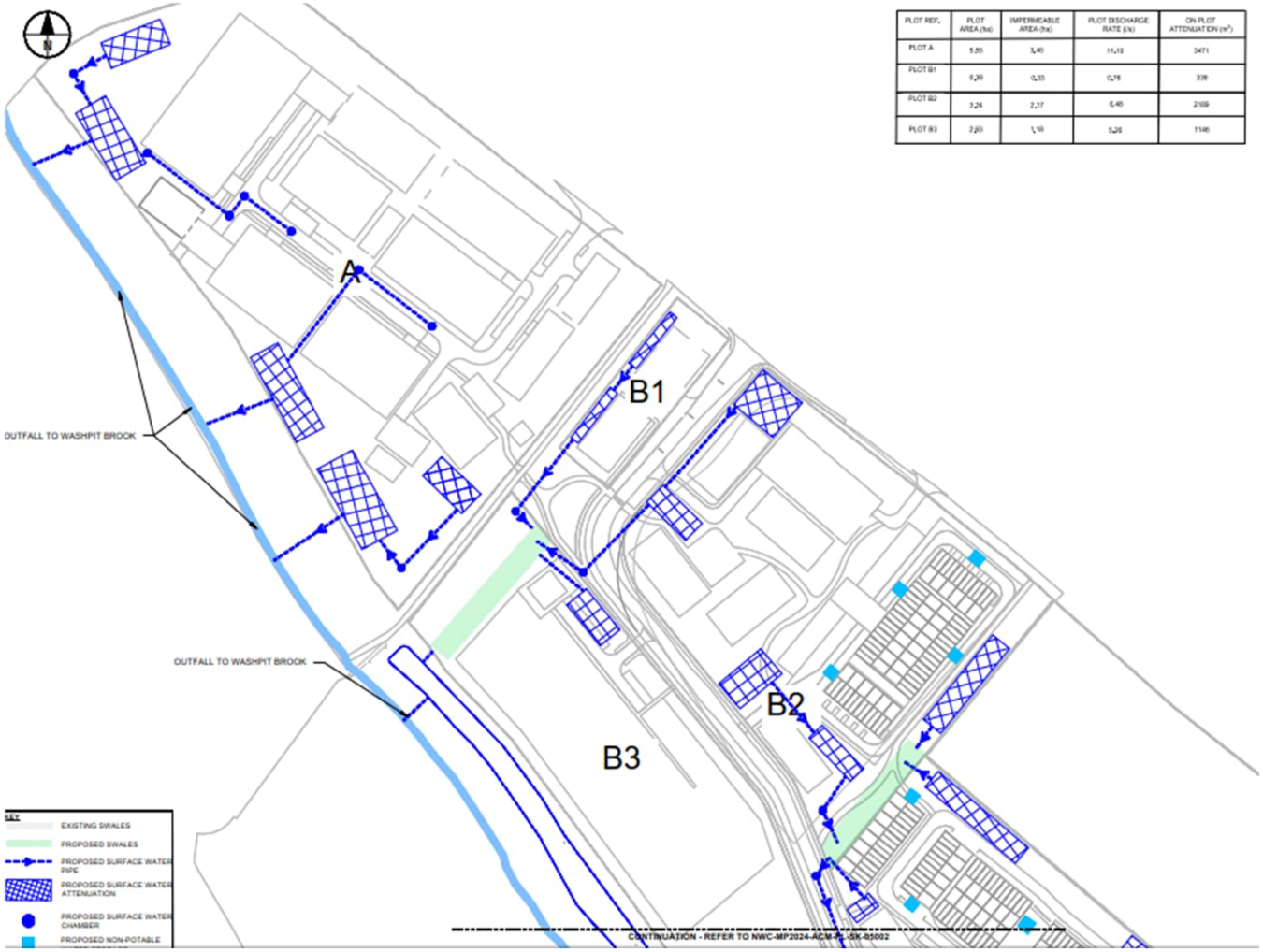


Surface Water Drainage Strategy

- Surface water runoff from individual plots and external areas including highways to discharge to sitewide drainage network and to the Western Edge where the runoff will be attenuated and discharge to the Washpit Brook at greenfield runoff rate.
- Surface water runoff from individual plots will be restricted to greenfield prior to discharge to sitewide network to provide onplot attenuation and reduce storage requirements within the sitewide network.
- Surface water runoff is proposed to be conveyed via swales or pipe network. Strategy is eventually envisaged to be a combination of the two options at detailed design to balance the SuDS requirement and space required for landscaping/amenity areas.
- Site partly discharges to the existing Phase 1 surface water drainage network and outfall. The existing lagoon and surface water network allowed for these discharges as part of the previously consented strategy.
- Storage available within the lagoon and Phase 1 catchment area incorporated into the sitewide hydraulic model to ensure the existing attenuation available within Phase 1 is sufficient to take the discharge from the new OPA development.
- Basins to be dry unless required for storage during rainfall events. Surface water attenuation will be provided for up to 1 in 100 year + 40% climate change over 24-hour duration.
- Sizes of the swale governed by the depth of the lowest incoming pipe depth and maximum side slope instead of volume of water the swale needs to hold.

Surface Water Drainage Strategy

- Individual plots restricted to greenfield rate (2l/s/ha).
- Outline attenuation requirement calculated using quick storage estimate (upper range used) and impermeable area. Detailed hydraulic modelling will be undertaken as part of the detailed plot design at next stage.
- Full hydraulic model created for strategic network
- Additional SuDS features within the plots will be considered as part of the detailed plot design at next stage.
- Raised plot levels are minimum c. 500mm above the 100-year +40% cc water level at the proposed detention basins.



PLOT REF.	PLOT AREA (ha)	IMPERMEABLE AREA (ha)	PLOT DISCHARGE RATE (l/s)	ON PLOT ATTENUATION (m³)
PLOT A	5.85	3.40	11.70	3471
PLOT B1	0.39	0.33	0.78	339
PLOT B2	3.24	2.17	6.48	2169
PLOT B3	2.83	1.18	5.66	1146

AOB

PROJECT NAME: North West Cambridge Masterplan

SCHEDULE OF APPLICANT'S RESPONSES TO COMMENTS RECEIVED

DATE ISSUED: 18.11.2025

COMMENTS RECEIVED FROM:	Lead Local Flood Authority (LLFA)	**FORMAT:**	Email	**DATE RECEIVED:**	28/10/2025
SUBJECT:	Flood Risk and Surface Water Drainage				

ID	ISSUE	COMMENT	RESPONSE
1.	Updated Surface Water Flood Risk mapping	The surface water flood risk for this site has changed as a result of the updated Environment Agency (EA) mapping. The revised data provides a more accurate representation of surface water flood risk, which may affect the assessment of flood risk and the design of surface water management measures. This applies across the site, but particularly to plots A B1 B2 and B3. In line with the sequential approach outlined in the Planning Practice Guidance (PPG, Paragraph 023), development should be directed away from areas at risk of flooding. Specifically, the guidance states that this means "avoiding, so far as possible, development in current and future medium and high flood risk areas considering all sources of flooding including areas at risk of surface water flooding." Applicants are strongly advised to review the latest mapping and ensure that flood risk assessments and drainage strategies reflect the updated flood risk information ensuring that the proposals are in accordance with national planning policy and guidance.	The updated surface water flood maps have been reviewed and there are no significant changes from to the surface water flood extent. Surface water flood risk shown in areas where existing drainage system is in place and localised low points in site topography. Sitewide levels is being rationalised as part of the proposed development and a surface water drainage strategy (SWDS) will be in place to account for storm event up to 100 year +40% CC. Site levels will be further developed at detailed design to ensure levels fall away from buildings.

ID	ISSUE	COMMENT	RESPONSE
2.	Impermeable drained area plan	In order for us to accurately assess the proposed scheme, an impermeable drained area plan must be submitted showing an accurate area (hectares) for each plot and the required attenuation for each plot. At present this has not been provided as part of the application.	Drawings NWC-MP2024-ACM-PL-SK-05001 to 05004 submitted as part of the FRA and SWDS includes tables showing the total area and impermeable area for each plot in hectares.
3.	Quick Storage Estimate	The strategy states that quick storage estimate has been used to estimate the attenuation volume requirements for each plot. We do not accept Quick Storage Estimate as an adequate calculation for complex sites.	A quick storage estimate has been used to estimate the attenuation volume requirement for individual plots. Upper estimate of the volume has been used as a conservative approach to quantify the attenuation volume requirements and space proof the illustrative masterplan within the plot. Detailed hydraulic modelling has been undertaken for the strategic drainage network which incorporates the discharge rates that the individual plots will be restricted to. Detailed modelling of plot drainage will be undertaken as part of reserved matters application following development of plot layouts.
4.	Phases of attenuation	It is unclear why the drainage strategy proposed two phases of attenuation, with individual plots restricted at greenfield runoff rate prior to discharging to the sitewide drainage network, and final restriction again to greenfield runoff rate from the attenuation basins. In the interest of clarity and to assist in reviewing the proposals we advise that further detailed information is provided.	The overall site is being restricted to 2 l/s/ha with individual plots restricted to the same rate pro-rata before discharging to the site wide network. The final discharge rate at the basin is based on the total catchment area it is serving i.e. the individual plots and external areas outside of the plots. Attenuation volume provided within Table 9 is the volume required within the site wide drainage network in additional to the on-plot attenuation.
5.	Detached Plots	Plots H1 H2 H3 and J are separated from the main site and proposed surface water discharge points in the northern section of the site by the existing Eddington development. It is not clear from the submitted drainage strategy how surface water from these plots will be managed.	Plots H1 H2 H3 and J will be restricted to 2 l/s/ha and discharge into the Phase 1 existing drainage network as per the previously consented strategy.
6.	Hydraulic Calculations	The applicant has provided calculations that require clarity or do not align with guidance; therefore, the LLFA require the applicant to address the following points: a) The main body of text states that scheme will adhere to a greenfield runoff rate of 2l/s/ha, which does not appear to correspond with all of the calculations provided. All information provided, including text, calculations and drawings, must correspond with each	a) The surface water runoff from the proposed development which discharges into the proposed detention basins are restricted to 2 l/s/ha. Parts of the new OPA discharges into the existing Phase 1 drainage network and lagoon as per the previously consented strategy. The individual plots from the new OPA which discharges into the phase 1 drainage network are still restricted to 2 l/s/ha which is a reduction from the discharge rates previously allowed for in the consented phase 1 drainage network.

ID	ISSUE	COMMENT	RESPONSE
		other and be clear so we can comment accurately on the proposed scheme. b) The calculations provided for 'tank 3' demonstrate half drain times of 7559 minutes and 8079 minutes for two of the modelled storm scenarios. Half drain time for all elements of the system, particularly those directly prior to flow control, should be less than 24 hours (1440 minutes) in order to ensure that the system has the capacity to accommodate rainfall events occurring in quick succession. c) Attenuation basins have been modelled with no freeboard. All storage areas for the design must include an appropriate freeboard allowance in accordance with CIRIA SuDS Manual C753. d) The system has been modelled using a figure of 100% porosity, this is not appropriate. e) The modelled dimensions of some swales do not align with guidance, for example, exceeding the maximum side slope or depth, see CCC Surface Water Planning Guidance and CIRIA SuDS Manual C753 for further guidance f) It is noted that oversized attenuation pipes are proposed as an option in the main body of text. This should be clarified. If oversized pipes are proposed, the applicant should clarify why the water cannot be better managed elsewhere within the on-site network using SuDS such as green roofs, swales, and permeable paving. g) Some hydrobrake discharge rates in the calculations appear very high.	b)"Tank 3" was modelled to only represent approximate storage available within the existing phase 1 lagoon to ensure the existing attenuation available within Phase 1 is sufficient to take the discharge from the new OPA development in addition to the phase 1 catchment discharging into the lagoon. Therefore, the half drain times for the tank is not applicable. c) Proposed detention basins are located at lower parts of the site. Proposed plot levels are higher than the top of detention basin level providing freeboard via the difference in the level between the nearest adjacent plots and the top of the basin level. Raised plot levels are minimum c. 500mm above the 100-year +40% cc water level at the proposed detention basins. d) The porosity in the ID model refers to percentage of the attenuation feature that is available for storage. For the basins, these will be dry unless required for storage and therefore, 100% porosity is applied. For "Tank 3", as mentioned these are only to represent the approximate storage available in the existing lagoon and therefore, shown as 100% porosity to just reflect the storage volume. e) Base width, longitudinal and side slopes are in line with the CCC guidance and the CIRIA SuDS Manual C753. Where longitudinal slopes are greater than 3%, check dams will be considered as part of detailed design. Proposed depths of the swales are deeper than the typical depths due to the depth required to allow the surrounding plots to drain by gravity above the base of the swale to slow the runoff and provide treatment. This is in line with the previously consented strategy and the swales constructed as part of the Phase 1 works. f) Oversized pipes have been modelled mainly to demonstrate that they work from technical and hydraulic perspective. The strategy is eventually envisaged to be a combination of the two options to balance the SuDS requirement and space required for landscaping/amenity areas at detailed design stage. On plot SuDS will be considered as part of the detailed plot design at next stage. g) We assume this relates to high discharge rate applied to "Tank 3". The 221 l/s from "Tank 3" is to represent the proposed 1 in 100 year discharge rate from Phase 1 agreed and implemented as per the previous consented strategy. Proposed detention basin part of the OPA are restricted to 2 l/s/ha

ID	ISSUE	COMMENT	RESPONSE
7.	Surface water runoff from highways and paved areas	The strategy proposes that surface water runoff from external areas including highways and other paved areas outside of the Building Development Zone boundaries will discharge unrestricted into the sitewide drainage network, this approach is not accepted. All impermeable areas should be restricted to appropriate runoff rates, achieving greenfield runoff rate where possible.	Surface water runoff from highways and external areas outside of the plot boundaries will be conveyed unrestricted to the sitewide drainage network where the flows will be restricted and attenuated within the proposed sitewide attenuation features (detention basins, swales/oversized pipes) prior to discharge to the watercourse.
8.	Further information about existing watercourse	It appears the applicant is proposing to discharge surface water to an existing watercourse (Washpit Brook). Therefore, the following information is required: - Condition of watercourse (how well maintained is the watercourse). Photographs at appropriate intervals along the watercourse should be provided. In addition, the direction of the flow of the watercourse should be clearly provided. - Capacity of the watercourse (the applicant must demonstrate that the watercourse has sufficient available capacity to cope with the influx of surface water from the site). - Outfall of the watercourse. Evidence of a final effective outfall can include desktop traces to show the physical presence of the watercourse.	The Washpit Brook flows in a north-westerly direction. It flows adjacent to the M11 motorway on the western boundary of the Site and through the northwestern corner of Girton. Downstream of the Site, the Washpit Brook becomes designated as a Main River. The Phase 1 surface water drainage currently discharges into the Washpit Brook and a Flood Alleviation Scheme (FAS), previously approved under the consented scheme, to mitigate the risk of flooding downstream as a result of the proposed development in its entirety has also been implemented as part of the Phase 1 works. Aerial google image of the implemented FAS and the phase 1 lagoon below.

ID	ISSUE	COMMENT	RESPONSE
			

Appendix I EXISTING SURFACE WATER DISCHARGE RATE

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Catherine Doarks
Site name:	NWC
Site location:	Cambridge

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

Site Details

Latitude:	52.22390° N
Longitude:	0.08208° E
Reference:	1266818692
Date:	Jun 25 2024 09:34

Runoff estimation approach

FEH Statistical

Site characteristics

Total site area (ha): 36.53

Methodology

Q_{MED} estimation method:	Calculate from BFI and SAAR
BFI and SPR method:	Specify BFI manually
HOST class:	N/A
BFI / BFIHOST:	0.421
Q_{MED} (l/s):	
Q_{BAR} / Q_{MED} factor:	1.12

Hydrological characteristics

	Default	Edited
SAAR (mm):	538	550
Hydrological region:	5	5
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 30 years:	2.45	2.45
Growth curve factor 100 years:	3.56	3.56
Growth curve factor 200 years:	4.21	4.21

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

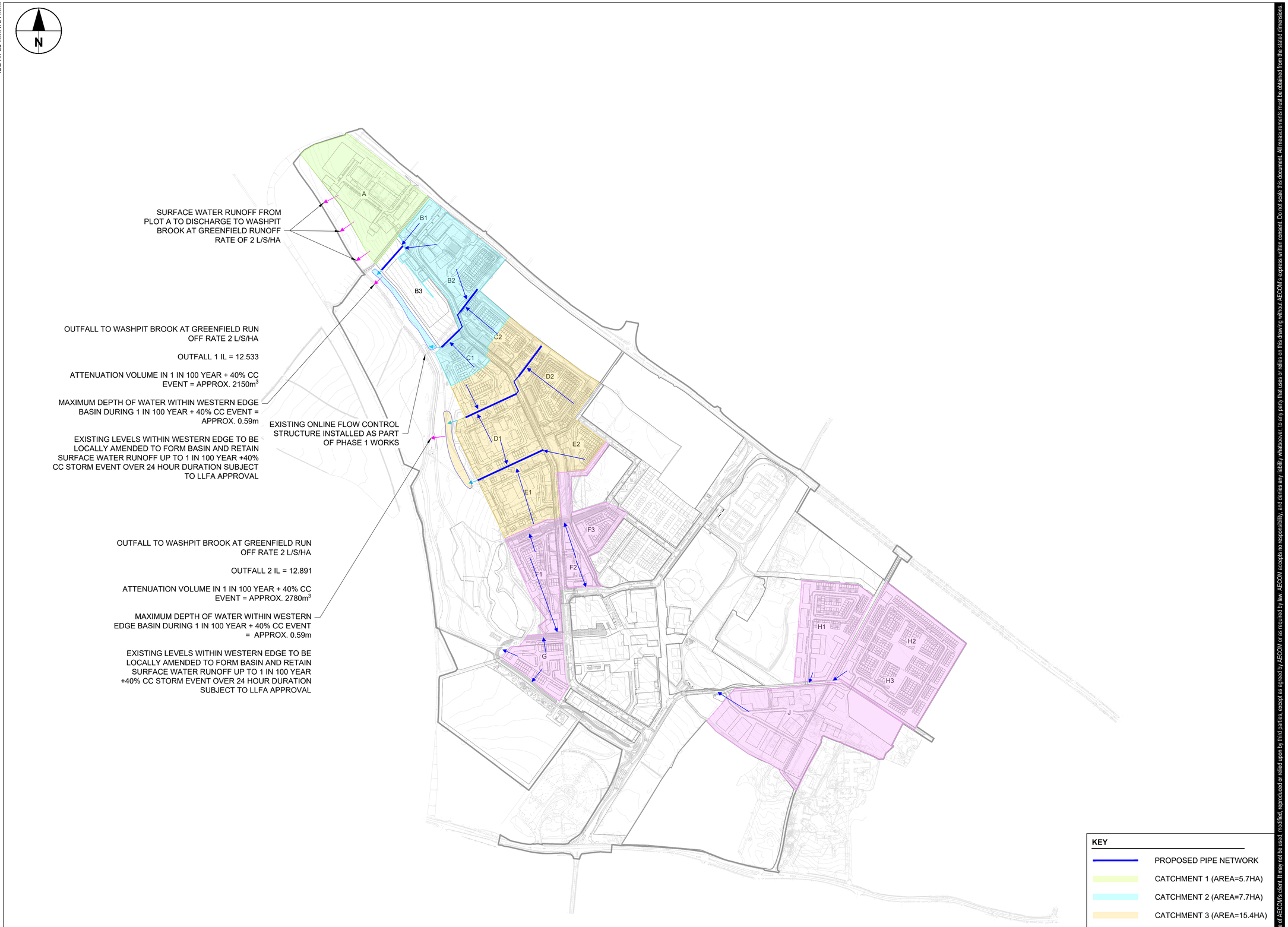
(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):		72.67
1 in 1 year (l/s):		63.22
1 in 30 years (l/s):		178.05
1 in 100 year (l/s):		258.71
1 in 200 years (l/s):		305.95

Appendix J DRAINAGE STRATEGY



KEY

- PROPOSED PIPE NETWORK
- CATCHMENT 1 (AREA=5.7HA)
- CATCHMENT 2 (AREA=7.7HA)
- CATCHMENT 3 (AREA=15.4HA)
- CATCHMENT 4 (AREA=28.8HA)
- APPROX. SURFACE WATER ATTENUATION EXTENT
- PLOT OUTFALL
- OUTFALL TO WESTERN EDGE
- OUTFALL TO WASHPIT BROOK

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NORTH WEST CAMBRIDGE
2024+ INFRASTRUCTURE

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3. FULL EXTENT OF DRAINAGE NETWORK AND SIZES IS SUBJECT TO DETAILED HYDRAULIC MODELLING FOLLOWING DEVELOPMENT OF MASTERPLAN AND SITEWIDE LEVELS.
4. PLOTS ARE TO BE RESTRICTED TO 2 L/S/HA GREENFIELD RUNOFF RATE IN LINE WITH THE LATEST PLANNING POLICIES. SURFACE WATER ATTENUATION REQUIRED TO ACHIEVE THE PLOT DISCHARGE RATE TO BE PROVIDED WITHIN THE PLOT BOUNDARIES.
5. ALL SURFACE WATER FROM THE SITE TO BE RESTRICTED TO 2 L/S/HA GREENFIELD RUNOFF RATE PRIOR TO DISCHARGE TO THE WASHPIT BROOK IN LINE WITH THE LATEST PLANNING POLICIES. FINAL DISCHARGE RATES TO BE AGREED WITH THE LEAD LOCAL FLOOD AUTHORITY (LLFA).
6. PLOT BOUNDARIES AND PLOT BUILDINGS BASED ON HAWKINS BROWN MASTERPLANPP9-10009 - ILLUSTRATIVE MASTERPLAN_250410 RECEIVED 11/04/2025.
7. DRAINAGE DESIGN IS BASED ON GRANT ASSOCIATES PROPOSED LEVELS RECEIVEDON 20.11.2024. DRAINAGE DESIGN INCLUDING ATTENUATION EXTENT IS SUBJECT TO FINALISED LANDFORM AND SITEWIDE LEVELS.
8. PROPOSED PIPES ARE ASSUMED TO BE NOT SUBJECT TO VEHICLE LOADING AND BASED ON MINIMUM 600mm COVER.

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P02	16/05/25	UPDATED MASTERPLAN
P01	10/12/24	FIRST ISSUE

PURPOSE OF ISSUE

FOR INFORMATION

SCALE 1:5000

SUITABILITY S0

PROJECT NUMBER

60732815

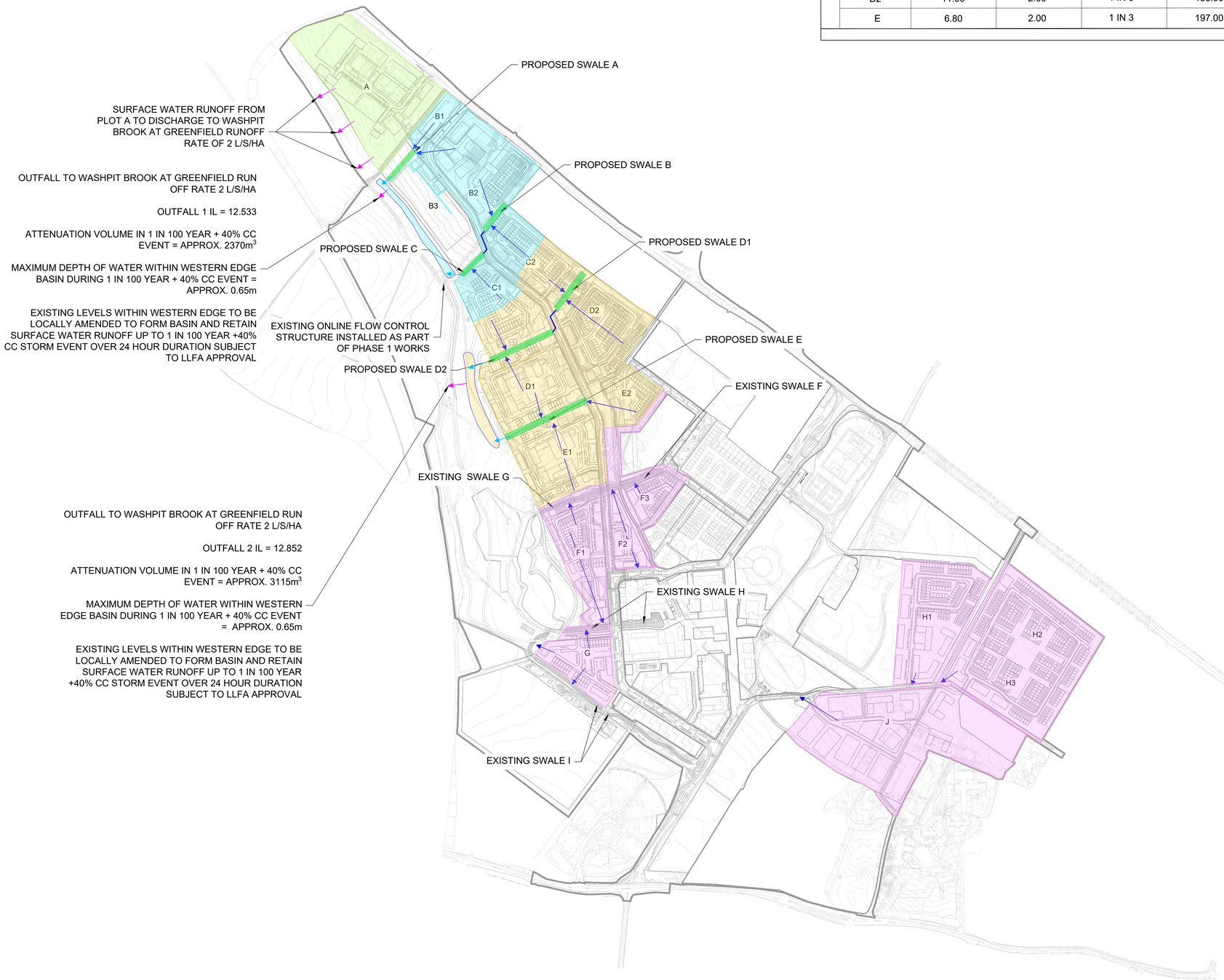
SHEET TITLE

SURFACE WATER DRAINAGE OPTION 2 - PIPE NETWORK

SHEET NUMBER NWC-MP2024-ACM-SW-SK-05012

REV P02

PROPOSED SWALE REF.	TOP WIDTH (m)	BASE WIDTH (m)	SIDE SLOPE	LENGTH (m)	CROSS SECTIONAL AREA (m^2)	DEPTH (m)
A	9.80	2.00	1 IN 3	88.00	7.67	1.30
B	15.80	2.00	1 IN 3	77.00	20.47	2.30
C	17.00	2.00	1 IN 3	70.00	23.75	2.50
D1	14.30	2.00	1 IN 3	103.00	16.71	2.05
D2	11.90	2.00	1 IN 3	153.00	11.47	1.65
E	6.80	2.00	1 IN 3	197.00	3.52	0.80



KEY

- EXISTING SWALE
- PROPOSED SWALE
- PROPOSED PIPE
- CATCHMENT 1 (AREA=5.7HA)
- CATCHMENT 2 (AREA=7.7HA)
- CATCHMENT 3 (AREA=15.4HA)
- CATCHMENT 4 (AREA=28.8HA)
- APPROX. SURFACE WATER ATTENUATION EXTENT
- PLOT OUTFALL
- SWALE OUTFALL
- OUTFALL TO WASHPIT BROOK

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4. PLOTS ARE TO BE RESTRICTED TO 2 L/S/HA GREENFIELD RUNOFF RATE IN LINE WITH THE LATEST PLANNING POLICIES. SURFACE WATER ATTENUATION REQUIRED TO ACHIEVE THE PLOT DISCHARGE RATE TO BE PROVIDED WITHIN THE PLOT BOUNDARIES.
5. ALL SURFACE WATER FROM THE SITE TO BE RESTRICTED TO 2 L/S/HA GREENFIELD RUNOFF RATE PRIOR TO DISCHARGE TO THE WASHPIT BROOK IN LINE WITH THE LATEST PLANNING POLICIES. FINAL DISCHARGE RATES TO BE AGREED WITH THE LEAD LOCAL FLOOD AUTHORITY (LLFA)
6. PLOT BOUNDARIES AND PLOT BUILDINGS BASED ON HAWKINS BROWN MASTERPLAN PP9-10009 - ILLUSTRATIVE MASTERPLAN_250410 RECEIVED 11/04/2025.
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P01	10/12/24	FIRST ISSUE

PURPOSE OF ISSUE

FOR INFORMATION

SCALE 1:5000

SUITABILITY S0

PROJECT NUMBER

60732815

SHEET TITLE

SURFACE WATER DRAINAGE OPTION 1 - SWALES

SHEET NUMBER NWC-MP2024-ACM-SW-SK-05011

REV P02

ISO A1 594mm x 841mm
Approved: SG
Checked: BL
Drawn: RA
Designer: RA
Project Management Initials
Last saved by: RAICEV/CM (2025-05-14) Last Plotted: 2025-05-15
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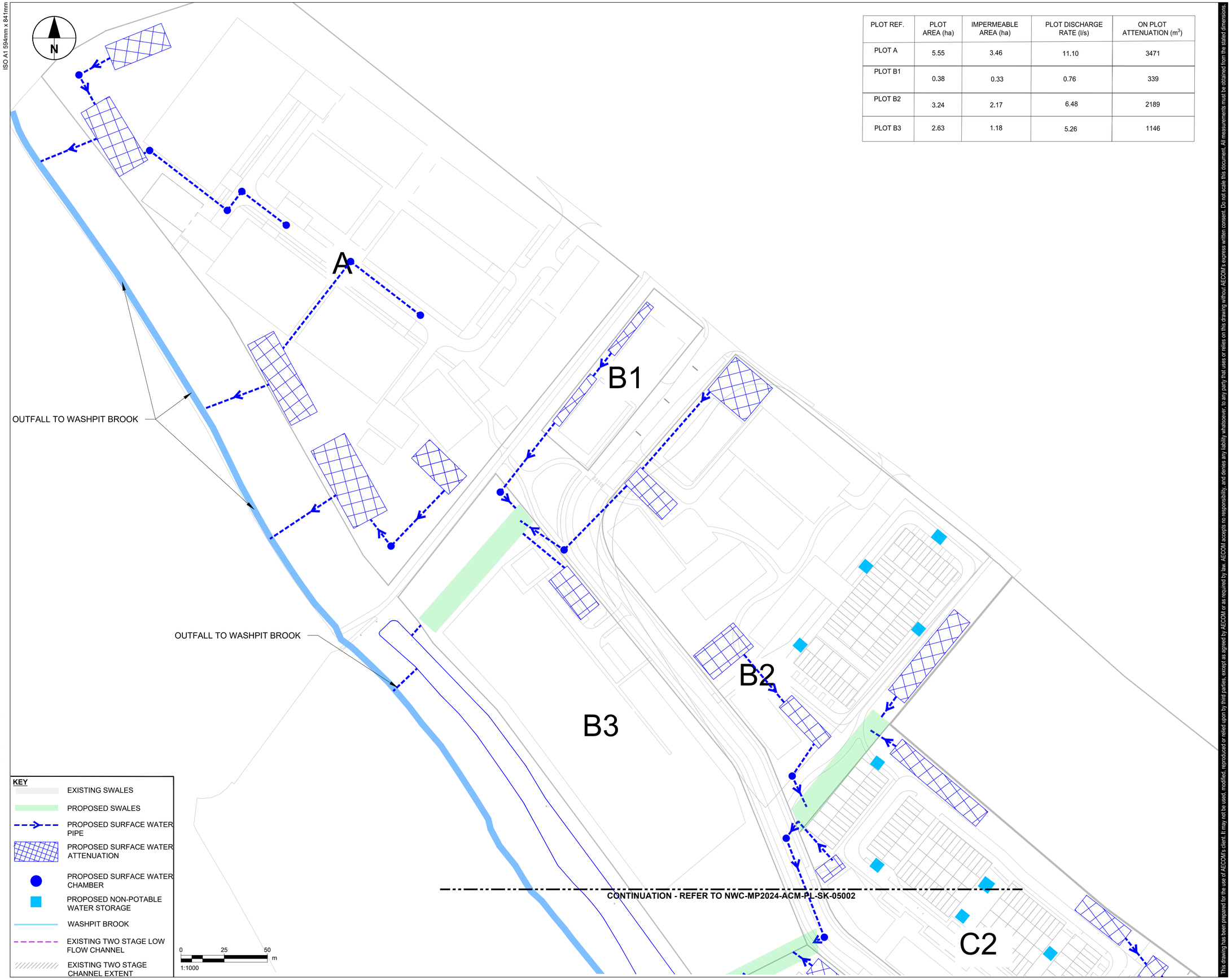

PLOT REF.	PLOT AREA (ha)	IMPERMEABLE AREA (ha)	PLOT DISCHARGE RATE (l/s)	ON PLOT ATTENUATION (m^3)
PLOT A	5.55	3.46	11.10	3471
PLOT B1	0.38	0.33	0.76	339
PLOT B2	3.24	2.17	6.48	2189
PLOT B3	2.63	1.18	5.26	1146

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4. ALL SURFACE WATER FROM THE SITE TO BE RESTRICTED TO 2 L/S/HA GREENFIELD RUNOFF RATE PRIOR TO DISCHARGE TO THE WASHPIT BROOK IN LINE WITH THE LATEST PLANNING POLICIES. FINAL DISCHARGE RATES TO BE AGREED WITH THE LEAD LOCAL FLOOD AUTHORITY (LLFA).
5. SURFACE WATER RUNOFF FROM PROPOSED SWALES TO BE ATTENUATED AT WESTERN EDGE PRIOR TO DISCHARGE TO THE WASHPIT BROOK. EXTENT OF ATTENUATION AT WASHPIT BROOK IS SUBJECT TO DETAILED HYDRAULIC MODELLING AND FINALISED SITEWIDE LEVELS.
6. PLOT BOUNDARIES AND PLOT BUILDINGS BASED ON HAWKINS BROWN MASTERPLAN PP9-10009 - ILLUSTRATIVE MASTERPLAN_250410 RECEIVED 11/04/2025.

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P01	10/12/24	First Issue

PURPOSE OF ISSUE

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SCALE 1:1000

SUITABILITY S0

PROJECT NUMBER

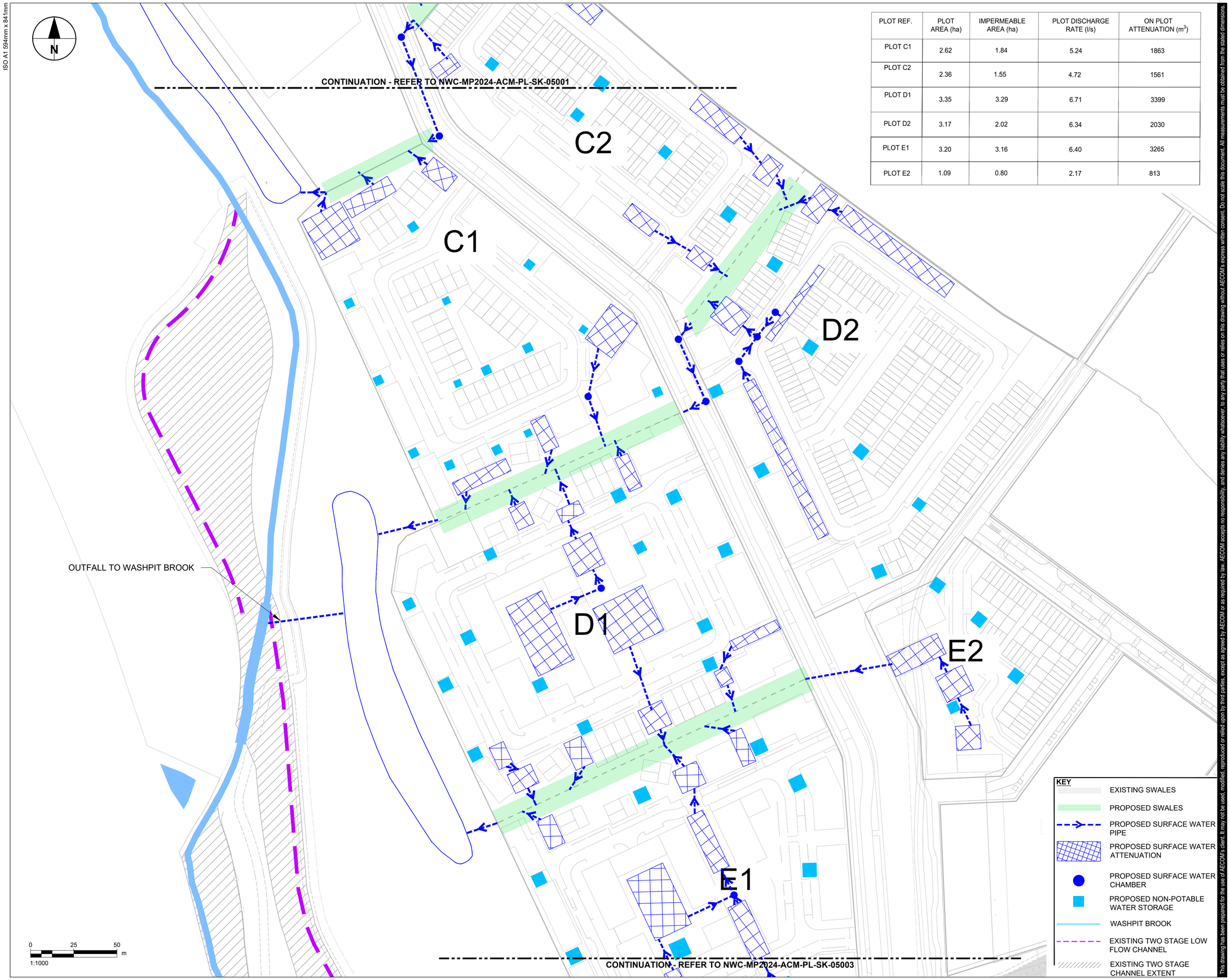
60732815

SHEET TITLE

INDICATIVE ON-PLOT SURFACE WATER ATTENUATION ARRANGEMENT SHEET 1

SHEET NUMBER NWC-MP2024-ACM-PL-SK-05001

REV P02



PLOT REF.	PLOT AREA (ha)	IMPERMEABLE AREA (ha)	PLOT DISCHARGE RATE (l/s)	ON PLOT ATTENUATION (m^3)
PLOT C1	2.62	1.84	5.24	1863
PLOT C2	2.36	1.55	4.72	1561
PLOT D1	3.35	3.29	6.71	3399
PLOT D2	3.17	2.02	6.34	2030
PLOT E1	3.20	3.16	6.40	3265
PLOT E2	1.09	0.80	2.17	813

KEY

- EXISTING SWALES
- PROPOSED SWALES
- PROPOSED SURFACE WATER PIPE
- PROPOSED SURFACE WATER ATTENUATION
- PROPOSED SURFACE WATER CHAMBER
- PROPOSED NON-POTABLE WATER STORAGE
- WASHPIT BROOK
- EXISTING TWO STAGE LOW FLOW CHANNEL
- EXISTING TWO STAGE CHANNEL EXTENT

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6. PLOT BOUNDARIES AND PLOT BUILDINGS BASED ON HAWKINS BROWN MASTERPLAN PP9-10009 - ILLUSTRATIVE MASTERPLAN_250410 RECEIVED 11/04/2025.

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P02	09/05/25	UPDATED MASTERPLAN
P01	10/12/24	First Issue

PURPOSE OF ISSUE

FOR INFORMATION

SCALE 1:1000

SUITABILITY S0

PROJECT NUMBER

60732815

SHEET TITLE

INDICATIVE ON-PLOT SURFACE WATER ATTENUATION ARRANGEMENT SHEET 2

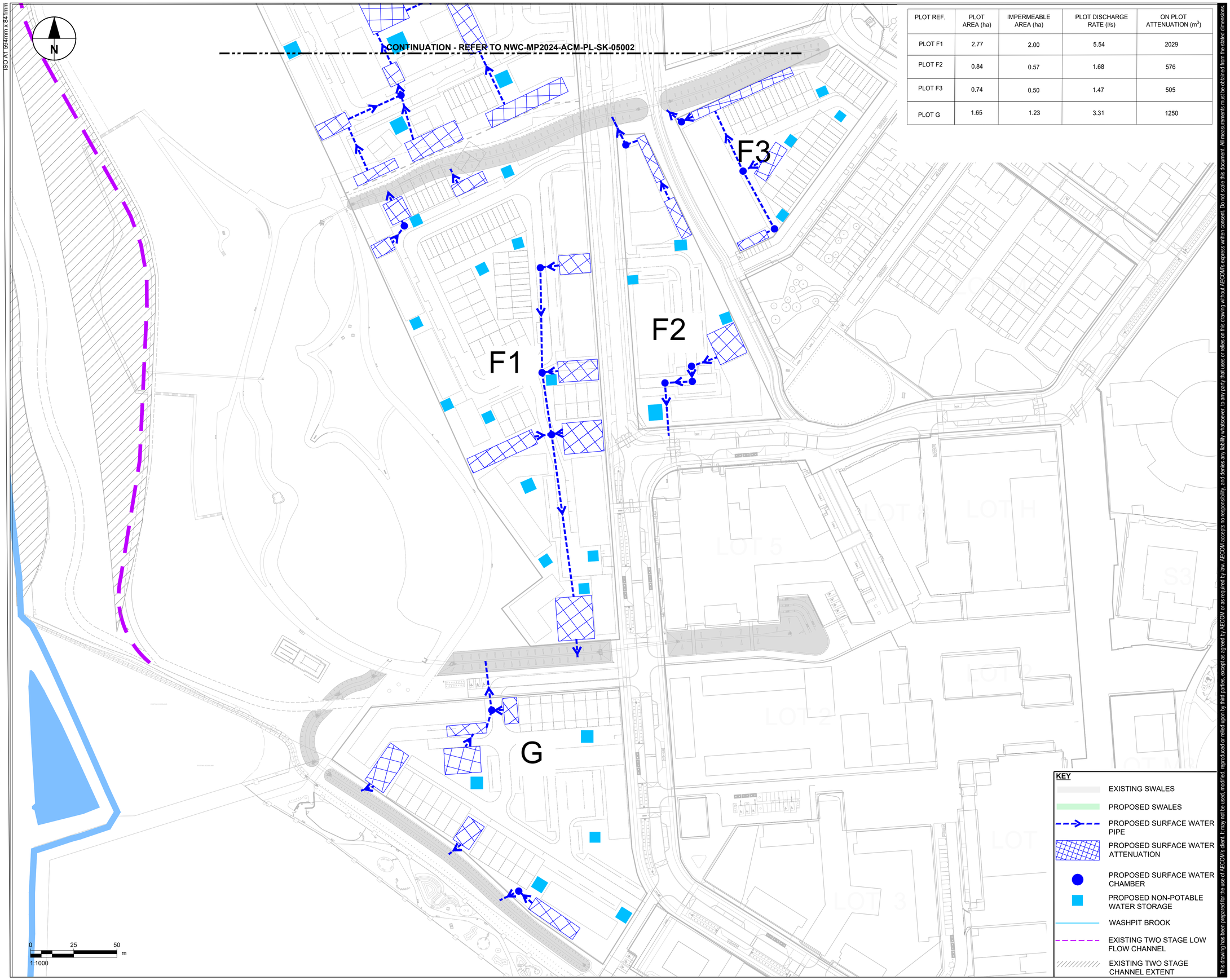
SHEET NUMBER NWC-MP2024-ACM-PL-SK-05002

REV P02

ISO A1 594mm x 841mm

Approved: SG
Checked: BL
Drawn: AW
Designer: BL
Project Management Initials

Last saved by: WAYRAHA (2025-05-07) Last Plotted: 2025-05-12
Filename: C:\USERS\WAYRAHA\DC\ACCDOCS\AECOM EU ACCIBP_EURL (UK)_60732815_NWC 2024+ INFRA\PROJECT FILES\900-WORK\910 BIM-CAD\DRAINAGE\25 SKETCHES\NWC-MP2024-ACM-PL-SK-05002.DWG



PLOT REF.	PLOT AREA (ha)	IMPERMEABLE AREA (ha)	PLOT DISCHARGE RATE (l/s)	ON PLOT ATTENUATION (m^3)
PLOT F1	2.77	2.00	5.54	2029
PLOT F2	0.84	0.57	1.68	576
PLOT F3	0.74	0.50	1.47	505
PLOT G	1.65	1.23	3.31	1250

AECOM

PROJECT

NORTH WEST CAMBRIDGE
2024+ INFRASTRUCTURE

CLIENT

UNIVERSITY OF CAMBRIDGE

CONSULTANT

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PURPOSE OF ISSUE

FOR INFORMATION

SCALE	SUITABILITY
1:1000	S0

PROJECT NUMBER

60732815

SHEET TITLE

INDICATIVE ON-PLOT SURFACE WATER ATTENUATION ARRANGEMENT SHEET 3

SHEET NUMBER	REV
NWC-MP2024-ACM-PL-SK-05003	P02

ISO A1 594mm x 841mm

Project Management Initials Designer: BL Drawn: AW Checked: BL Approved: SG

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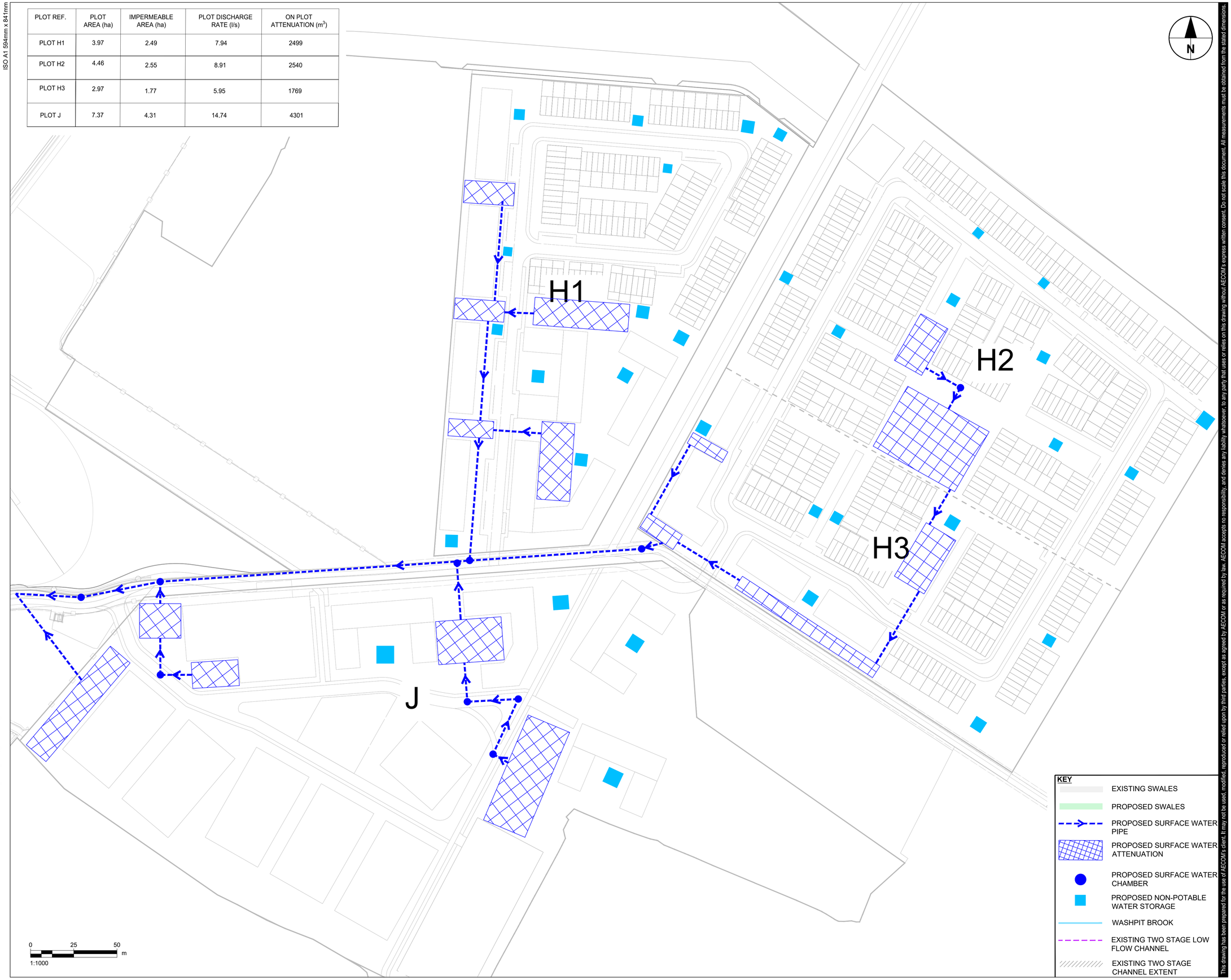
PLOT REF.	PLOT AREA (ha)	IMPERMEABLE AREA (ha)	PLOT DISCHARGE RATE (l/s)	ON PLOT ATTENUATION (m^3)
PLOT H1	3.97	2.49	7.94	2499
PLOT H2	4.46	2.55	8.91	2540
PLOT H3	2.97	1.77	5.95	1769
PLOT J	7.37	4.31	14.74	4301



ISO A1 594mm x 841mm

Approved: SG
Checked: BL
Drawn: AW
Designer: BL
Project Management Initials

Last saved by: WAYRAHA(2025-05-07) Last Plotted: 2025-05-12
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2024+ INFRASTRUCTURE

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SCALE 1:1000

SUITABILITY S0

PROJECT NUMBER

60732815

SHEET TITLE

INDICATIVE ON-PLOT SURFACE WATER ATTENUATION ARRANGEMENT SHEET 4

SHEET NUMBER NWC-MP2024-ACM-PL-SK-05004

REV P02

Appendix K INFO DRAINAGE HYDRAULIC MODELLING

North West Cambridge Masterplan:	Date: 14/05/2025		
	Designed by: MR	Checked by: BL	Approved By: BL
Report Details: Type: Junctions Storm Phase: Phase (1)	Company Address:		

Name	Junction Type	Easting (m)	Northing (m)
Simple Junction (1)	Simple Junction	541974.451	260820.001
Simple Junction	Simple Junction	542133.757	260419.166

Inlets

Junction	Inlet Name	Incoming Item(s)	Bypass Destination	Capacity Type
Simple Junction (1)	Inlet	Pipe (12)	(None)	No Restriction
Simple Junction	Inlet	Pipe (14)	(None)	No Restriction

Tank (1)

Type : Tank

Dimensions

Exceedance Level (m)	14.920
Depth (m)	1.645
Base Level (m)	13.275
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	0.00
Total Volume (m³)	20000.045

Depth (m)	Area (m²)	Volume (m³)
0.000	12500.00	0.000
1.600	12500.00	20000.000

Inlets

Inlet (3)

Inlet Type	Point Inflow
Incoming Item(s)	Pipe (2)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (4)

Inlet Type	Point Inflow
Incoming Item(s)	Pipe (7)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (5)

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

North West Cambridge Masterplan:	Date: 14/05/2025		
	Designed by: MR	Checked by: BL	Approved By: BL
Report Details: Type: Stormwater Controls Storm Phase: Phase (1)	Company Address:		

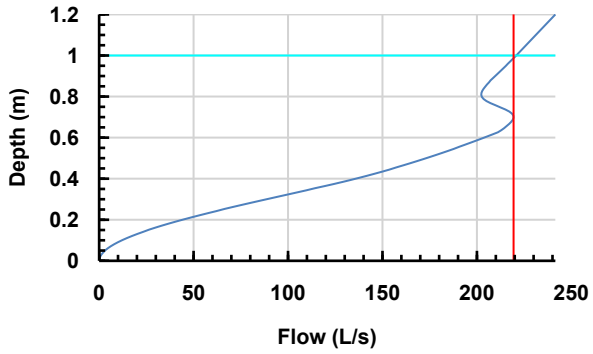
Outlets

Outlet

Outgoing Connection	(None)
Outlet Type	Hydro-Brake®

Invert Level (m)	13.275
Design Depth (m)	1.000
Design Flow (L/s)	221.0
Objective	Minimise Upstream Storage Requirements
Application	Surface Water Only
Sump Available	☐

Unit Reference	CHE-0480-2210-1000-2210



Advanced

Perimeter	Circular
Length (m)	266.015

North West Cambridge Masterplan:	Date: 14/05/2025		
	Designed by: MR	Checked by: BL	Approved By: BL
Report Details: Type: Stormwater Controls Storm Phase: Phase (1)	Company Address:		

Tank (3)

Type : Tank

Dimensions

Exceedance Level (m)	15.800
Depth (m)	1.000
Base Level (m)	14.800
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	0.00
Total Volume (m³)	21000.000

Depth (m)	Area (m²)	Volume (m³)
0.000	21000.00	0.000
1.000	21000.00	21000.000

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	H &J
Bypass Destination	(None)
Capacity Type	No Restriction

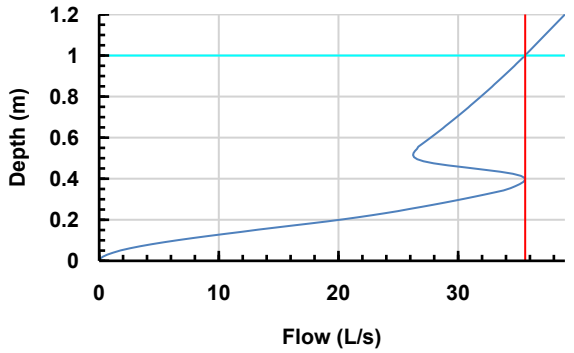
Outlets

Outlet

Outgoing Connection	Pipe (11)
Outlet Type	Hydro-Brake®

Invert Level (m)	14.900
Design Depth (m)	1.000
Design Flow (L/s)	35.61
Objective	Minimise Upstream Storage Requirements
Application	Surface Water Only
Sump Available	☐

Unit Reference	CHE-0243-3561-1000-3561



Advanced

Perimeter	Circular
Length (m)	154.156

Detention Basin 1

Type : Pond

Dimensions

Exceedance Level (m)	13.363
Depth (m)	0.650
Base Level (m)	12.713
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	3.00
Total Volume (m³)	2360.316

Depth (m)	Area (m²)	Volume (m³)
0.000	3425.00	0.000
0.650	3841.49	2360.316

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area (16)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (2)

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

Inlet (3)

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

North West Cambridge Masterplan:	Date: 14/05/2025		
	Designed by: MR	Checked by: BL	Approved By: BL
Report Details: Type: Stormwater Controls Storm Phase: Phase (1)	Company Address:		

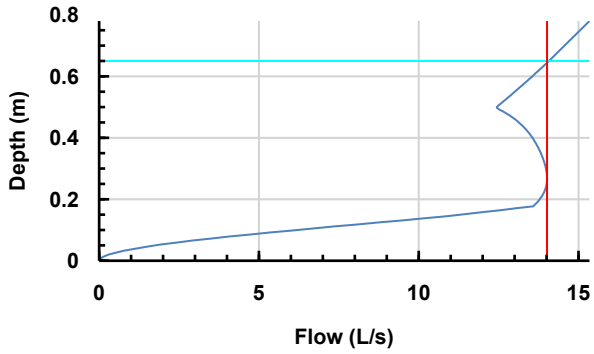
Outlets

Outlet

Outgoing Connection	Pipe (12)
Outlet Type	Hydro-Brake®

Invert Level (m)	12.713
Design Depth (m)	0.650
Design Flow (L/s)	14.1
Objective	Minimise Upstream Storage Requirements
Application	Surface Water Only
Sump Available	☑

Unit Reference	SHE-0174-1410-0650-1410



Advanced

Perimeter	Circular
Length (m)	280.420
Friction Scheme	Manning's n
n	0.035

Detention Basin 2

Type : Pond

Dimensions

Exceedance Level (m)	13.850
Depth (m)	0.650
Base Level (m)	13.200
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	3.00
Total Volume (m³)	3111.629

Depth (m)	Area (m²)	Volume (m³)
0.000	4550.00	0.000
0.650	5028.22	3111.629

Inlets

Inlet (2)

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

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Pipe (13)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (3)

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area (17)
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe (14)
Outlet Type	Orifice

Diameter (m)	0.139
Coefficient of Discharge	0.600
Invert Level (m)	13.200

Advanced

Perimeter	Circular
Length (m)	223.540
Friction Scheme	Manning's n
n	0.035

Swale E (0)

Type : Swale

Swale

Exceedance Level (m)	14.100
Depth (m)	0.800
Base Level (m)	13.300
Top Width (m)	6.800
Side Slope (1:X)	3.00
Base Width (m)	2.000
Freeboard (mm)	10
Length (m)	197.000
Long. Slope (1:X)	36.60
Filtration Rate (m/hr)	50.0
Friction Scheme	Manning's n
n	0.035
Total Volume (m³)	680.103

Inlets

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	D1/2+E1+E2 Catchment Area (11)
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Swale Catchment (7)
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Outlets

Outlet (1)

Outgoing Connection	Pipe (8)
Outlet Type	Free Discharge

Advanced

Swale

Porosity (%)	100

Swale C (0)

Type : Swale

Swale

Exceedance Level (m)	16.500
Depth (m)	2.500
Base Level (m)	14.000
Top Width (m)	17.000
Side Slope (1:X)	3.00
Base Width (m)	2.000
Freeboard (mm)	10
Length (m)	70.000
Long. Slope (1:X)	31.60
Filtration Rate (m/hr)	50.0
Friction Scheme	Manning's n
n	0.035
Total Volume (m³)	1650.621

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	C1/2+B3/2 Road 2 Swale Catchment (4)
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Inlet (1)

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

Outlets

Outlet (1)

Outgoing Connection	Pipe (3)
Outlet Type	Free Discharge

Advanced

Swale

Porosity (%)	100

Swale H2 - Ex

Type : Swale

Swale

Exceedance Level (m)	15.000
Depth (m)	1.700
Base Level (m)	13.300
Top Width (m)	13.000
Side Slope (1:X)	3.53
Base Width (m)	1.000
Freeboard (mm)	10
Length (m)	97.604
Long. Slope (1:X)	100.00
Filtration Rate (m/hr)	50.0
Friction Scheme	Manning's n
n	0.035
Total Volume (m³)	1148.833

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	F1 2/3 + G/3
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Pipe (5)
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe (7)
Outlet Type	Free Discharge

Advanced

Swale

Porosity (%)	100

Swale G - Ex

Type : Swale

Swale

Exceedance Level (m)	17.800
Depth (m)	0.200
Base Level (m)	17.600
Top Width (m)	12.000
Side Slope (1:X)	27.50
Base Width (m)	1.000
Freeboard (mm)	10
Length (m)	175.000
Long. Slope (1:X)	57.00
Filtration Rate (m/hr)	50.0
Friction Scheme	Manning's n
n	0.035
Total Volume (m³)	206.981

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	F1/3+ F2/2 Catchment Area (10) Pipe (9)
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area (9)
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Outlets

Outlet (1)

Outgoing Connection	Pipe (6)
Outlet Type	Free Discharge

Advanced

Swale

Porosity (%)	100

Swale D (1)

Type : Swale

Swale

Exceedance Level (m)	19.300
Depth (m)	2.050
Base Level (m)	17.250
Top Width (m)	14.300
Side Slope (1:X)	3.00
Base Width (m)	2.000
Freeboard (mm)	10
Length (m)	103.000
Long. Slope (1:X)	29.50
Filtration Rate (m/hr)	50.0
Friction Scheme	Manning's n
n	0.035
Total Volume (m³)	1706.174

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	C2/2+D2
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Swale Catchment (5)
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe (10)
Outlet Type	Free Discharge

Advanced

Swale

Porosity (%)	100

Swale I -Ex

Type : Swale

Swale

Exceedance Level (m)	15.585
Depth (m)	1.285
Base Level (m)	14.300
Top Width (m)	9.210
Side Slope (1:X)	3.00
Base Width (m)	1.500
Freeboard (mm)	10
Length (m)	195.000
Long. Slope (1:X)	1000.00
Filtration Rate (m/hr)	50.0
Friction Scheme	Manning's n
n	0.035
Total Volume (m³)	1323.928

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	G/3 Phase 1 Plot Flow - 1 Phase 1 - 1
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Inlet (1)

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

Outlets

Outlet (1)

Outgoing Connection	Pipe (2)
Outlet Type	Free Discharge

Advanced

Swale

Porosity (%)	100

Swale H - Ex

Type : Swale

Swale

Exceedance Level (m)	17.017
Depth (m)	1.525
Base Level (m)	15.492
Top Width (m)	14.000
Side Slope (1:X)	4.26
Base Width (m)	1.000
Freeboard (mm)	10
Length (m)	97.604
Long. Slope (1:X)	65.00
Filtration Rate (m/hr)	50.0
Friction Scheme	Manning's n
n	0.035
Total Volume (m³)	1102.722

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Phase 1 Plot Flow - 2
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Phase 1 - 2 F2/2
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe (5)
Outlet Type	Free Discharge

Advanced

Swale

Porosity (%)	100

Swale I -2

Type : Swale

Swale

Exceedance Level (m)	15.800
Depth (m)	1.000
Base Level (m)	14.800
Top Width (m)	7.500
Side Slope (1:X)	3.00
Base Width (m)	1.500
Freeboard (mm)	10
Length (m)	220.000
Long. Slope (1:X)	1000.00
Filtration Rate (m/hr)	50.0
Friction Scheme	Manning's n
n	0.035
Total Volume (m³)	973.566

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Pipe (11) Phase 1 Plot Flow - 1 (1)
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Outlets

Outlet (1)

Outgoing Connection	Pipe (4)
Outlet Type	Free Discharge

Advanced

Swale

Porosity (%)	100

Swale F - Ex

Type : Swale

Swale

Exceedance Level (m)	23.000
Depth (m)	2.200
Base Level (m)	20.800
Top Width (m)	15.000
Side Slope (1:X)	3.18
Base Width (m)	1.000
Freeboard (mm)	10
Length (m)	90.000
Long. Slope (1:X)	147.00
Filtration Rate (m/hr)	50.0
Friction Scheme	Manning's n
n	0.035
Total Volume (m³)	1570.529

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Phase 1 - 3 Phase 1 Plot Flow - 3 Catchment Area (11) (2) F3
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe (9)
Outlet Type	Free Discharge

Advanced

Swale

Porosity (%)	100

Swale A (0)

Type : Swale

Swale

Exceedance Level (m)	14.300
Depth (m)	1.300
Base Level (m)	13.000
Top Width (m)	9.800
Side Slope (1:X)	3.00
Base Width (m)	2.000
Freeboard (mm)	10
Length (m)	88.321
Long. Slope (1:X)	25.20
Filtration Rate (m/hr)	50.0
Friction Scheme	Manning's n
n	0.035
Total Volume (m³)	668.795

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Road 1 Swale Catchment B1+B2/2+B3/2
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe
Outlet Type	Free Discharge

Advanced

Swale

Porosity (%)	100

Swale B (0) Type : Swale

Swale

Exceedance Level (m)	19.300
Depth (m)	2.300
Base Level (m)	17.000
Top Width (m)	15.800
Side Slope (1:X)	3.00
Base Width (m)	2.000
Freeboard (mm)	10
Length (m)	77.000
Long. Slope (1:X)	27.00
Filtration Rate (m/hr)	50.0
Friction Scheme	Manning's n
n	0.035
Total Volume (m³)	1564.047

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	B2/2+C2/2
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Swale Catchment (3)
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe (1)
Outlet Type	Free Discharge

Advanced

Swale

Porosity (%)	100

Swale D (0) Type : Swale

Swale

Exceedance Level (m)	15.000
Depth (m)	1.650
Base Level (m)	13.350
Top Width (m)	11.900
Side Slope (1:X)	3.00
Base Width (m)	2.000
Freeboard (mm)	10
Length (m)	153.000
Long. Slope (1:X)	40.00
Filtration Rate (m/hr)	50.0
Friction Scheme	Manning's n
n	0.035
Total Volume (m³)	1736.366

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	C1/2+D1/2 Road 3
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Pipe (10)
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Inlet (2)

Inlet Type	Point Inflow
Incoming Item(s)	Swale Catchment (6)
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe (13)
Outlet Type	Free Discharge

Advanced

Swale

Porosity (%)	100

North West Cambridge Masterplan:	Date: 14/05/2025		
	Designed by: MR	Checked by: BL	Approved By: BL
Report Details: Type: Connections Storm Phase: Phase (1)	Company Address:		

Name	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Upstream Cover Level (m)	Upstream Invert Level (m)
Pipe (5)	15.989	Pipe	13.413		0.6	1000	18.519	15.492
Pipe (11)	36.994	Pipe	369.939		0.6	375	15.800	14.900
Pipe (4)	29.585	Pipe	97.001		0.6	1000	16.020	14.800
Pipe (9)	19.497	Pipe	149.980		0.6	300	23.000	20.800
Pipe (2)	95.362	Pipe	95.362		0.6	1000	15.780	14.300
Pipe (7)	37.212	Pipe	1488.492		0.6	1000	15.976	13.300
Pipe (6)	31.614	Pipe	8.649		0.6	1000	17.800	16.955
Pipe	11.863	Pipe	41.333		0.6	375	14.300	13.000
Pipe (3)	23.397	Pipe	18.183		0.6	300	16.500	14.000
Pipe (8)	32.901	Pipe	329.008		0.6	525	14.100	13.300
Pipe (13)	48.524	Pipe	323.491		0.6	375	15.000	13.350
Pipe (10)	40.431	Pipe	179.693		0.6	375	19.300	17.250
Pipe (12)	27.070	Pipe	150.000		0.6	150	13.363	12.713
Pipe (14)	29.593	Pipe	85.047		0.6	225	13.850	13.200
Pipe (1)	33.176	Pipe	37.487		0.6	300	19.300	17.100

Name	Downstream Cover Level (m)	Downstream Invert Level (m)	Part Family	Lock	Flow Restriction (L/s)
Pipe (5)	15.976	14.300		Levels	
Pipe (11)	16.020	14.800		All	35.61
Pipe (4)	15.780	14.495		Levels	
Pipe (9)	22.100	20.670		All	
Pipe (2)	14.920	13.300		All	
Pipe (7)	14.920	13.275		All	
Pipe (6)	14.920	13.300		Levels	
Pipe	13.363	12.713		Levels	532.18
Pipe (3)	13.363	12.713		Levels	
Pipe (8)	13.850	13.200		Levels	
Pipe (13)	14.000	13.200		All	
Pipe (10)	18.825	17.025		All	
Pipe (12)	12.683	12.533		Levels	14.07
Pipe (14)	13.000	12.852		None	30.73
Pipe (1)	18.715	16.215		Levels	

North West Cambridge Masterplan:	Date: 14/05/2025		
	Designed by: MR	Checked by: BL	Approved By: BL
Report Details: Type: Inflow Summary Storm Phase: Phase (1)	Company Address:		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
B1+B2/2+B3/2	Swale A (0)	4.4						
B2/2+C2/2	Swale B (0)	5.6						
C1/2+B3/2	Swale C (0)	3.0						
C1/2+D1/2	Swale D (0)	6.0						
C2/2+D2	Swale D (1)	8.7						
Catchment Area (9)	Swale G - Ex		Time of Concentration	0.400	100	0	100	0.400
Catchment Area (10)	Swale G - Ex		Time of Concentration	0.529	100	0	100	0.529
Catchment Area (11)	Swale E (0)		Time of Concentration	0.790	100	0	100	0.790
Catchment Area (11) (2)	Swale F - Ex		Time of Concentration	0.396	100	0	100	0.396
Catchment Area (16)	Detention Basin 1		Time of Concentration	0.450	100	0	100	0.450
Catchment Area (17)	Detention Basin 2		Time of Concentration	0.570	100	0	100	0.570
D1/2+E1+E2	Swale E (0)	11.9						
F1 2/3 + G/3	Swale H2 - Ex	4.4						
F1/3+ F2/2	Swale G - Ex	2.7						
F2/2	Swale H - Ex	0.8						
F3	Swale F - Ex	1.5						
G/3	Swale I -Ex	0.7						
H &J	Tank (3)		Time of Concentration	19.170	100	0	100	19.170
Phase 1 - 1	Swale I -Ex		Time of Concentration	11.400	100	0	100	11.400
Phase 1 - 2	Swale H - Ex		Time of Concentration	3.800	100	0	100	3.800
Phase 1 - 3	Swale F - Ex		Time of Concentration	2.000	100	0	100	2.000
Phase 1 Plot Flow - 1	Swale I -Ex	31.7						
Phase 1 Plot Flow - 1 (1)	Swale I -2	31.7						
Phase 1 Plot Flow - 2	Swale H - Ex	28.1						
Phase 1 Plot Flow - 3	Swale F - Ex	15.0						
Road 1	Swale A (0)		Time of Concentration	0.566	100	0	100	0.566
Road 2	Swale C (0)		Time of Concentration	0.539	100	0	100	0.539
Road 3	Swale D (0)		Time of Concentration	0.432	100	0	100	0.432
Swale Catchment	Swale A (0)		Time of Concentration	0.086	100	0	100	0.086
Swale Catchment (3)	Swale B (0)		Time of Concentration	0.122	100	0	100	0.122
Swale Catchment (4)	Swale C (0)		Time of Concentration	0.119	100	0	100	0.119
Swale Catchment (5)	Swale D (1)		Time of Concentration	0.147	100	0	100	0.147
Swale Catchment (6)	Swale D (0)		Time of Concentration	0.270	100	0	100	0.270
Swale Catchment (7)	Swale E (0)		Time of Concentration	0.134	100	0	100	0.134
TOTAL		**156.2**		**41.920**				**41.920**

North West Cambridge Masterplan:	Date: 14/05/2025		
	Designed by: MR	Checked by: BL	Approved By: BL
Report Details: Type: Network Design Criteria Storm Phase: Phase (1)	Company Address:		

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

North West Cambridge Masterplan:	Date: 14/05/2025		
	Designed by: MR	Checked by: BL	Approved By: BL
Report Details: Type: Network Design Criteria Storm Phase: Phase (1)	Company Address:		

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

North West Cambridge Masterplan:	Date: 14/05/2025		
	Designed by: MR	Checked by: BL	Approved By: BL
Report Details: Type: Outfall Details Storm Phase: Phase (1)	Company Address:		

Outfalls

Outfall	Outfall Type	Fixed Surcharged Level (m)	Level Curve
Tank (1)	Free Discharge		
Simple Junction (1)	Fixed Surcharged Level	12.500	
FEH : 2 years: +0 %: 15 mins: Summer		12.500	
FEH : 2 years: +0 %: 15 mins: Winter		12.500	
FEH : 100 years: +40 %: 15 mins: Summer		12.500	
FEH : 100 years: +40 %: 15 mins: Winter		12.500	
FEH : 30 years: +35 %: 15 mins: Summer		12.500	
FEH : 30 years: +35 %: 15 mins: Winter		12.500	
FEH : 2 years: +0 %: 30 mins: Summer		12.500	
FEH : 2 years: +0 %: 30 mins: Winter		12.500	
FEH : 100 years: +40 %: 30 mins: Summer		12.500	
FEH : 100 years: +40 %: 30 mins: Winter		12.500	
FEH : 30 years: +35 %: 30 mins: Summer		12.500	
FEH : 30 years: +35 %: 30 mins: Winter		12.500	
FEH : 2 years: +0 %: 60 mins: Summer		12.500	
FEH : 2 years: +0 %: 60 mins: Winter		12.500	
FEH : 100 years: +40 %: 60 mins: Summer		12.500	
FEH : 100 years: +40 %: 60 mins: Winter		12.500	
FEH : 30 years: +35 %: 60 mins: Summer		12.500	
FEH : 30 years: +35 %: 60 mins: Winter		12.500	
FEH : 2 years: +0 %: 120 mins: Summer		12.500	
FEH : 2 years: +0 %: 120 mins: Winter		12.500	
FEH : 100 years: +40 %: 120 mins: Summer		12.500	
FEH : 100 years: +40 %: 120 mins: Winter		12.500	
FEH : 30 years: +35 %: 120 mins: Summer		12.500	
FEH : 30 years: +35 %: 120 mins: Winter		12.500	
FEH : 2 years: +0 %: 180 mins: Summer		12.500	
FEH : 2 years: +0 %: 180 mins: Winter		12.500	
FEH : 100 years: +40 %: 180 mins: Summer		12.500	
FEH : 100 years: +40 %: 180 mins: Winter		12.500	
FEH : 30 years: +35 %: 180 mins: Summer		12.500	
FEH : 30 years: +35 %: 180 mins: Winter		12.500	
FEH : 2 years: +0 %: 240 mins: Summer		12.500	

FEH : 2 years: +0 %: 240 mins: Winter		12.500	
FEH : 100 years: +40 %: 240 mins: Summer		12.500	
FEH : 100 years: +40 %: 240 mins: Winter		12.500	
FEH : 30 years: +35 %: 240 mins: Summer		12.500	
FEH : 30 years: +35 %: 240 mins: Winter		12.500	
FEH : 2 years: +0 %: 360 mins: Summer		12.500	
FEH : 2 years: +0 %: 360 mins: Winter		12.500	
FEH : 100 years: +40 %: 360 mins: Summer		12.500	
FEH : 100 years: +40 %: 360 mins: Winter		12.500	
FEH : 30 years: +35 %: 360 mins: Summer		12.500	
FEH : 30 years: +35 %: 360 mins: Winter		12.500	
FEH : 2 years: +0 %: 480 mins: Summer		12.500	
FEH : 2 years: +0 %: 480 mins: Winter		12.500	
FEH : 100 years: +40 %: 480 mins: Summer		12.500	
FEH : 100 years: +40 %: 480 mins: Winter		12.500	
FEH : 30 years: +35 %: 480 mins: Summer		12.500	
FEH : 30 years: +35 %: 480 mins: Winter		12.500	
FEH : 2 years: +0 %: 600 mins: Summer		12.500	
FEH : 2 years: +0 %: 600 mins: Winter		12.500	
FEH : 100 years: +40 %: 600 mins: Summer		12.500	
FEH : 100 years: +40 %: 600 mins: Winter		12.500	
FEH : 30 years: +35 %: 600 mins: Summer		12.500	
FEH : 30 years: +35 %: 600 mins: Winter		12.500	
FEH : 2 years: +0 %: 720 mins: Summer		12.500	
FEH : 2 years: +0 %: 720 mins: Winter		12.500	
FEH : 100 years: +40 %: 720 mins: Summer		12.500	
FEH : 100 years: +40 %: 720 mins: Winter		12.500	
FEH : 30 years: +35 %: 720 mins: Summer		12.500	
FEH : 30 years: +35 %: 720 mins: Winter		12.500	
FEH : 2 years: +0 %: 960 mins: Summer		12.500	
FEH : 2 years: +0 %: 960 mins: Winter		12.500	
FEH : 100 years: +40 %: 960 mins: Summer		12.500	
FEH : 100 years: +40 %: 960 mins: Winter		12.500	
FEH : 30 years: +35 %: 960 mins: Summer		12.500	
FEH : 30 years: +35 %: 960 mins: Winter		12.500	

FEH : 2 years: +0 %: 1440 mins: Summer		12.500	
FEH : 2 years: +0 %: 1440 mins: Winter		12.500	
FEH : 100 years: +40 %: 1440 mins: Summer		12.500	
FEH : 100 years: +40 %: 1440 mins: Winter		12.500	
FEH : 30 years: +35 %: 1440 mins: Summer		12.500	
FEH : 30 years: +35 %: 1440 mins: Winter		12.500	
Simple Junction	Fixed Surcharged Level	12.800	
FEH : 2 years: +0 %: 15 mins: Summer		12.800	
FEH : 2 years: +0 %: 15 mins: Winter		12.800	
FEH : 100 years: +40 %: 15 mins: Summer		12.800	
FEH : 100 years: +40 %: 15 mins: Winter		12.800	
FEH : 30 years: +35 %: 15 mins: Summer		12.800	
FEH : 30 years: +35 %: 15 mins: Winter		12.800	
FEH : 2 years: +0 %: 30 mins: Summer		12.800	
FEH : 2 years: +0 %: 30 mins: Winter		12.800	
FEH : 100 years: +40 %: 30 mins: Summer		12.800	
FEH : 100 years: +40 %: 30 mins: Winter		12.800	
FEH : 30 years: +35 %: 30 mins: Summer		12.800	
FEH : 30 years: +35 %: 30 mins: Winter		12.800	
FEH : 2 years: +0 %: 60 mins: Summer		12.800	
FEH : 2 years: +0 %: 60 mins: Winter		12.800	
FEH : 100 years: +40 %: 60 mins: Summer		12.800	
FEH : 100 years: +40 %: 60 mins: Winter		12.800	
FEH : 30 years: +35 %: 60 mins: Summer		12.800	
FEH : 30 years: +35 %: 60 mins: Winter		12.800	
FEH : 2 years: +0 %: 120 mins: Summer		12.800	
FEH : 2 years: +0 %: 120 mins: Winter		12.800	
FEH : 100 years: +40 %: 120 mins: Summer		12.800	
FEH : 100 years: +40 %: 120 mins: Winter		12.800	
FEH : 30 years: +35 %: 120 mins: Summer		12.800	
FEH : 30 years: +35 %: 120 mins: Winter		12.800	
FEH : 2 years: +0 %: 180 mins: Summer		12.800	
FEH : 2 years: +0 %: 180 mins: Winter		12.800	
FEH : 100 years: +40 %: 180 mins: Summer		12.800	
FEH : 100 years: +40 %: 180 mins: Winter		12.800	

FEH : 30 years: +35 %: 180 mins: Summer		12.800	
FEH : 30 years: +35 %: 180 mins: Winter		12.800	
FEH : 2 years: +0 %: 240 mins: Summer		12.800	
FEH : 2 years: +0 %: 240 mins: Winter		12.800	
FEH : 100 years: +40 %: 240 mins: Summer		12.800	
FEH : 100 years: +40 %: 240 mins: Winter		12.800	
FEH : 30 years: +35 %: 240 mins: Summer		12.800	
FEH : 30 years: +35 %: 240 mins: Winter		12.800	
FEH : 2 years: +0 %: 360 mins: Summer		12.800	
FEH : 2 years: +0 %: 360 mins: Winter		12.800	
FEH : 100 years: +40 %: 360 mins: Summer		12.800	
FEH : 100 years: +40 %: 360 mins: Winter		12.800	
FEH : 30 years: +35 %: 360 mins: Summer		12.800	
FEH : 30 years: +35 %: 360 mins: Winter		12.800	
FEH : 2 years: +0 %: 480 mins: Summer		12.800	
FEH : 2 years: +0 %: 480 mins: Winter		12.800	
FEH : 100 years: +40 %: 480 mins: Summer		12.800	
FEH : 100 years: +40 %: 480 mins: Winter		12.800	
FEH : 30 years: +35 %: 480 mins: Summer		12.800	
FEH : 30 years: +35 %: 480 mins: Winter		12.800	
FEH : 2 years: +0 %: 600 mins: Summer		12.800	
FEH : 2 years: +0 %: 600 mins: Winter		12.800	
FEH : 100 years: +40 %: 600 mins: Summer		12.800	
FEH : 100 years: +40 %: 600 mins: Winter		12.800	
FEH : 30 years: +35 %: 600 mins: Summer		12.800	
FEH : 30 years: +35 %: 600 mins: Winter		12.800	
FEH : 2 years: +0 %: 720 mins: Summer		12.800	
FEH : 2 years: +0 %: 720 mins: Winter		12.800	
FEH : 100 years: +40 %: 720 mins: Summer		12.800	
FEH : 100 years: +40 %: 720 mins: Winter		12.800	
FEH : 30 years: +35 %: 720 mins: Summer		12.800	
FEH : 30 years: +35 %: 720 mins: Winter		12.800	
FEH : 2 years: +0 %: 960 mins: Summer		12.800	
FEH : 2 years: +0 %: 960 mins: Winter		12.800	
FEH : 100 years: +40 %: 960 mins: Summer		12.800	

FEH : 100 years: +40 %: 960 mins: Winter		12.800	
FEH : 30 years: +35 %: 960 mins: Summer		12.800	
FEH : 30 years: +35 %: 960 mins: Winter		12.800	
FEH : 2 years: +0 %: 1440 mins: Summer		12.800	
FEH : 2 years: +0 %: 1440 mins: Winter		12.800	
FEH : 100 years: +40 %: 1440 mins: Summer		12.800	
FEH : 100 years: +40 %: 1440 mins: Winter		12.800	
FEH : 30 years: +35 %: 1440 mins: Summer		12.800	
FEH : 30 years: +35 %: 1440 mins: Winter		12.800	

North West Cambridge Masterplan:	Date: 14/05/2025		
	Designed by: MR	Checked by: BL	Approved By: BL
Report Title: Rainfall Analysis Criteria	Company Address:		

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

FEH

Type: FEH

Site Location	GB 542381 260322 TL 42381 60322
Rainfall Version	2013
Data Type	Point
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
2.0	0.000
100.0	40.000
30.0	35.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
180	360
240	480
360	720
480	960
600	1200
720	1440
960	1920
1440	2880