ALL CONCRETE TO BE SULPHATE RESISTANT.

TO ACEC CLASS DS4-AC4 WITHIN GAULT CLAY
TO ACEC CLASS DS2-AC2 WITHIN GRAVEL AREAS
TO ACEC CLASS DS1-AC1 IN MADE GROUND

KEY

- FOUL SEWER ADOPTABLE NETWORK
- FW_MH31 — FOUL WATER ADOPTABLE MANHOLE
- FOUL SEWER NETWORK NOT ADOPTABLE UNDER THIS CONTRACT. FOR DETAILS REFER TO TABLE BELOW.
- RISING MAIN

A THESE MANHOLES & SPURS ARE CURRENTLY NOT PART OF THE SECTION 104 WORKS.
FW_MH76 & Spur 28.000
FW_MH 79 & Spur 30.000
FW_MH 83 & SpUR 32.000

B SPURS AND MANHOLES TO FORM PART OF LOT CONTRACTORS 104 APPLICATION.

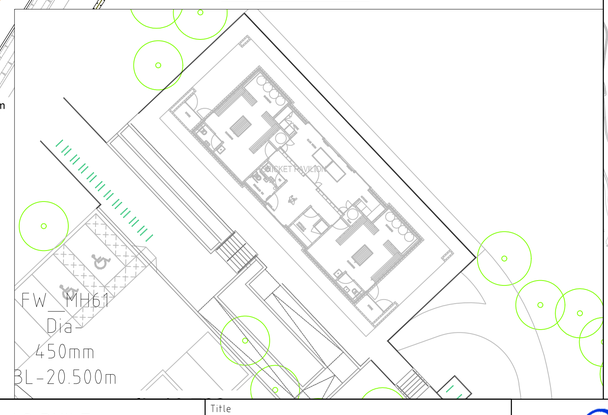
Spur Pipe935	Spur Pipe938
Spur Pipe942	Spur FW_10.000
Spur Pipe940	Spur FW_36.000
Spur Pipe936	Spur FW_26.00
Spur FW_4.000	FW_MH73
Spur FW_5.000	FW_MH92

HAZARD WARNING

- THE EXACT POSITION OF BURIED SERVICES SHALL BE CONFIRMED ON SITE PRIOR TO THE USE OF ANY MECHANICAL PLANT.
- FOR MORE DETAILED INFORMATION PLEASE REFER TO THE DESIGNERS H&S HAZARD RECORD.
- SHOULD ANY ADDITIONAL HAZARDS BE IDENTIFIED THE CONTRACTOR SHOULD NOTIFY ALL THE RELEVANT PROJECT TEAM MEMBERS.

KEY PLAN

CRICKET PAVILLION INSET (1:250)



GENERAL NOTES:

1. DO NOT SCALE FROM DRAWING, USE FIGURED DIMENSIONS ONLY.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS & ENGINEERS DRAWINGS AND SPECIFICATIONS.
3. WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE STATUTORY REQUIREMENTS.
4. APPROPRIATE MEASURES SHOULD BE TAKEN FOR WORKING IN CLOSE PROXIMITY TO DEEP EXCAVATIONS.
5. EVERYDAY OR LOW RISK HAZARDS THAT SHOULD BE OBVIOUS TO A COMPETENT CONTRACTOR.

DRAINAGE NOTES:

6. ALL WORKS TO COMPLY WITH SEWERS FOR ADOPTION 7th EDITION AND ANGLIAN WATER'S REQUIREMENTS.
7. ALL MANHOLE COVERS WITHIN TRAFFICKED AREAS TO BE CLASS D400.
8. ALL PIPE BEDDING TYPE 'S'.
9. ALL MANHOLES WILL BE CONSTRUCTED TO CONFORM TO THE SFA7 DOCUMENT PART B3 AND FIGURE B1.
10. AN APPROPRIATE ROOT BARRIER IS TO BE INSTALLED WHERE REQUIRED TO PROTECT THE DRAINAGE SYSTEM. SEE TYPICAL SECTIONS.
11. ALL TREE CANOPIES TO CONFORM TO THE REQUIREMENTS WITHIN SFA7 DOCUMENT PART B3.1.13.
12. REFER TO FOUL WATER DRAINAGE SCHEDULE NWC1-HYD-SW-050-XX-SCH-CE-0002-P26 FOR DETAILS OF PIPES AND CHAMBERS.

AS BUILT INFORMATION SHOWN ON THIS LAYOUT IS AS PROVIDED BY SKANSKA VIA ACONEX

Issue	Description	Date
Z01	AS BUILT	12-09-18
C05	AS BUILTS UPDATED FROM INFORMATION RECEIVED ON 2017-05-31	03-07-17
C04	CRICKET PAVILLION INSET ADDED - CP_FW07 IL AMENDED	29-03-17
C03	DRAINAGE LAYOUT AMENDED & SITE LAYOUT UPDATED	26-09-16
C02	DRAINAGE ANNOTATION REVISED AND NOTES ADDED	22-04-16

Client: UNIVERSITY OF CAMBRIDGE
SKANSKA NORTH WEST CAMBRIDGE DEVELOPMENT

Scales	1:500	Current Issue Signatures	
Original Size	A1	Author M.GRIFFITHS	M.Griffiths
Height Datum	DATUM	Checker P.JOHNSON	P.Johnson
Grid	GRID	Approver S.A.DAVIES	S.Davies
Filename:	NWC1-HYD-SW-050-XX-DRG-CE-0048-0052-Z02-SECTION 104 FOUL_WATER_DRAINAGE_LAYOUT.DWG	© Copyright reserved	

Status: AS BUILT
Project: NORTH WEST CAMBRIDGE

Title: FOUL WATER DRAINAGE SECTION 104 AGREEMENT (SHEET 5 OF 5)

Hyder Consulting

Hyder Consulting (UK) Limited
Manning House
22 Carlisle Place
London
SW1P 1JA
Tel: +44(0) 203 014 9000

Project No.: UA006967
Drawing Number: NWC1-HYD-SW-050-XX-DRG-CE-0052
Issue: Z01

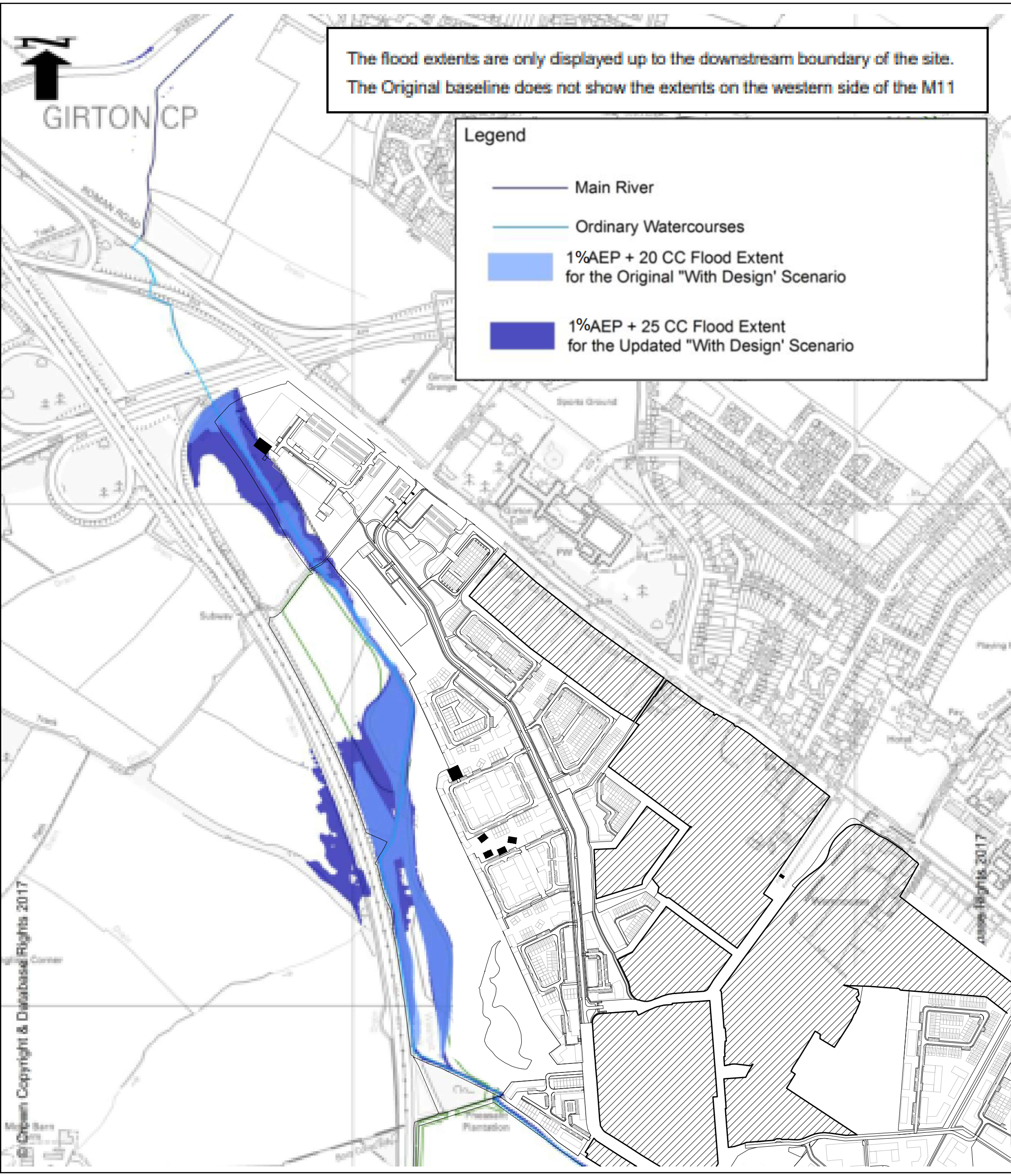
CAD FILE : V:\E-OurDrawings\CAD\050 Series\NWC1-HYD-SW-050-XX-DRG-CE-0048-0052-Z02-Section 104 Foul_Water_Drainage_Layout.dwg
PRINTED BY : PW68098 - SEPTEMBER/12/2018 - 1.53PM UPDATED BY: PW68098 - SEPTEMBER/12/2018 - 11.45AM

100mm on Original

12/Sep/2018 1:53 PM V:\E-OurDrawings\CAD\050 Series\NWC1-HYD-SW-050-XX-DRG-CE-0048-0052-Z02-Section 104 Foul_Water_Drainage_Layout.dwg

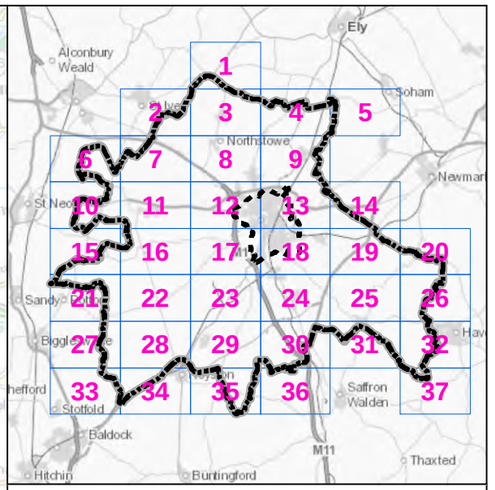
V2

Appendix E Flood Alleviation Scheme


N
GIRTON CP
The flood extents are only displayed up to the downstream boundary of the site.
The Original baseline does not show the extents on the western side of the M11
Legend
Main River
Ordinary Watercourses
1%AEP + 20 CC Flood Extent
for the Original "With Design' Scenario
1%AEP + 25 CC Flood Extent
for the Updated "With Design' Scenario
© Crown Copyright & Database Rights 2017

Appendix F SFRA Maps

Postcode	Number of Sewer Flooding Incidents		
	Internal	External	Total
CB1	3	0	3
CB10	n/a	n/a	0
CB11	n/a	n/a	0
CB2	n/a	n/a	0
CB21	0	8	8
CB22	2	4	6
CB23	2	19	21
CB24	2	10	12
CB25	1	7	8
CB3	1	2	3
CB4	0	3	3
CB5	0	1	1
CB6	n/a	n/a	0
CB7	n/a	n/a	0
CB8	n/a	n/a	0
CB9	n/a	n/a	0



Legend

Study Area

- Cambridge City Boundary
- South Cambridgeshire Boundary

Total Number of Incidents

- 0
- 1
- 2 - 5
- 6 - 10
- 11 - 15
- > 15

Notes

The Historic Sewer Flooding map uses the DG5 register provided by the sewerage company, Anglian Water, which is a record of all reported sewer flooding indicents.

The incidents are recorded on a postcode basis, therefore each coloured area represents the total number of reported incidents, both internal and external, within that postcode. The greatest number of incidents reported was 21 in the CB23 area.

Stantec

Client: GREATER CAMBRIDGE SHARED PLANNING

Greater Cambridge Integrated Water Management Study

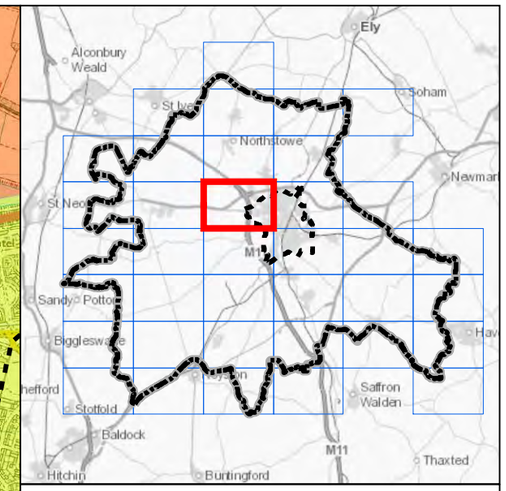
Historic Sewer Flooding

0 7.5 15 km

Sheet Number: Master

1:180,000 @ A3	Date: 26/07/2021
Drawn: MD	Checked: PJ
Figure: 48444/4005/GIS029	Rev A

Document Path: J:\48444 Greater Cambridge Water Cycle Study\GIS\Workspaces\48444 GIS029 Sewer Flooding [Master]_v2.mxd



Legend

Study Area

- Cambridge City Boundary
- South Cambridgeshire Boundary

Total Number of Incidents

- 0
- 1
- 2 - 5
- 6 - 10
- 11 - 15
- > 15

Notes

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The incidents are recorded on a postcode basis, therefore each coloured area represents the total number of reported incidents, both internal and external, within that postcode. The greatest number of incidents reported was 21 in the CB23 area.

Stantec

Client: GREATER CAMBRIDGE SHARED PLANNING

Greater Cambridge Integrated Water Management Study

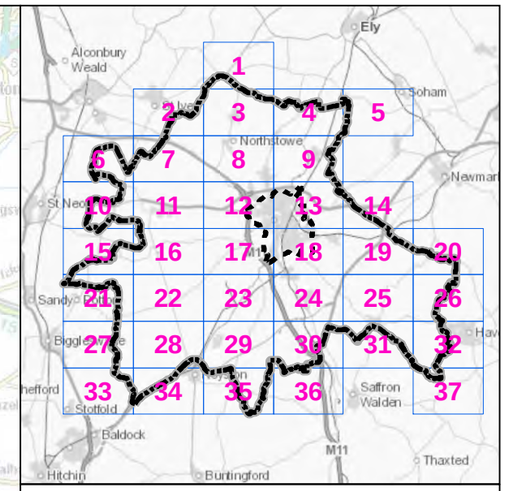
Historic Sewer Flooding

0 1 2 km

Sheet Number: 12 of 37

1:23,980 @ A3	Date: 26/07/2021
Drawn: MD	Checked: PJ
Figure: 48444/4005/GIS029	Rev A

Document Path: J:\48444 Greater Cambridge Water Cycle Study\GIS\Workspaces\48444 GIS029 Sewer Flooding_v2.mxd



Legend

Study Area

- Cambridge City Boundary
- South Cambridgeshire Boundary

Groundwater Flooding Potential

- Limited potential for groundwater flooding to occur
- Potential for groundwater flooding of property situated below ground level
- Potential for groundwater flooding to occur at surface

Notes

The Susceptibility to Groundwater Flooding dataset indicates areas where geological conditions could enable groundwater flooding to occur, whether that be close to the ground surface or at the surface. It has been produced by the British Geological Survey (BGS) and classifies the potential of groundwater flooding, based on geological and hydrogeological information, into three classes:

'Limited potential for groundwater flooding to occur';
'Potential for groundwater flooding of property situated below ground level';
'Potential for groundwater flooding to occur at surface'.

Areas not classified as any of these are not considered to be prone to groundwater flooding.

It should be noted that the data indicates susceptibility to groundwater flooding and not illustrate hazard or risk; therefore should not be used on its own to inform planning decisions at any scale.

Stantec

Client

GREATER CAMBRIDGE SHARED PLANNING

Greater Cambridge Integrated Water Management Study

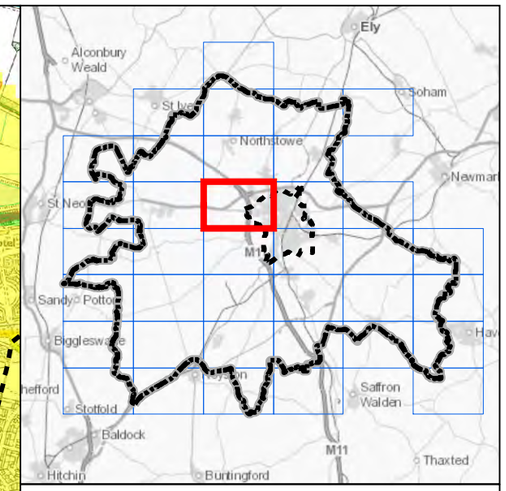
Susceptibility to Groundwater Flooding

0 7.5 15 km

Sheet Number: Master

1:180,000 @ A3	Date: 26/07/2021
Drawn: MD	Checked: PJ
Figure: 48444/4005/GIS024	Rev A

Document Path: J:\48444 Greater Cambridge Water Cycle Study\GIS\Workspaces\48444 GIS024 Groundwater Flood Risk [Master].mxd



Legend

Study Area

- Cambridge City Boundary
- South Cambridgeshire Boundary

Groundwater Flooding Potential

- Limited potential for groundwater flooding to occur
- Potential for groundwater flooding of property situated below ground level
- Potential for groundwater flooding to occur at surface

Notes

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'Limited potential for groundwater flooding to occur';
'Potential for groundwater flooding of property situated below ground level';
'Potential for groundwater flooding to occur at surface'.

Areas not classified as any of these are not considered to be prone to groundwater flooding.

It should be noted that the data indicates susceptibility to groundwater flooding and not illustrate hazard or risk; therefore should not be used on its own to inform planning decisions at any scale.

Stantec

Client: GREATER CAMBRIDGE SHARED PLANNING

Greater Cambridge Integrated Water Management Study

Susceptibility to Groundwater Flooding

0 1 2 km

Sheet Number: 12 of 37

1:23,960 @ A3	Date: 26/07/2021
Drawn: MD	Checked: PJ
Figure: 48444/4005/GIS024	Rev A

Document Path: J:\48444 Greater Cambridge Water Cycle Study\GIS\Workspaces\48444 GIS024 Groundwater Flood Risk.mxd

Appendix G PREPLANNING ENQUIRY ANGLIAN WATER

Pre-Planning Assessment Report

North West Cambridge

InFlow Reference: PPE-0217160

Assessment Type: Used Water

Report published: 13/12/2024

Thank you for submitting a pre-planning enquiry.

This has been produced for AECOM Ltd.

Your reference number is **PPE-0217160**.

This report can be submitted as a drainage strategy for the development should it seek planning permission.

If you have any questions upon receipt of this report, you can submit a further question via InFlow. Alternatively, please contact the Planning & Capacity team on **07929 786 955** or email planningliaison@anglianwater.co.uk

---

Section 1 - Proposed development

The response within this report has been based on the following information which was submitted as part of your application:

List of planned developments	
Type of development	**No. Of units**
Dwellings	6000

The anticipated residential build rate is:

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12
Build rate	50	50	50	50	50	50	50	50	50	50	50	5450

Development type: Greenfield

Planning application status: Unknown

Site grid reference number: TL4268060293

The comments contained within this report relate to the public water mains and sewers indicated on our records.

Your attention is drawn to the disclaimer in the useful information section of this report.

Section 2 - Assets affected

Our records indicate that we have the following types of assets within or overlapping the boundary of your development site as listed in the table below.

Additionally, it is highly recommended that you carry out a thorough investigation of your proposed working area to establish whether any unmapped public or private sewers and lateral drains are in existence. We are unable to permit development either over or within the easement strip without our prior consent. The extent of the easement is provided in the table below. Please be aware that the existing water mains/public sewers should be located in highway or open space and not in private gardens. This is to ensure available access for any future maintenance and repair and this should be taken into consideration when planning your site layout.

Water and Used water easement information		
Asset type	Pipe size (mm)	Total easement required (m)
Sewer mains	150	3.00 m either side of the centre line
Sewer mains	225	3.00 m either side of the centre line
Sewer mains	300	3.00 m either side of the centre line
Sewer mains	375	3.00 m either side of the centre line
Sewer mains	450	3.50 m either side of the centre line

If it is not possible to avoid our assets then these may need to be diverted in accordance with Section 185 of the Water Industry Act (1991). You will need to make a formal application if you would like a diversion to be considered.

Pumping Station

The development site is within 15 metres of a sewage pumping station. This asset requires access for maintenance and will have sewerage infrastructure leading to it. For practical reasons therefore it cannot be easily relocated.Anglian Water consider that dwellings located within 15 metres of the pumping station would place them at risk of nuisance in the form of noise, odour or the general disruption from maintenance work caused by the normal operation of the pumping station.The site layout should take this into account and accommodate this infrastructure type through a necessary cordon sanitaire, through public space or highway infrastructure to ensure that no development within 15 metres from the boundary of a sewage pumping station if the development is potentially sensitive to noise or other disturbance or to ensure future amenity issues are not created.

Due to the private sewer transfer in October 2011 many newly adopted public used water assets and their history are not indicated on our records. You also need to be aware that your development site may contain private water mains, drains or other assets not shown on our records. These are private assets and not the responsibility of Anglian Water but that of the landowner.

Section 3 - Water recycling services

In examining the used water system we assess the ability for your site to connect to the public sewerage network without causing a detriment to the operation of the system. We also assess the receiving water recycling centre and determine whether the water recycling centre can cope with the increased flow and effluent quality arising from your development.

Water recycling centre

The foul drainage from this development is in the catchment of Cambridge Water Recycling Centre which currently does not have capacity to treat the flows from the development site. Anglian Water has applied to the Environment Agency for an interim new permit to address exceedance. Please note that it is Anglian Water responsibility to take the necessary steps to ensure there is capacity to accommodate the domestic flows from the proposed development.

Our long-term plans for Cambridge WRC are linked to the Cambridge relocation project and the Development Consent Order. The new Cambridge WRC will take all existing domestic flows from current Cambridge WRC and all flows from the future growth within the WRC catchment.

We are working with Greater Cambridgeshire to understand the long-term growth figures, using the emerging local plan allocations and planning permissions. This allows us to design and deliver a new Cambridge WRC which can meet future demand.

Used water network

Our assessment has been based on development flows connecting to the nearest foul water sewer of the same size or greater pipe diameter to that required to drain the site. The infrastructure to convey foul water flows to the receiving sewerage network is assumed to be the responsibility of the developer. Conveyance to the connection point is considered as Onsite Work and includes all work carried out upstream from of the point of connection, including making the connection to our existing network.

This connection point has been determined in reference to the calculated discharge flow and on this basis, a 750mm internal diameter pipe is required to drain the development site. We have assessed your preferred connection point which is to the 1200mm sewer located in Madingley Road at National Grid reference (NGR) TL 43650 59105. Anglian Water has assessed the impact of a pumped conveyance from the planned development to the public foul sewerage network and we can confirm that this connection is acceptable as the foul sewerage system, at present, has available capacity for your site. In line with Sewers for Adoption, the pumped discharge will need to connect via an intermediate manhole and at least 5 metres of an appropriately sized gravity sewer. The pump rate and configuration of the connection will be determined with your detailed design. You should submit this detail with your Section 106 new connection application.

Due to the size of this site, we would like to understand your onsite drainage design in greater detail. Therefore, we would like to arrange a meeting to examine the available options and establish an effective strategy. Please advise our team of your availability for a meeting via Planningliaison@anglianwater.co.uk.

Please note that Anglian Water will request a suitably worded condition at planning application stage to ensure this strategy is implemented to mitigate the risk of flooding.

It is assumed that the developer will provide the necessary infrastructure to convey flows from the site to the network. Consequently, this report does not include any costs for the conveyance of flows.

Surface water disposal

You indicated on the Pre-Planning Application form that a connection to the public surface water sewer network is not required. Therefore a capacity assessment has not been made on the public surface water network.

As you may be aware, Anglian Water will consider the adoption of SuDs provided that they meet the criteria outline in our SuDs adoption manual. This can be found on our website. We will adopt features located in public open space that are designed and constructed, in conjunction with the Local Authority and Lead Local Flood Authority (LLFA), to the criteria within our SuDs adoption manual. Specifically, developers must be able to demonstrate:

1. Effective upstream source control,
2. Effective exceedance design, and
3. Effective maintenance schedule demonstrating than the assets can be maintained both now and in the future with adequate access.

If you wish to look at the adoption of any SuDs then an expression of interest form can be found on our website

As the proposed method of surface water disposal is not relevant to Anglian Water; we suggest that you contact the relevant Local Authority, Lead Local Flood Authority, the Environment Agency or the Internal Drainage Board, as appropriate.

Trade Effluent

We note that you do not have any trade effluent requirements. Should this be required in the future you will need our written formal consent. This is in accordance with Section 118 of the Water Industry Act (1991).

Used Water Budget Costs

Your development site will be required to pay an Infrastructure charge for each new property connecting to the public water and sewerage network that benefits from Full planning permission. The infrastructure charge replaces the zonal charge as previously identified.

You will be required to pay an infrastructure charge upon connection for each new plot on your development site. The infrastructure charge are types of charges set out in Section 146(2) of the Water Industry Act 1991.

The charge should be paid by anyone who wishes to build or develop a property and is payable upon request of connection.

- The Infrastructure Charge is based on the cost of any reinforcement and upgrades to our existing network ("Network Reinforcements"), whether designed to address strategic or local capacity issues. For more information on our Infrastructure Charge, please see the 'Useful Information' section of this report.

Infrastructure charges are raised on a standard basis of one charge per new connection (one for water and one for sewerage).

The Water Recycling Infrastructure charge for your dwellings is:

Infrastructure charge	Number of units	Total
£ 403	6000	£2,418,000.00

Please note that you should also budget for infrastructure charges on non-household premises where applicable and these will be calculated according to the number and type of water fittings in the premises. This is called the "relevant multiplier" method of calculating the charge and the relevant multiplier will be applied to the figures set out in our 2024-25 Developer Charging Arrangements to arrive at the amount payable. Details of the relevant multiplier for each fitting can be found on our website.

Section 4 – Map of connection point

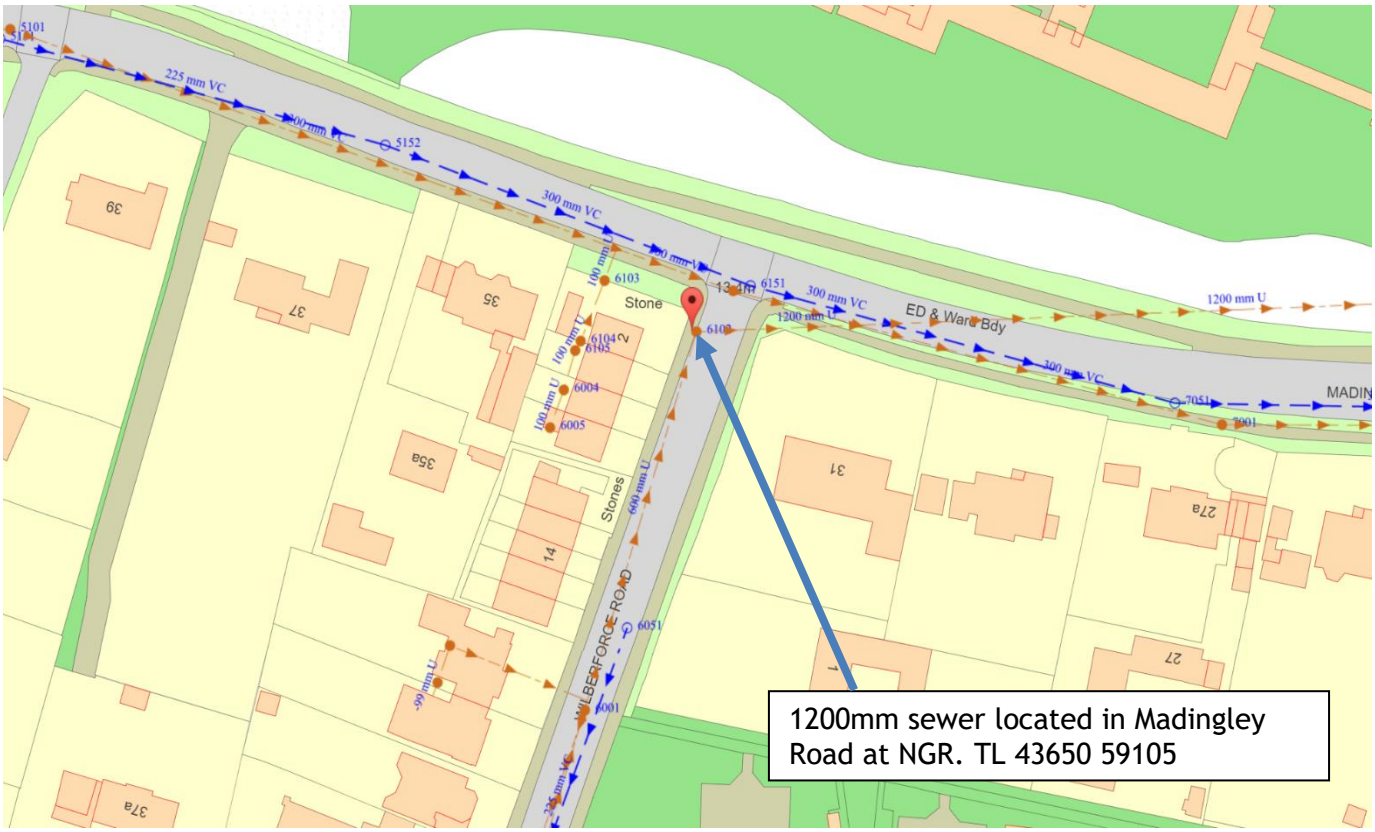

Figure 1: Showing your connection point for foul water

Section 5 - Useful information

Water Industry Act – Key used water sections

Section 98:

This provides you with the right to requisition a new public sewer. The new public sewer can be constructed by Anglian Water on your behalf. Alternatively, you can construct the sewer yourself under section 30 of the Anglian Water Authority Act 1977.

Section 102:

This provides you with the right to have an existing sewerage asset vested by us. It is your responsibility to bring the infrastructure to an adoptable condition ahead of the asset being vested.

Section 104:

This provides you with the right to have a design technically vetted and an agreement reached that will see us adopt your assets following their satisfactory construction and connection to the public sewer.

Section 106:

This provides you with the right to have your constructed sewer connected to the public sewer.

Section 185

This provides you with the right to have a public sewerage asset diverted.

Details on how to make a formal application for a new sewer, new connection or diversion are available on our website or via our Development Services team on **0345 60 66 087**.

Sustainable drainage systems

Many existing urban drainage systems can cause problems of flooding, pollution or damage to the environment and are not resilient to climate change in the long term. .

Our preferred method of surface water disposal is through the use of Sustainable Drainage Systems or SuDS.

SuDS are a range of techniques that aim to mimic the way surface water drains in natural systems within urban areas. For more information on SuDS, please visit our website

We recommend that you contact the Local Authority and Lead Local Flood Authority (LLFA) for your site to discuss your application.

Private sewer transfers

Sewers and lateral drains connected to the public sewer on the 1 July 2011 transferred into Water Company ownership on the 1 October 2011. This follows the implementation of the Floods and Water Management Act (FWMA). This included sewers and lateral drains that were subject to an existing Section 104 Adoption Agreement and those that were not. There were exemptions and the main non-transferable assets were as follows:

Surface water sewers and lateral drains that do not discharge to the public sewer, e.g. those that discharged to a watercourse.

Foul sewers and lateral drains that discharged to a privately owned sewage treatment/collection facility.

Pumping stations and rising mains will transfer between 1 October 2011 and 1 October 2016.

The implementation of Section 42 of the FWMA will ensure that future private sewers will not be created. It is anticipated that all new sewer applications will need to have an approved section 104 application ahead of a section 106 connection.

It is anticipated that all new sewer applications will need to have an approved Section104 application ahead of a Section 106 connection

Encroachment

Anglian Water operates a risk based approach to development encroaching close to our used water infrastructure. We assess the issue of encroachment if you are planning to build within 400 metres of a water recycling centre or, within 15 metres to 100 metres of a pumping station. We have more information available on our website

Locating our assets

Maps detailing the location of our water and used water infrastructure including both underground assets and above ground assets such as pumping stations and recycling centres are available from digdat

All requests from members of the public or non-statutory bodies for maps showing the location of our assets will be subject to an appropriate administrative charge.

We have more information on our website

Charging arrangements

Our charging arrangements and summary for this year's water and used water connection and infrastructure charges can be found on our website

Section 6 - Disclaimer

The information provided in this report is based on data currently held by Anglian Water Services Limited ('Anglian Water') or provided by a third party. Accordingly, the information in this report is provided with no guarantee of accuracy, timeliness, completeness and is without indemnity or warranty of any kind (express or implied).

This report should not be considered in isolation and does not nullify the need for the enquirer to make additional appropriate searches, inspections and enquiries. Anglian Water supports the plan led approach to sustainable development that is set out in the National Planning Policy Framework ('NPPF') and any infrastructure needs identified in this report must be considered in the context of current, adopted and/or emerging local plans. Where local plans are absent, silent or have expired these needs should be considered against the definition of sustainability holistically as set out in the NPPF.

Whilst the information in this report is based on the presumption that proposed development obtains planning permission, nothing in this report confirms that planning permission will be granted or that Anglian Water will be bound to carry out the works/proposals contained within this report.

No liability whatsoever, including liability for negligence is accepted by Anglian Water or its partners, employees or agents, for any error or omission, or for the results obtained from the use of this report and/or its content.

Furthermore, in no event will any of those parties be liable to the applicant or any third party for any decision made or action taken as a result of reliance on this report.

This report is valid from the date issued and the enquirer is advised to resubmit their request for an up to date report should there be a delay in submitting any subsequent application for water supply/sewer connection(s). Our pre-planning reports are valid for 12 months, however please note Anglian Water cannot reserve capacity and available capacity in our network can be reduced at any time due to increased requirements from existing businesses and houses as well as from new housing and new commercial developments.

Appendix H LLFA CORRESPONDENCE

Outlook

RE: (Pre-app Request) North West Cambridge: 2024 Masterplan - LLFA Liaison Drainage Strategy Proposals - Meeting Weds 16th Oct 10.00

From Benjamin Woolf <Benjamin.Woolf@cambridgeshire.gov.uk>
Date Wed 2025-02-19 10:54
To Limbu, Bimarsha <Bimarsha.Limbu@aecom.com>
Cc Guarniere, Stuart <stuart.guarniere@aecom.com>; Howgego, Dom <Dominic.Howgego@aecom.com>; NWC2024 <NWC2024@aecom.com>

Hello Bimarsha,

Yes we agree to the approach below in principle.
Happy to answer any questions going forward.

Kind regards,

Benjamin Woolf
SuDS and Flood Risk Officer
M: 07780 119465
Flood Risk Team

Cambridgeshire County Council

Alconbury Weald Civic Hub, Emery Crescent, Enterprise Campus, Alconbury Weald, PE28 4YE

Upcoming Leave:

From: Limbu, Bimarsha <Bimarsha.Limbu@aecom.com>
Sent: 19 February 2025 09:08

To: Benjamin Woolf <Benjamin.Woolf@cambridgeshire.gov.uk>
Cc: Guarniere, Stuart <stuart.guarniere@aecom.com>; Howgego, Dom <Dominic.Howgego@aecom.com>; NWC2024 <NWC2024@aecom.com>
Subject: RE: (Pre-app Request) North West Cambridge: 2024 Masterplan - LLFA Liaison Drainage Strategy Proposals - Meeting Weds 16th Oct 10.00

Hi Ben,

Thankyou for your time yesterday.

As discussed, AECOM is currently preparing the flood risk assessment to support the new OPA. The vast majority of the Site is in Flood Zone 1. A small area northwest of the Site is in Flood Zone 2, however, no habitable buildings are proposed within Flood Zone 2. A flood alleviation scheme comprising of a two-stage channel with flow control structure running parallel to the Washpit Brook within the Site was fully implemented as part of the Phase 1 works to ensure that the completed development in its entirety does not result in increased flooding. AECOM undertook fluvial modelling of the Washpit Brook with the updated climate change factors in line with the current gov.uk climate change guidance. The model showed the flood alleviation scheme still provided betterment to downstream flood risk. The FRA will be prepared based on this implemented flood alleviation scheme reducing flood risk and the fluvial modelling results will be submitted as part of the assessment.

Please let us know if you are in agreement with the approach outlined above?

Kind Regards,

Bimarsha Limbu, MEng CEng MICE
Principal Engineer, Infrastructure, Buildings and Places
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M +44-(0)75-5252-0382
bimarsha.limbu@aecom.com

From: Benjamin Woolf <Benjamin.Woolf@cambridgeshire.gov.uk>
Sent: 13 February 2025 13:14
To: Limbu, Bimarsha <Bimarsha.Limbu@aecom.com>
Cc: Guarniere, Stuart <stuart.guarniere@aecom.com>; Howgego, Dom <Dominic.Howgego@aecom.com>; NWC2024 <NWC2024@aecom.com>
Subject: RE: (Pre-app Request) North West Cambridge: 2024 Masterplan - LLFA Liaison Drainage Strategy Proposals - Meeting Weds 16th Oct 10.00

Thank you, see you then.

Kind regards,
Ben

From: Limbu, Bimarsha <Bimarsha.Limbu@aecom.com>
Sent: 13 February 2025 13:01
To: Benjamin Woolf <Benjamin.Woolf@cambridgeshire.gov.uk>
Cc: Guarniere, Stuart <stuart.guarniere@aecom.com>; Howgego, Dom <Dominic.Howgego@aecom.com>; NWC2024 <NWC2024@aecom.com>

Subject: RE: (Pre-app Request) North West Cambridge: 2024 Masterplan - LLFA Liaison Drainage Strategy Proposals - Meeting Weds 16th Oct 10.00

Hi Benjamin,

Tuesday 2pm works. I'll send out a Teams invite shortly.

Kind Regards,

Bimarsha Limbu, MEng CEng MICE
Principal Engineer, Infrastructure, Buildings and Places
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From: Benjamin Woolf <Benjamin.Woolf@cambridgeshire.gov.uk>
Sent: 13 February 2025 12:58
To: Limbu, Bimarsha <Bimarsha.Limbu@aecom.com>
Cc: Guarniere, Stuart <stuart.guarniere@aecom.com>; Howgego, Dom <Dominic.Howgego@aecom.com>; NWC2024 <NWC2024@aecom.com>
Subject: RE: (Pre-app Request) North West Cambridge: 2024 Masterplan - LLFA Liaison Drainage Strategy Proposals - Meeting Weds 16th Oct 10.00

Hello Bimarsha,

Can we go for the Tuesday at 2pm?

Kind regards,

Benjamin Woolf
SuDS and Flood Risk Officer
M: 07780 119465
Flood Risk Team

Cambridgeshire County Council

Alconbury Weald Civic Hub, Emery Crescent, Enterprise Campus, Alconbury Weald, PE28 4YE

Upcoming Leave:

North West Cambridge Masterplan

Initial Meeting with the LLFA

16th October 2024.

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Meeting Overview

Proposed Agenda

1. Introductions
2. Masterplan context and relationship to existing scheme
3. Flood risk and drainage background (previous consented scheme)
4. Proposed Surface Water Drainage Strategy
    a. Key points and what's changed
    b. Non-potable water
    c. Catchment areas
    d. Discharge rates
    e. Surface water detention at Western Edge
    f. Climate Change Allowance
5. AOB

Intended outcomes

LLFA familiarity with, and endorsement of, broad strategy principles and key elements (to be discussed as part of the meeting).

To identify any key points for further liaison and agree forward communication with the LLFA.

Masterplan context

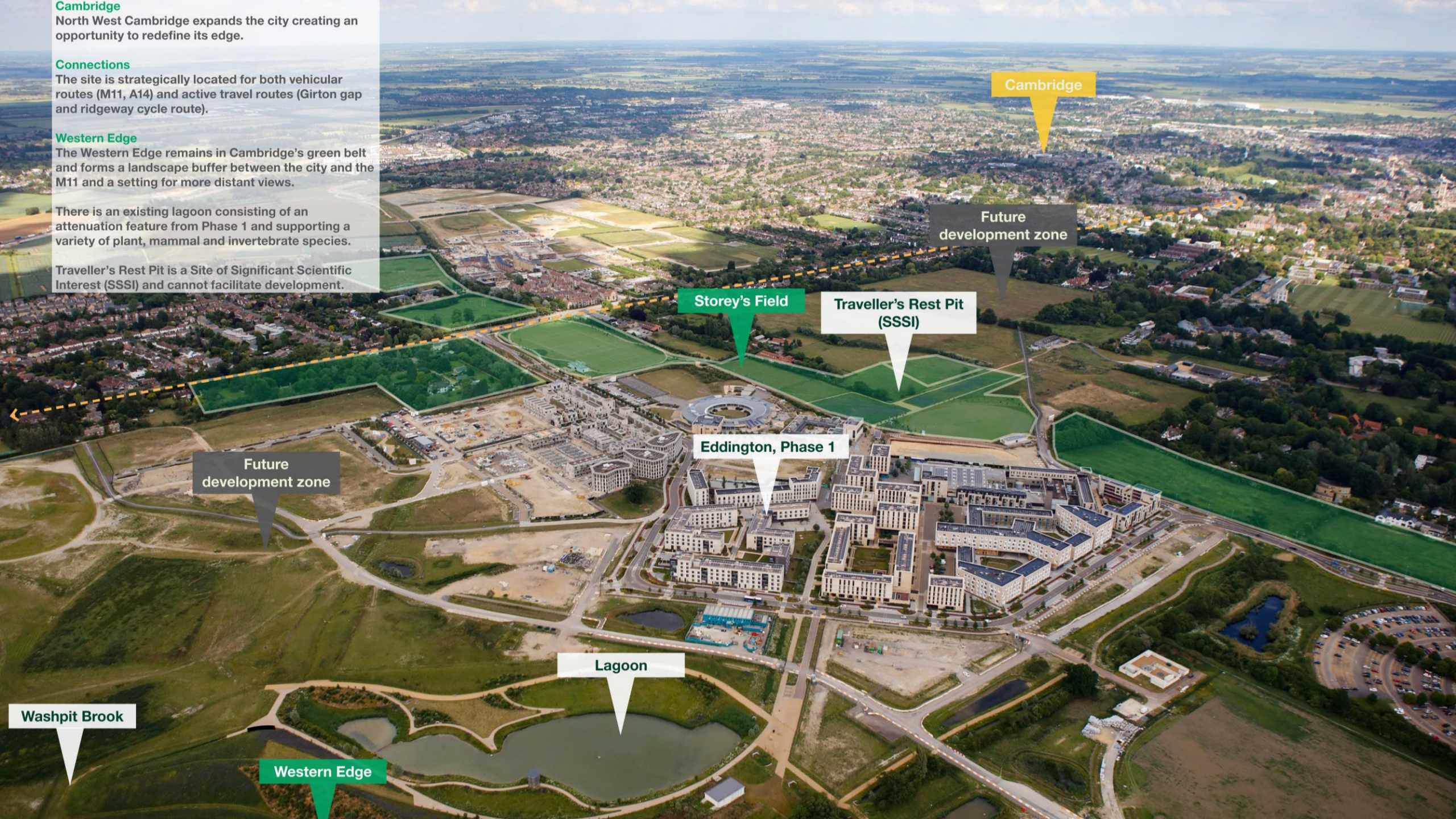
Cambridge
North West Cambridge expands the city creating an opportunity to redefine its edge.

Connections
The site is strategically located for both vehicular routes (M11, A14) and active travel routes (Girton gap and ridgeway cycle route).

Western Edge
The Western Edge remains in Cambridge's green belt and forms a landscape buffer between the city and the M11 and a setting for more distant views.

There is an existing lagoon consisting of an attenuation feature from Phase 1 and supporting a variety of plant, mammal and invertebrate species.

Traveller's Rest Pit is a Site of Significant Scientific Interest (SSSI) and cannot facilitate development.



Allocated site for 3,000 dwellings (student accommodation, employment, retail and community uses).

Benefits from existing although largely lapsed planning permissions.

Principle of development established.

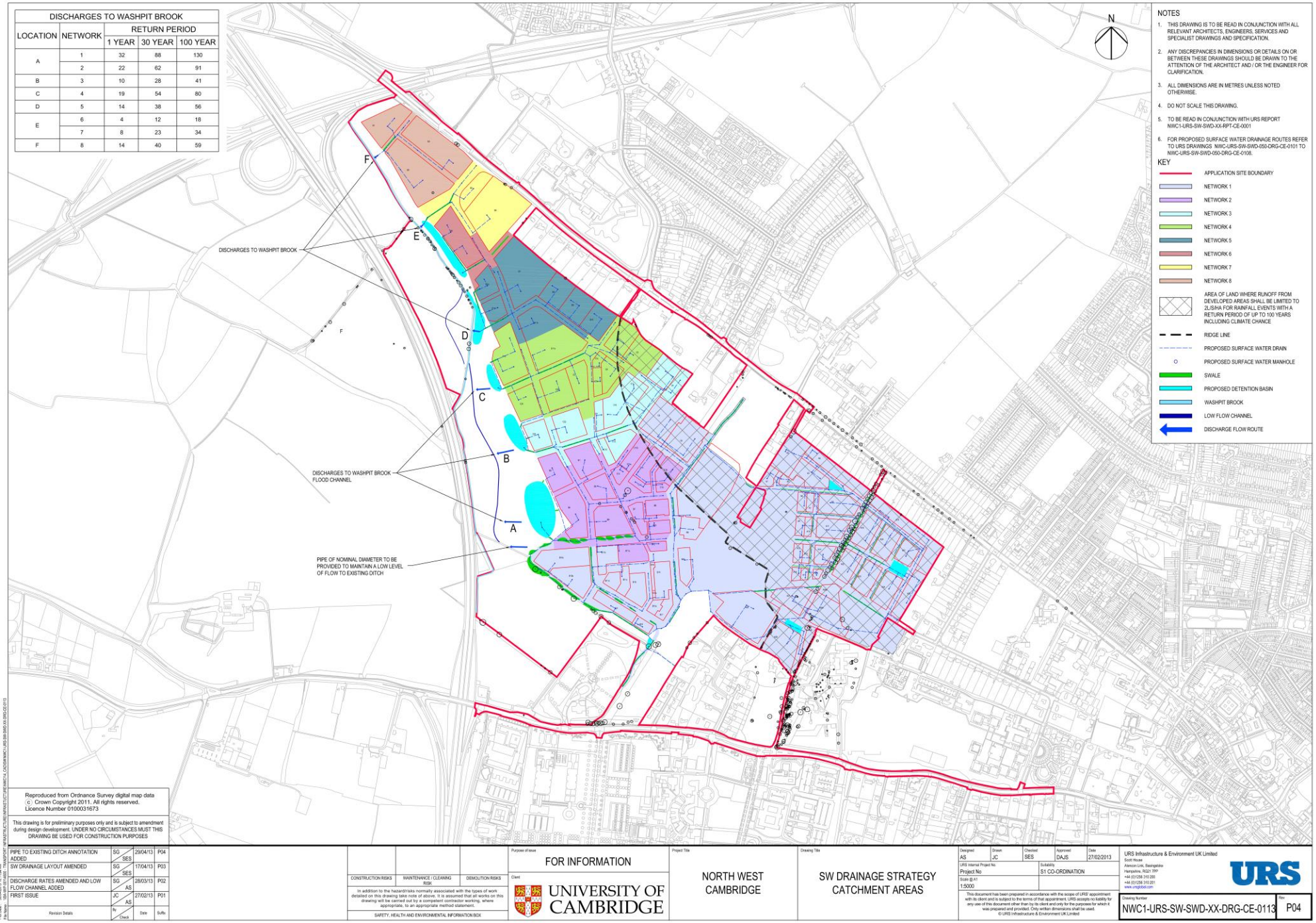
Phase 1 (1800 dwellings).

Proposals seek an uplift to between 4,500 and 6000 dwellings, subject to testing of design typologies and infrastructure constraints.

Flood risk and drainage background


Hungtindon Road
M-11
Phase 1


Pheasant



DISCHARGES TO WASHPIT BROOK				
LOCATION	NETWORK	RETURN PERIOD		
		1 YEAR	30 YEAR	100 YEAR
A	1	32	88	130
	2	22	62	91
B	3	10	28	41
C	4	19	54	80
D	5	14	38	56
E	6	4	12	18
	7	8	23	34
F	8	14	40	59

Revision	Details	By / Check	Date	Suffix
P04	PIPE TO EXISTING DITCH ANNOTATION ADDED	SG / SES	29/04/13	P04
P03	SW DRAINAGE LAYOUT AMENDED	SG / SES	17/04/13	P03
P02	DISCHARGE RATES AMENDED AND LOW FLOW CHANNEL ADDED	SG / AS	28/03/13	P02
P01	FIRST ISSUE	JC / AS	27/02/13	P01

CONSTRUCTION RISKS | MAINTENANCE / CLEANING RISK | DEMOLITION RISKS

In addition to the hazard/risks normally associated with the types of work detailed on this drawing take note of above. It is assumed that all works on this drawing will be carried out by a competent contractor working, where appropriate, to an appropriate method statement.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

Designed	Drawn	Checked	Approved	Date
AS	JC	SES	DAJS	27/02/2013

URS Internal Project No: Project No
Suitability: S1 CO-ORDINATION
Scale @ A1: 1:5000

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Drawing Number: NWC1-URS-SW-SWD-XX-DRG-CE-0113
Rev: P04

Key Points

Consented and implemented scheme:

Flood risk scheme implemented for Washpit Brook.

On plot attenuation with discharge rates controlled to swale system (“green fingers”)

Western edge attenuation prior to discharge at agreed rates to Washpit Brook.

Non potable on site storage via lagoons for phase 1.

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Proposed Drainage Strategy

PROPOSED SURFACE WATER DRAINAGE STRATEGY

Key Points

Masterplan Drainage Strategy

On plot attenuation with discharge rates controlled to swale system (“green fingers”).

Western edge attenuation prior to discharge at agreed rates to Washpit Brook.

Non potable on plot storage via tanked system.

Key Elements.

a. Surface water runoff to discharge to Washpit Brook via a number of outfalls.

b. Discharge rates limited to greenfield at 2 l/s/ha where future plots are also to be restricted to 2 l/s/ha.

c. Discharge rate and attenuation calculation based on developable area only.

d. Surface water runoff to be restricted at both plot level (with on plot attenuation) and at Western Edge (attenuated volume to be detained along the Western Edge prior to discharge to Washpit Brook).

e. Use of FEH rainfall data.

f. Reference to gov.uk guidance for climate change allowances for both peak rainfall and river flow.

Minutes

Meeting name
North West Cambridge LLFA Liaison

Meeting date
16.10.24

Location
MS Teams

AECOM project number
60732815

Subject
Emerging Surface Water Drainage Strategy

Time
10.00

Project name
North West Cambridge Masterplan

Prepared by
Dom Howgego

Attendees
Benjamin Woolfe, LLFA (Cambs CC)
Rebecca Saunt, Planning Team, UoC.
Sophie Butler, Planning, QUOD
Stuart Guarniere, Engineering, AECOM
Bimarsha Limbu, Drainage Lead, AECOM
Dom Howgego, Project Manager, AECOM

Circulation list
Guy Wilson, Planning Officer, CCC
Matt Sherwood, Planning Lead, QUOD
Gemma Bushell, Project Manager, Turner and Townsend.

Ref	Notes	Initial
01	Following introductions, the general scheme context was outlined. BW confirmed that he had not previously had an involvement North West Cambridge (NWC). The Planning Officer is Guy Wilson (Greater Cambridge Planning). An initial project pre-application meeting has taken place and DH noted that there is some useful context and initial planning feedback available. The project was introduced through the attached slide pack. The supporting description below is quoted from planning correspondence in response to the first pre application meeting: The site is allocated for development under the North West Cambridge Area Action Plan (NWCAAP) and benefits from existing, albeit largely lapsed, planning permissions. As such the principle of development of the site is established. The site is allocated for approximately 3,000 dwellings, alongside other uses. The proposals seek a significant uplift, taking the total number of dwellings to between 4,500 and 6,000, with the final figure to be derived through testing of proposed design typologies and infrastructure constraints. Whilst this would not accord with the site allocation, national policy advocates the efficient use of land, and (whilst at an early stage) the emerging joint Local Plan includes an uplift of approximately 1,500 homes as part of its strategy for meeting housing needs. Furthermore, the government has indicated support for a significant increase in housing delivery in the Cambridge area to support growth. On this basis, the general principle of densification of the site is accepted, subject to testing design typologies and understanding infrastructure constraints to determine the site's capacity.	**Display**
02	The balance of the Masterplan at North West Cambridge is programmed to be submitted for an Outline Planning Application in Q3 2025. The purposes of this initial introductory meeting with the LLFA is as outlined in the slide deck.	
03	SG ran through the Phase 1 (now implemented) flood risk and drainage strategy. The key points are on the slide deck. It was noted that the consented flood risk management scheme is now complete and operational and is designed to cater for the entire development footprint. Attenuation was provided on plot and at the Western Edge, prior to discharging at agreed rates to the Washpit Brook. A swale system conveyed attenuated flows from plots to the western edge. Non potable on site storage was via Lagoons for Phase 1.	
04	Three key points were highlighted in respect of the planned drainage strategy for the balance of the Masterplan (also with reference to the slide deck). a) The principles of the drainage strategy are following the consented strategy. On plot attenuation / swale system / western edge attenuation prior to discharge at agreed rates to the Washpit Brook (at a number of locations).	

Ref	Notes	Initial
	b) It is noted that a number of parameters have changed since the previous consent (such as climate change allowances) and these are being considered appropriately as part of the emerging strategy. Please refer to the list on the slide deck. c) For the balance of the masterplan non potable water storage is proposed to be on plot.	
05	BW noted that consideration needs to be given to maintenance routes and access to drainage infrastructure on the western edge and that any permanent water bodies should be considered in impermeable area calculations (this was noted).	
06	The proposals were well received in the meeting by BW. DH requested some written feedback with an endorsement of the principles as far as possible at this stage. BW noted that the LLFA would respond accordingly and include relevant written guidance.	**BW**
07	It was noted that further liaison with a more detailed proposal maybe appropriate and AECOM would advise and update the LLFA accordingly. BW noted small queries could be responded to as needed by the LLFA. Please note for the avoidance of doubt no liaison is currently planned with the Environment Agency.	**DH/BL**

North West Cambridge

Meeting with the LLFA

11th December 2024

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Meeting Overview

Proposed Agenda

1. Introductions
2. Update on development scheme
3. Surface Water Drainage Strategy Update
4. AOB

Intended outcomes

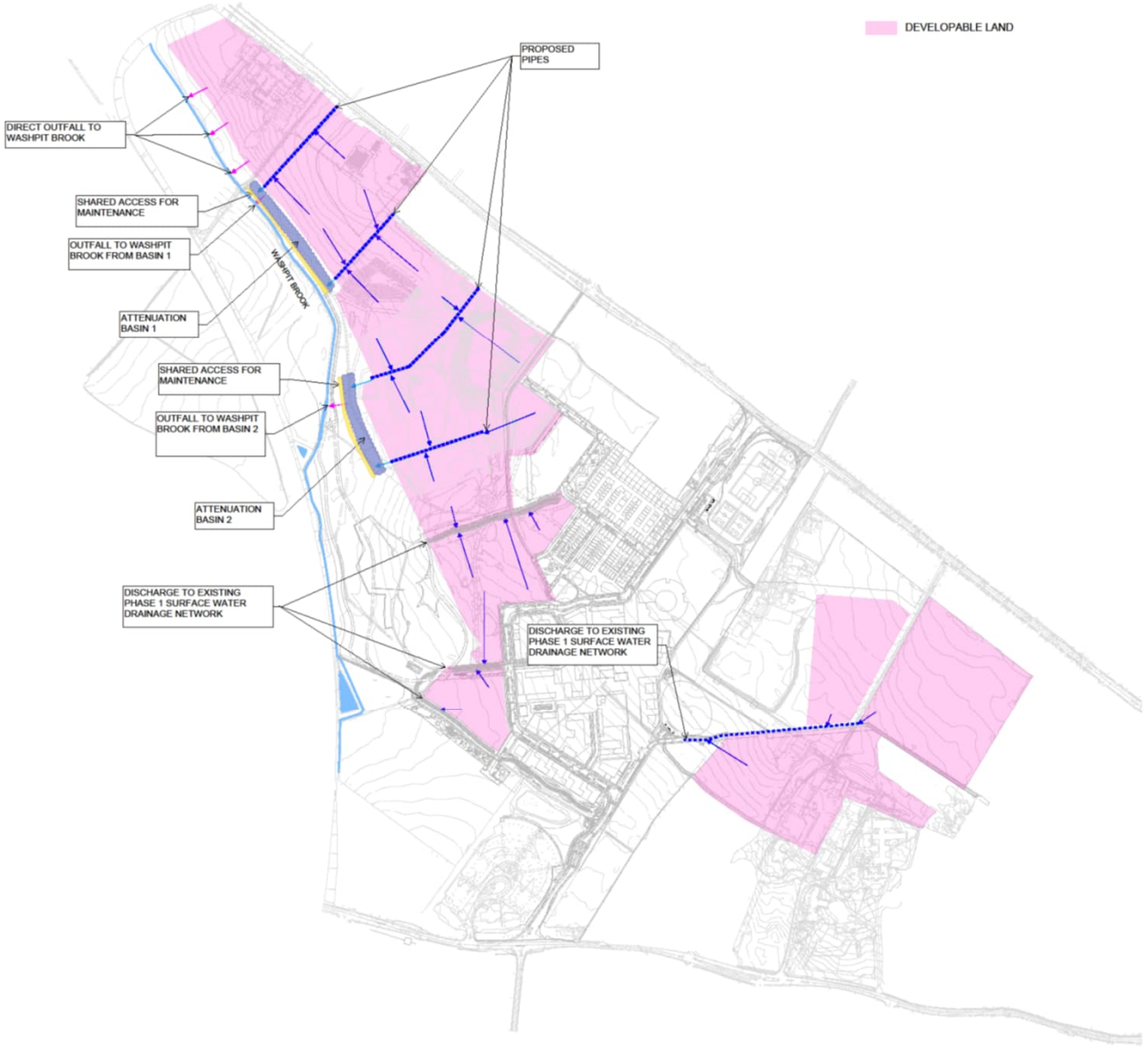
1. Confirmation of the proposed design parameters and proposal presented

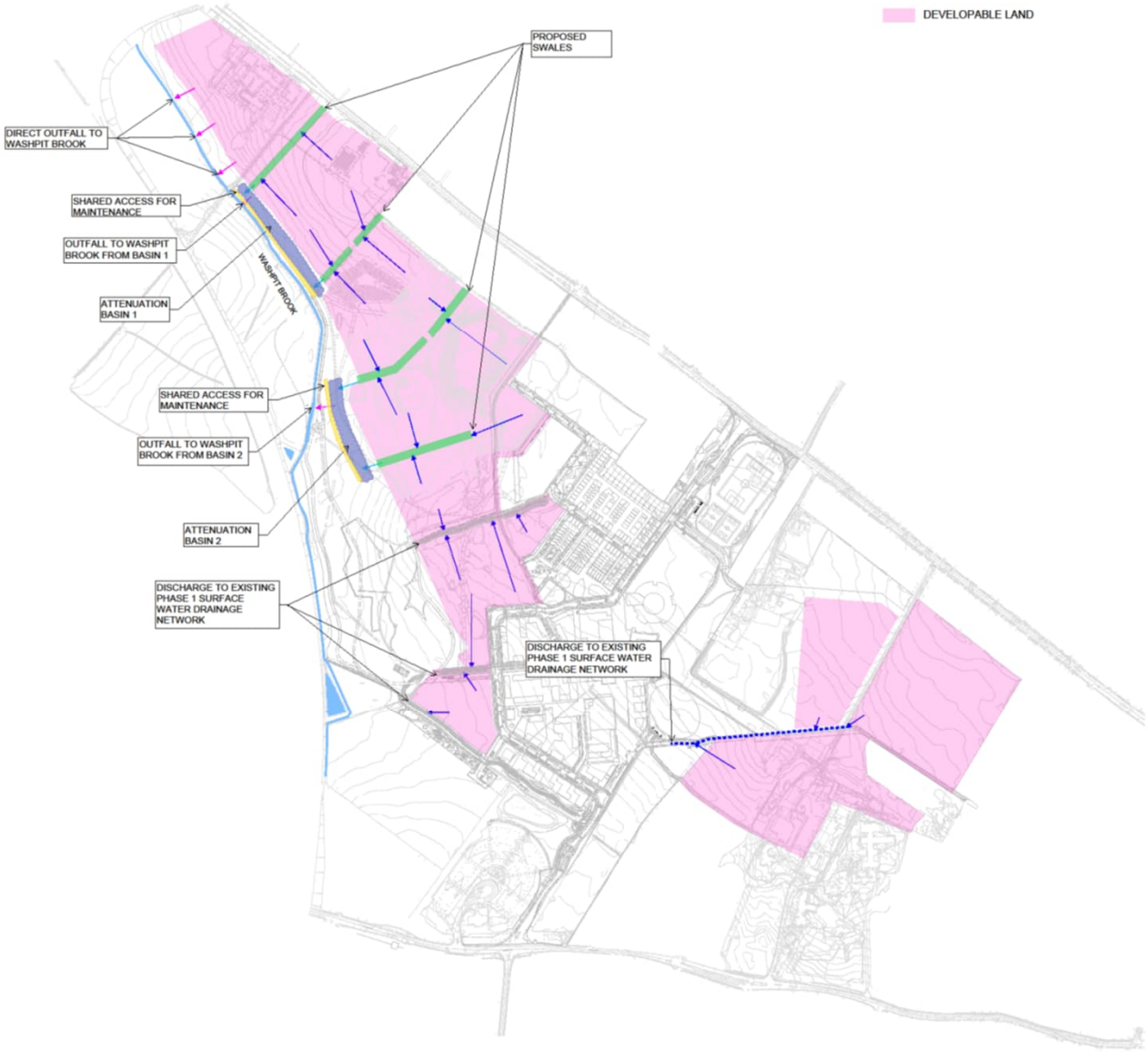
Proposed Development Scheme Update

- Proposals seek an uplift to between 4500 and 6000 dwellings, student accommodation, employment, retail and community use subject to testing of design typologies and infrastructure constraints.

- Masterplan layout currently being developed

- Additional pre-application discussions undertaken with the planning officer


DEVELOPABLE LAND
PROPOSED PIPES
DIRECT OUTFALL TO WASHPIT BROOK
SHARED ACCESS FOR MAINTENANCE
OUTFALL TO WASHPIT BROOK FROM BASIN 1
WASHPIT BROOK
ATTENUATION BASIN 1
SHARED ACCESS FOR MAINTENANCE
OUTFALL TO WASHPIT BROOK FROM BASIN 2
ATTENUATION BASIN 2
DISCHARGE TO EXISTING PHASE 1 SURFACE WATER DRAINAGE NETWORK
DISCHARGE TO EXISTING PHASE 1 SURFACE WATER DRAINAGE NETWORK


DEVELOPABLE LAND
PROPOSED SWALES
DIRECT OUTFALL TO WASHPIT BROOK
SHARED ACCESS FOR MAINTENANCE
OUTFALL TO WASHPIT BROOK FROM BASIN 1
WASHPIT BROOK
ATTENUATION BASIN 1
SHARED ACCESS FOR MAINTENANCE
OUTFALL TO WASHPIT BROOK FROM BASIN 2
ATTENUATION BASIN 2
DISCHARGE TO EXISTING PHASE 1 SURFACE WATER DRAINAGE NETWORK
DISCHARGE TO EXISTING PHASE 1 SURFACE WATER DRAINAGE NETWORK

Proposed 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 is proposed to be conveyed via swales or pipe network.

Design Parameters

- Surface water runoff rate will be restricted to 2 l/s/ha prior to discharge to Washpit Brook.

- Individual plots will be restricted to greenfield runoff rate 2 l/s/ha prior to discharge to the sitewide drainage network.

- FEH rainfall data used and therefore, return period of 2 year is used a minimum.

- Surface water attenuation will be provided for up to 1 in 100 year + 40% climate change over 24-hour duration.

Western Edge Attenuation and Outfall to Washpit Brook

- Attenuation basin of up to 650mm depth and 1 in 3 side slopes.

- A 4m wide shared path for maintenance access to the basin and public access is proposed adjacent to the basin.

- Outfall to the Washpit Brook will be kept as shallow as possible to remain above the peak flood water level of the Washpit Brook to maintain free discharge. Where this is not possible and the outfall is submerged, attenuation basin within the Western Edge will allow for the volume of surface water to be held back until such time where free discharge can be achieved.

- Non return/valves will be proposed to prevent backflow.

AOB

Minutes

Meeting name
North West Cambridge LLFA Liaison

Meeting date
11.12.24

Location
MS Teams

Subject
Emerging Surface Water Drainage Strategy

Time
9.00

Project name
North West Cambridge Masterplan

Document number
60732815

Prepared by
Bimarsha Limbu

Attendees
Benjamin Woolfe, LLFA (Cambs CC)
Sophie Butler, Planning, QUOD
Stuart Guarniere, Engineering, AECOM
Bimarsha Limbu, Drainage Lead, AECOM
Dom Howgego, Project Manager, AECOM

Circulation List
Guy Wilson, Planning Officer, CCC
Matt Sherwood, Planning Lead, QUOD
Rebecca Saunt, Planning Team, UoC
Gemma Bushell, Project Manager, Turner and Townsend.

Ref	Notes	Initial
01	A general update on the project was provided. The masterplan is currently being developed and further pre-application discussions have been undertaken.	
02	A presentation of progress was tabled. The surface water drainage strategy is being developed in parallel with the emerging masterplan. There are a number of competing demands for external space within the site, including the need to manage level differences across the footprint. Balancing drainage objectives with landscape and amenity provision is one example. To support this, two extreme options from a spatial perspective have been assessed which include: a) Surface water conveyance via a piped network from the Site to the Western Edge b) surface water conveyance via swales from the Site to the Western Edge For both options, the surface water runoff is still proposed to be restricted at the Western Edge prior to discharge to the Washpit Brook at greenfield runoff rate of 2 l/s/ha with individual plots also restricted at greenfield runoff rate of 2l/s/ha prior to discharging to the sitewide drainage network. The above options are modelled mainly to demonstrate that they work from technical and hydraulic perspective. SG highlighted that whilst the proposed pipe network results in needing additional form of surface water treatment, it provides additional space at ground level for landscaping and amenity areas. 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. The strategy will include two stages of treatment prior to discharge to the Washpit Brook. BW queried on the use of permeable paving to provide surface water treatment. BL/SG noted these will be considered as the strategy gets developed and as part of the future plot detailed design. SG noted that permeable paving would need to be tanked due to underlying geology (Gault Clay).	
03	BL provided a summary of the design parameters used as per the slides. BL noted a minimum of 2-year rainfall event is used as FEH rainfall data is being used. BW advised this is acceptable.	
04	Attenuation basins will be provided along the Western Edge to store the surface water runoff and restrict to greenfield runoff rate. Adjacent maintenance access provision was shown in the presentation and noted in the discussions. The outfall to the Washpit Brook will be kept as shallow as possible. Where this is not possible and the outfall is submerged below the peak flood water level of the brook, the storage within the Western Edge will allow for the volume of surface water to be held back during the submerged condition until free discharge can be achieved. SG also highlighted that the proposed plot levels are significantly higher than the peak flood water level.	

Ref	Notes	Initial
05	BW noted on the requirement to consider exceedance flow paths. SG confirmed overland flow rates will be considered as the design is developed.	
06	SG queried whether liaison with the Environment Agency (EA) is required to notify of the consultation being undertaken with the LLFA. BW advised he'll confirm and provide contact detail for the EA.	**BW**
07	In general terms BW was accepting and supportive of the principles put forward in the discussion.	

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?

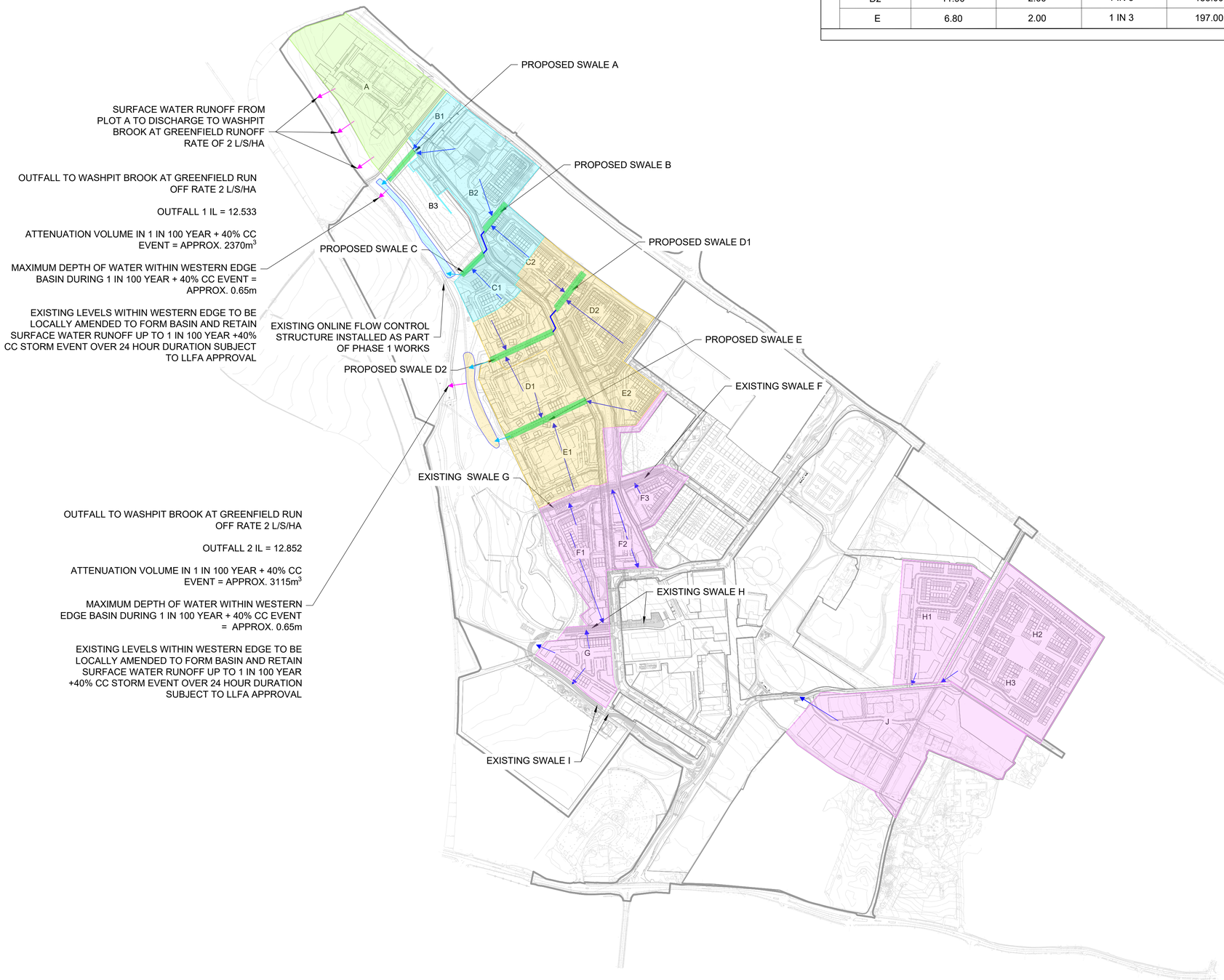
Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

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

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

AECOM

PROJECT

NORTH WEST CAMBRIDGE
2024+ INFRASTRUCTURE

CLIENT

UNIVERSITY OF CAMBRIDGE

CONSULTANT

AECOM Ltd
Aldgate Tower, 2 Leman Street
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www.aecom.com

GENERAL NOTES

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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 MASTERPLAN PP9-10009 - ILLUSTRATIVE MASTERPLAN_250410 RECEIVED 11/04/2025.
7. DRAINAGE DESIGN IS BASED ON GRANT ASSOCIATES PROPOSED LEVELS RECEIVED ON 20.11.2024. DRAINAGE DESIGN INCLUDING ATTENUATION EXTENT IS SUBJECT TO FINALISED LANDFORM AND SITEWIDE LEVELS.

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 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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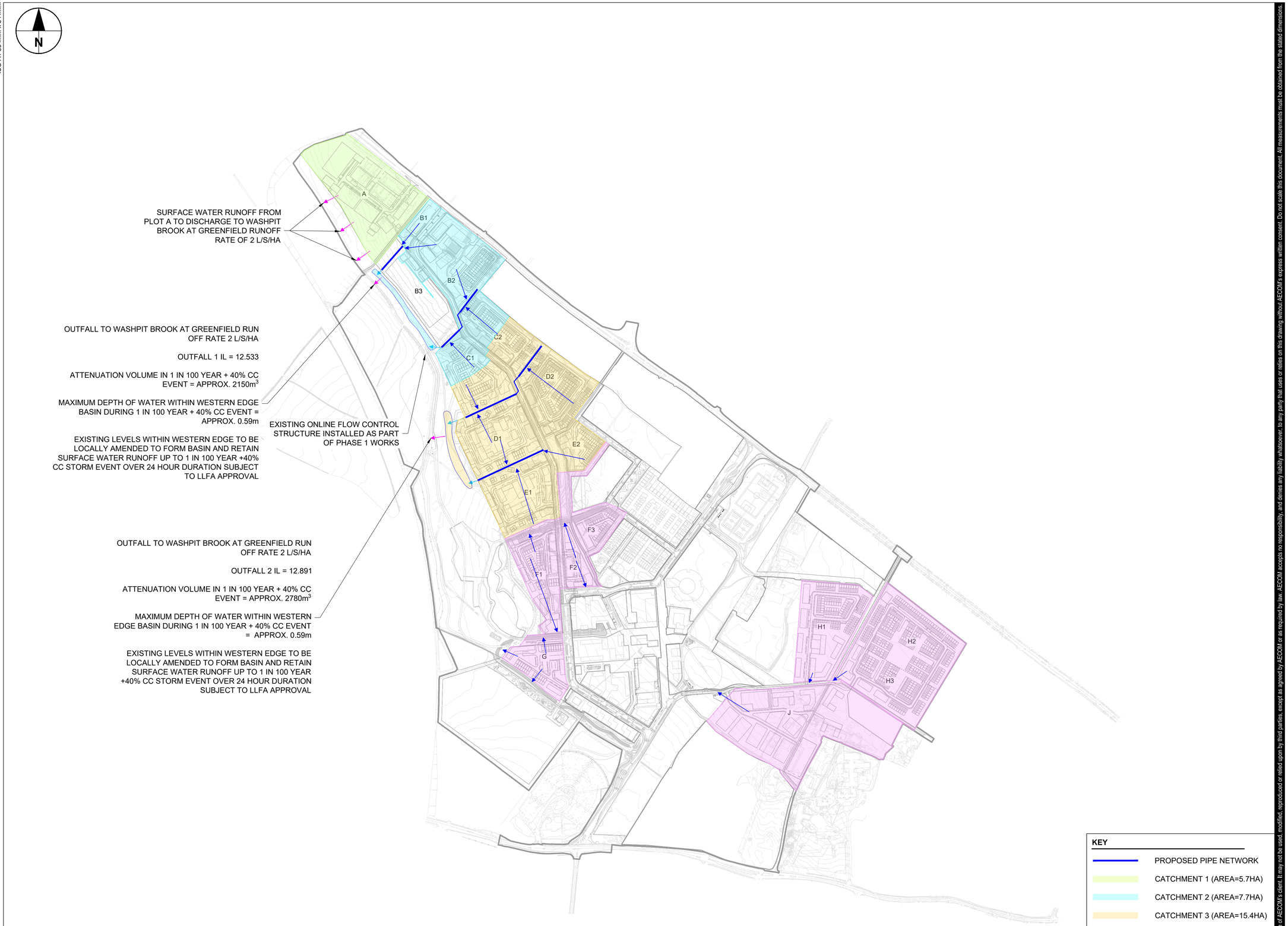

ISO A1 594mm x 841mm

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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AECOM

PROJECT

NORTH WEST CAMBRIDGE 2024+ INFRASTRUCTURE

CLIENT

UNIVERSITY OF CAMBRIDGE

CONSULTANT

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GENERAL NOTES

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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.
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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

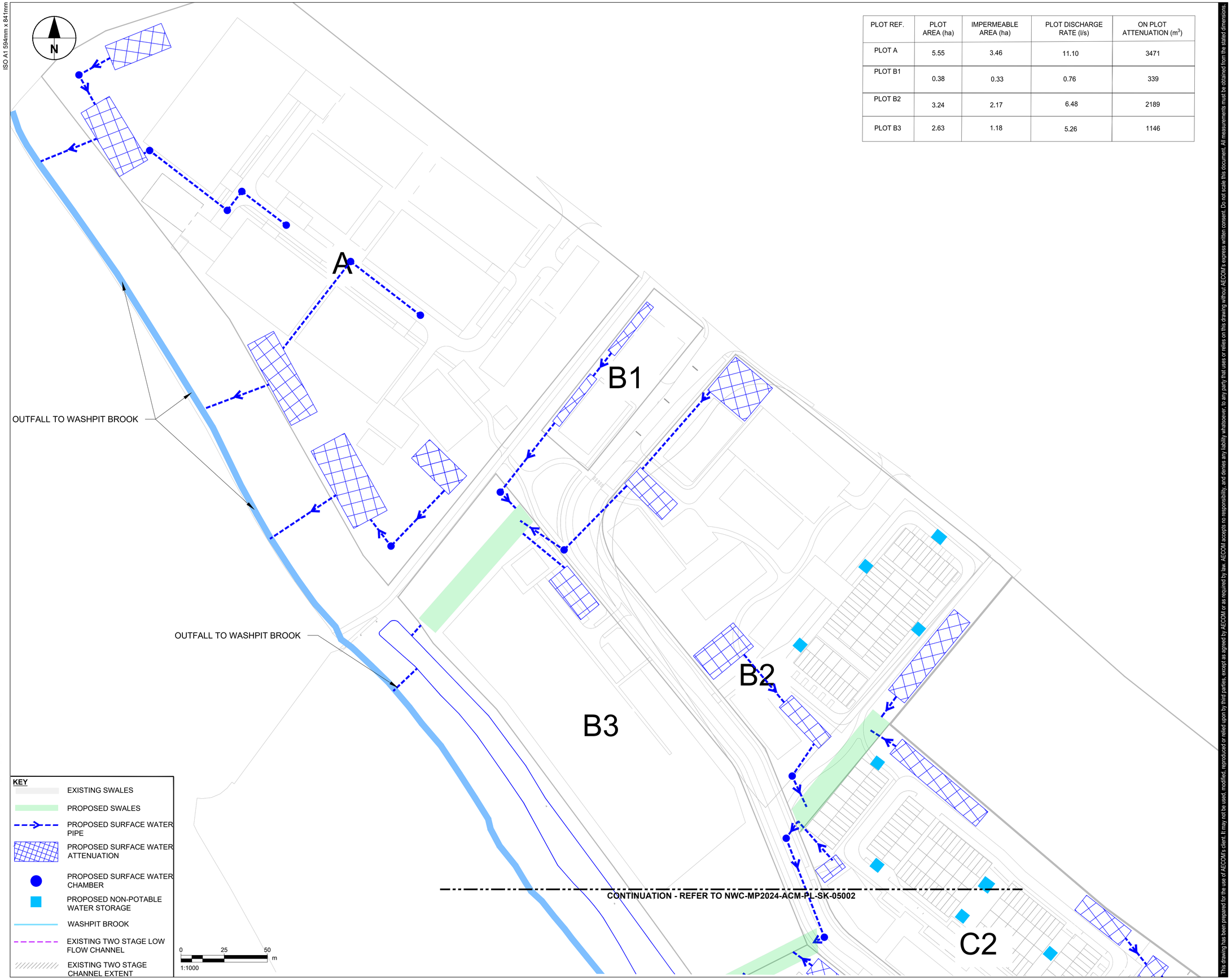
60732815

SHEET TITLE

SURFACE WATER DRAINAGE OPTION 2 - PIPE NETWORK

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

REV P02



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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PROJECT

NORTH WEST CAMBRIDGE
2024+ INFRASTRUCTURE

CLIENT

UNIVERSITY OF CAMBRIDGE

CONSULTANT

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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.

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P02	16/05/25	UPDATED MASTERPLAN
P01	10/12/24	First Issue

PURPOSE OF ISSUE

FOR INFORMATION

SCALE 1:1000

SUITABILITY S0

PROJECT NUMBER

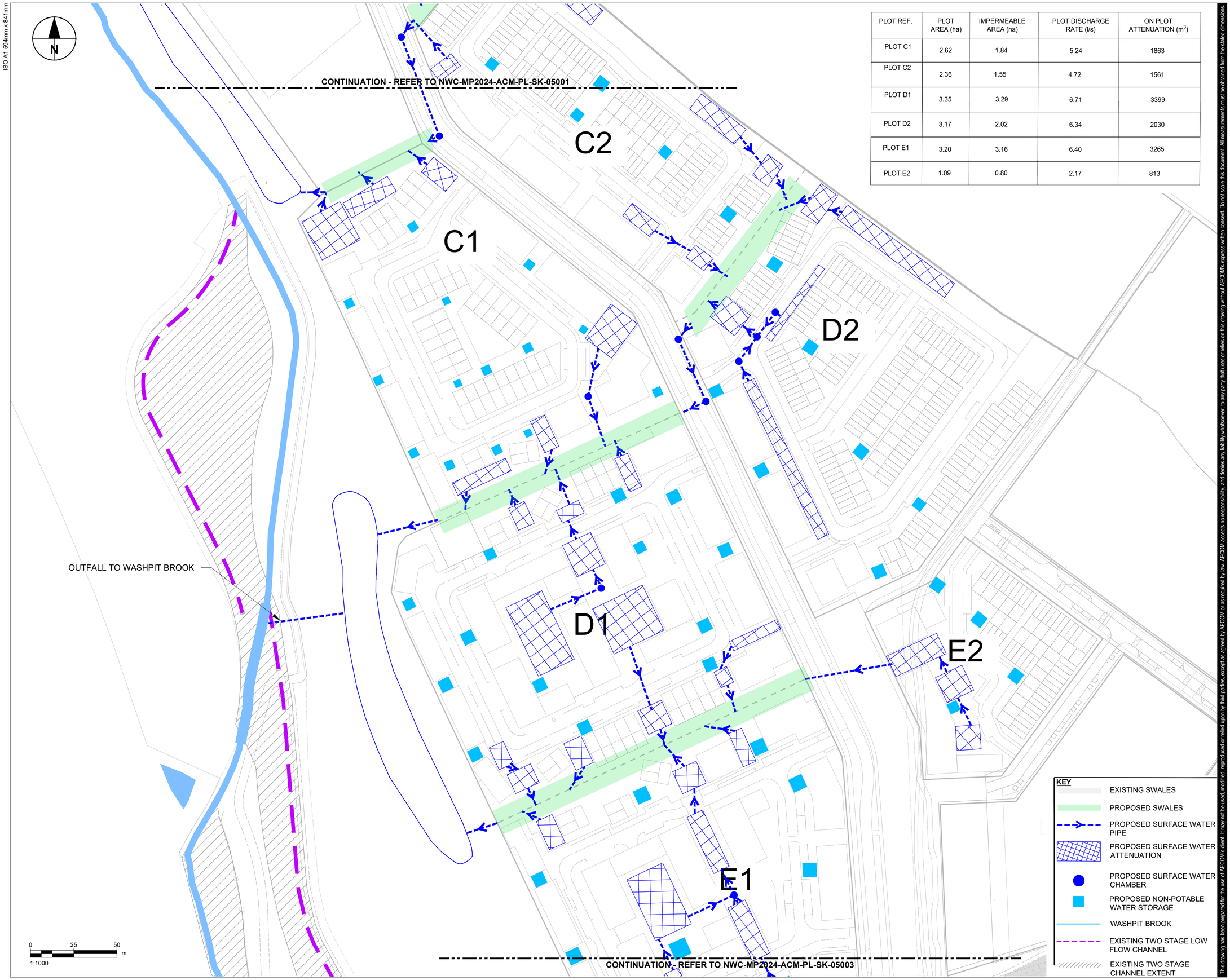
60732815

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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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

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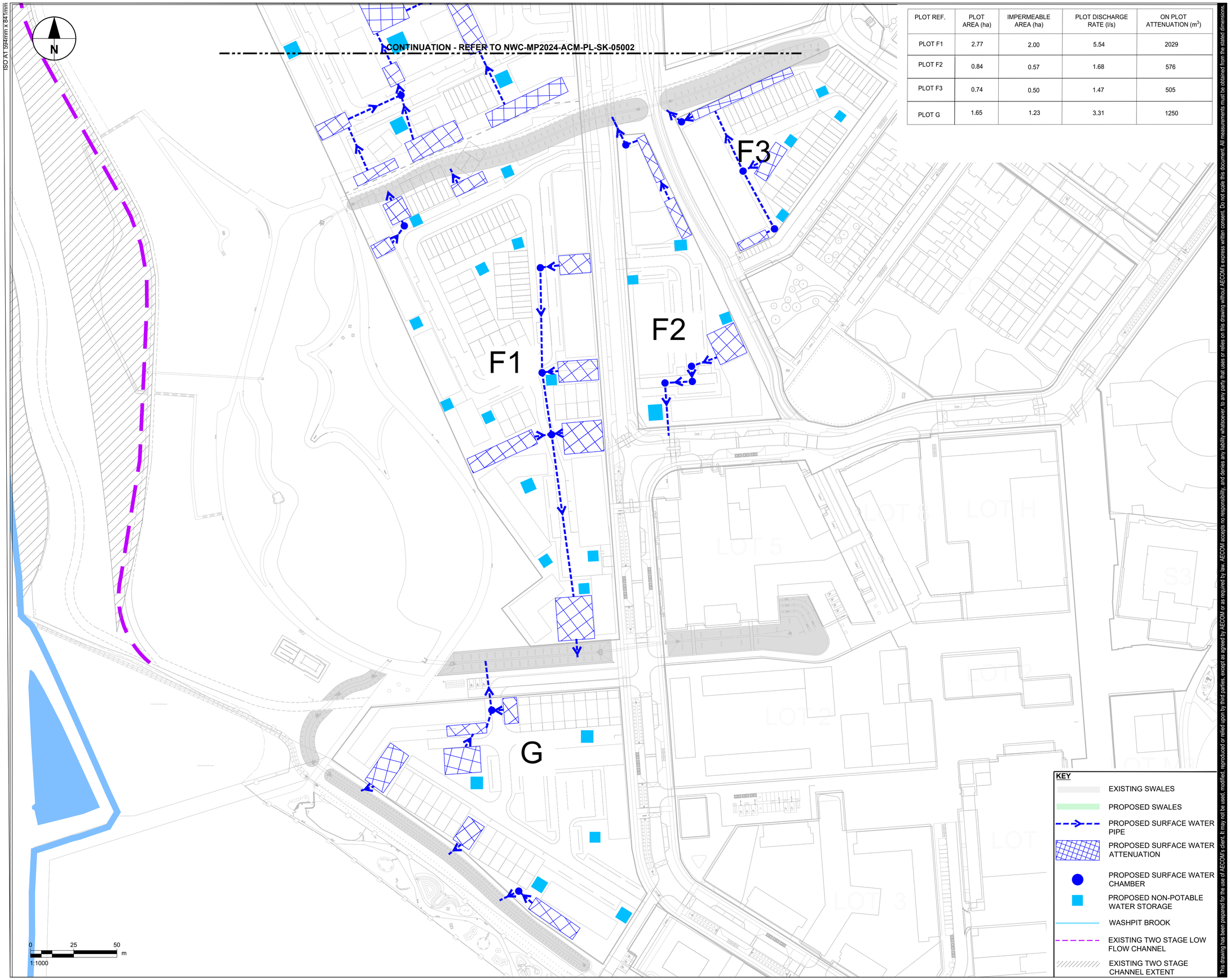

PLOT REF.	PLOT AREA (ha)	IMPERMEABLE AREA (ha)	PLOT DISCHARGE RATE (l/s)	ON PLOT ATTENUATION (m^3)
PLOT F1	2.77	2.00	5.54	2029
PLOT F2	0.84	0.57	1.68	576
PLOT F3	0.74	0.50	1.47	505
PLOT G	1.65	1.23	3.31	1250

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ISSUE/REVISION

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

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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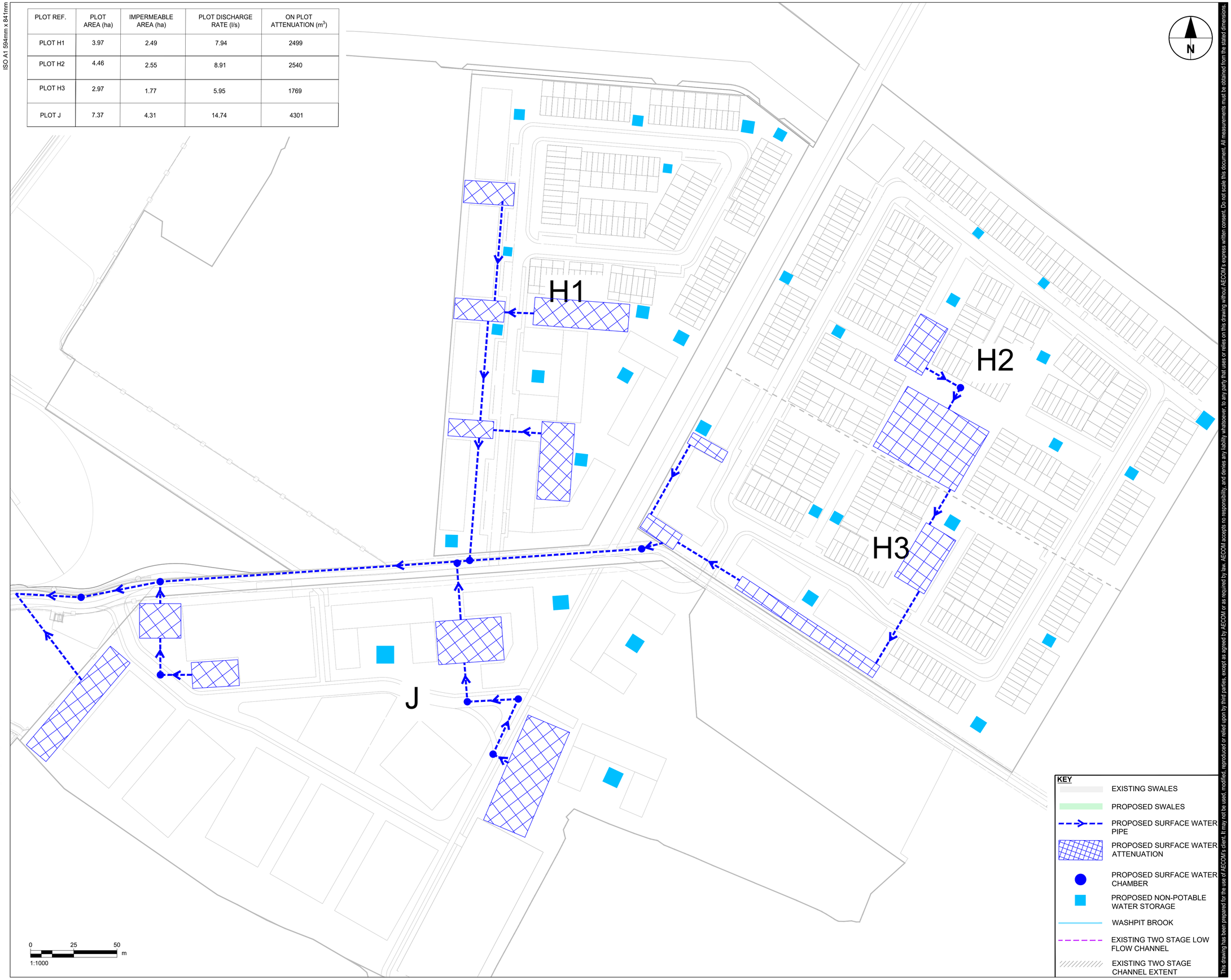
ISO A1 594mm x 841mm

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

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



KEY

- EXISTING SWALES
- PROPOSED SWALES
- PROPOSED SURFACE WATER PIPE
- PROPOSED SURFACE WATER ATTENUATION
- PROPOSED SURFACE WATER CHAMBER
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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 4

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

REV P02

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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:		

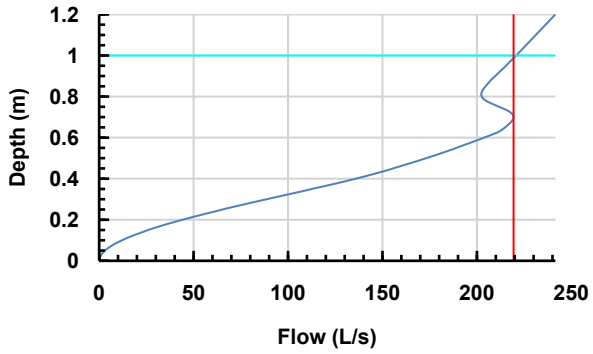
Outlets

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

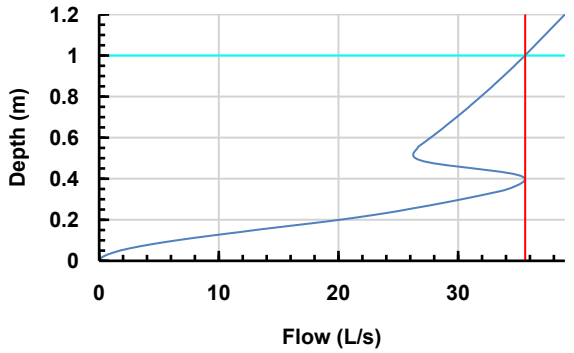
Outlets

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:		

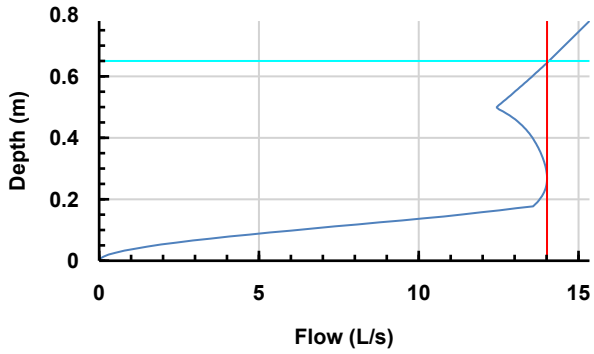
Outlets

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

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:		

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

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:		

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	

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

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

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
B2/2+C2/2	FEH: 2 years: +0 %: 15 mins: Summer	-	5.6	10.080
F3	FEH: 2 years: +0 %: 15 mins: Summer	-	1.5	2.646
F1/3+ F2/2	FEH: 2 years: +0 %: 15 mins: Summer	-	2.7	4.842
F1 2/3 + G/3	FEH: 2 years: +0 %: 15 mins: Summer	-	4.4	7.848
G/3	FEH: 2 years: +0 %: 15 mins: Summer	-	0.7	1.206
Road 1	FEH: 2 years: +0 %: 15 mins: Winter	0.57	96.3	44.541
Road 2	FEH: 2 years: +0 %: 15 mins: Winter	0.54	91.7	42.417
Swale Catchment	FEH: 2 years: +0 %: 15 mins: Winter	0.09	14.6	6.768
Catchment Area (9)	FEH: 2 years: +0 %: 15 mins: Winter	0.40	68.0	31.461
Catchment Area (10)	FEH: 2 years: +0 %: 15 mins: Winter	0.53	89.9	41.607
Catchment Area (11)	FEH: 2 years: +0 %: 15 mins: Winter	0.79	134.4	62.163
Road 3	FEH: 2 years: +0 %: 15 mins: Winter	0.43	73.6	34.035
Phase 1 - 2	FEH: 2 years: +0 %: 30 mins: Winter	3.80	276.2	376.419
Phase 1 Plot Flow - 2	FEH: 2 years: +0 %: 15 mins: Summer	-	28.1	50.580
Phase 1 - 1	FEH: 2 years: +0 %: 30 mins: Winter	11.40	828.6	1129.266
Phase 1 Plot Flow - 1	FEH: 2 years: +0 %: 15 mins: Summer	-	31.7	57.078
Phase 1 - 3	FEH: 2 years: +0 %: 15 mins: Winter	2.00	174.8	157.395
Phase 1 Plot Flow - 3	FEH: 2 years: +0 %: 15 mins: Summer	-	15.0	27.000
H &J	FEH: 2 years: +0 %: 15 mins: Winter	19.17	1675.3	1508.653
Catchment Area (11) (2)	FEH: 2 years: +0 %: 15 mins: Winter	0.40	67.4	31.194

Phase 1 Plot Flow - 1 (1)	FEH: 2 years: +0 %: 15 mins: Summer	-	31.7	57.078
Catchment Area (16)	FEH: 2 years: +0 %: 15 mins: Winter	0.45	76.5	35.415
Catchment Area (17)	FEH: 2 years: +0 %: 15 mins: Winter	0.57	97.0	44.859
B1+B2/2+B3/2	FEH: 2 years: +0 %: 15 mins: Summer	-	4.4	7.956
C1/2+B3/2	FEH: 2 years: +0 %: 15 mins: Summer	-	3.0	5.436
C1/2+D1/2	FEH: 2 years: +0 %: 15 mins: Summer	-	6.0	10.764
D1/2+E1+E2	FEH: 2 years: +0 %: 15 mins: Summer	-	11.9	21.474
C2/2+D2	FEH: 2 years: +0 %: 15 mins: Summer	-	8.7	15.660
F2/2	FEH: 2 years: +0 %: 15 mins: Summer	-	0.8	1.512
Swale Catchment (3)	FEH: 2 years: +0 %: 15 mins: Winter	0.12	20.7	9.600
Swale Catchment (4)	FEH: 2 years: +0 %: 15 mins: Winter	0.12	20.2	9.363
Swale Catchment (5)	FEH: 2 years: +0 %: 15 mins: Winter	0.15	25.0	11.571
Swale Catchment (6)	FEH: 2 years: +0 %: 15 mins: Winter	0.27	45.9	21.246
Swale Catchment (7)	FEH: 2 years: +0 %: 15 mins: Winter	0.13	22.8	10.545

FEH: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
B2/2+C2/2	FEH: 100 years: +40 %: 15 mins: Summer	-	5.6	10.080
F3	FEH: 100 years: +40 %: 15 mins: Summer	-	1.5	2.646
F1/3+ F2/2	FEH: 100 years: +40 %: 15 mins: Summer	-	2.7	4.842
F1 2/3 + G/3	FEH: 100 years: +40 %: 15 mins: Summer	-	4.4	7.848
G/3	FEH: 100 years: +40 %: 15 mins: Summer	-	0.7	1.206
Road 1	FEH: 100 years: +40 %: 15 mins: Winter	0.57	420.0	194.298
Road 2	FEH: 100 years: +40 %: 15 mins: Winter	0.54	399.9	185.028
Swale Catchment	FEH: 100 years: +40 %: 15 mins: Winter	0.09	63.8	29.523
Catchment Area (9)	FEH: 100 years: +40 %: 15 mins: Winter	0.40	296.6	137.232
Catchment Area (10)	FEH: 100 years: +40 %: 15 mins: Winter	0.53	392.3	181.497
Catchment Area (11)	FEH: 100 years: +40 %: 15 mins: Winter	0.79	586.1	271.152
Road 3	FEH: 100 years: +40 %: 15 mins: Winter	0.43	320.9	148.464
Phase 1 - 2	FEH: 100 years: +40 %: 30 mins: Winter	3.80	1233.2	1680.690
Phase 1 Plot Flow - 2	FEH: 100 years: +40 %: 15 mins: Summer	-	28.1	50.580
Phase 1 - 1	FEH: 100 years: +40 %: 30 mins: Winter	11.40	3699.5	5042.068

Phase 1 Plot Flow - 1	FEH: 100 years: +40 %: 15 mins: Summer	-	31.7	57.078
Phase 1 - 3	FEH: 100 years: +40 %: 15 mins: Winter	2.00	762.4	686.566
Phase 1 Plot Flow - 3	FEH: 100 years: +40 %: 15 mins: Summer	-	15.0	27.000
H &J	FEH: 100 years: +40 %: 15 mins: Winter	19.17	7307.6	6580.716
Catchment Area (11) (2)	FEH: 100 years: +40 %: 15 mins: Winter	0.40	294.1	136.062
Phase 1 Plot Flow - 1 (1)	FEH: 100 years: +40 %: 15 mins: Summer	-	31.7	57.078
Catchment Area (16)	FEH: 100 years: +40 %: 15 mins: Winter	0.45	333.9	154.476
Catchment Area (17)	FEH: 100 years: +40 %: 15 mins: Winter	0.57	422.9	195.672
B1+B2/2+B3/2	FEH: 100 years: +40 %: 15 mins: Summer	-	4.4	7.956
C1/2+B3/2	FEH: 100 years: +40 %: 15 mins: Summer	-	3.0	5.436
C1/2+D1/2	FEH: 100 years: +40 %: 15 mins: Summer	-	6.0	10.764
D1/2+E1+E2	FEH: 100 years: +40 %: 15 mins: Summer	-	11.9	21.474
C2/2+D2	FEH: 100 years: +40 %: 15 mins: Summer	-	8.7	15.660
F2/2	FEH: 100 years: +40 %: 15 mins: Summer	-	0.8	1.512
Swale Catchment (3)	FEH: 100 years: +40 %: 15 mins: Winter	0.12	90.5	41.880
Swale Catchment (4)	FEH: 100 years: +40 %: 15 mins: Winter	0.12	88.3	40.851
Swale Catchment (5)	FEH: 100 years: +40 %: 15 mins: Winter	0.15	109.1	50.466

Swale Catchment (6)	FEH: 100 years: +40 %: 15 mins: Winter	0.27	200.3	92.688
Swale Catchment (7)	FEH: 100 years: +40 %: 15 mins: Winter	0.13	99.4	45.999

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

FEH: 30 years: Increase Rainfall (%): +35: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
B2/2+C2/2	FEH: 30 years: +35 %: 15 mins: Summer	-	5.6	10.080
F3	FEH: 30 years: +35 %: 15 mins: Summer	-	1.5	2.646
F1/3+ F2/2	FEH: 30 years: +35 %: 15 mins: Summer	-	2.7	4.842
F1 2/3 + G/3	FEH: 30 years: +35 %: 15 mins: Summer	-	4.4	7.848
G/3	FEH: 30 years: +35 %: 15 mins: Summer	-	0.7	1.206
Road 1	FEH: 30 years: +35 %: 15 mins: Winter	0.57	306.4	141.738
Road 2	FEH: 30 years: +35 %: 15 mins: Winter	0.54	291.7	134.973
Swale Catchment	FEH: 30 years: +35 %: 15 mins: Winter	0.09	46.5	21.534
Catchment Area (9)	FEH: 30 years: +35 %: 15 mins: Winter	0.40	216.4	100.104
Catchment Area (10)	FEH: 30 years: +35 %: 15 mins: Winter	0.53	286.2	132.399
Catchment Area (11)	FEH: 30 years: +35 %: 15 mins: Winter	0.79	427.5	197.799
Road 3	FEH: 30 years: +35 %: 15 mins: Winter	0.43	234.1	108.306
Phase 1 - 2	FEH: 30 years: +35 %: 30 mins: Winter	3.80	894.5	1219.110
Phase 1 Plot Flow - 2	FEH: 30 years: +35 %: 15 mins: Summer	-	28.1	50.580
Phase 1 - 1	FEH: 30 years: +35 %: 30 mins: Winter	11.40	2683.5	3657.340

Phase 1 Plot Flow - 1	FEH: 30 years: +35 %: 15 mins: Summer	-	31.7	57.078
Phase 1 - 3	FEH: 30 years: +35 %: 15 mins: Winter	2.00	556.2	500.833
Phase 1 Plot Flow - 3	FEH: 30 years: +35 %: 15 mins: Summer	-	15.0	27.000
H &J	FEH: 30 years: +35 %: 15 mins: Winter	19.17	5330.7	4800.463
Catchment Area (11) (2)	FEH: 30 years: +35 %: 15 mins: Winter	0.40	214.5	99.255
Phase 1 Plot Flow - 1 (1)	FEH: 30 years: +35 %: 15 mins: Summer	-	31.7	57.078
Catchment Area (16)	FEH: 30 years: +35 %: 15 mins: Winter	0.45	243.6	112.686
Catchment Area (17)	FEH: 30 years: +35 %: 15 mins: Winter	0.57	308.5	142.737
B1+B2/2+B3/2	FEH: 30 years: +35 %: 15 mins: Summer	-	4.4	7.956
C1/2+B3/2	FEH: 30 years: +35 %: 15 mins: Summer	-	3.0	5.436
C1/2+D1/2	FEH: 30 years: +35 %: 15 mins: Summer	-	6.0	10.764
D1/2+E1+E2	FEH: 30 years: +35 %: 15 mins: Summer	-	11.9	21.474
C2/2+D2	FEH: 30 years: +35 %: 15 mins: Summer	-	8.7	15.660
F2/2	FEH: 30 years: +35 %: 15 mins: Summer	-	0.8	1.512
Swale Catchment (3)	FEH: 30 years: +35 %: 15 mins: Winter	0.12	66.0	30.549
Swale Catchment (4)	FEH: 30 years: +35 %: 15 mins: Winter	0.12	64.4	29.799
Swale Catchment (5)	FEH: 30 years: +35 %: 15 mins: Winter	0.15	79.6	36.810

Swale Catchment (6)	FEH: 30 years: +35 %: 15 mins: Winter	0.27	146.1	67.611
Swale Catchment (7)	FEH: 30 years: +35 %: 15 mins: Winter	0.13	72.5	33.552

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

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

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
Simple Junction (1)	FEH: 2 years: +0 %: 1440 mins: Winter		12.533	12.640	0.107	13.4			13.4	1776.371	OK
Simple Junction	FEH: 2 years: +0 %: 1440 mins: Winter		12.852	12.953	0.101	23.5			23.5	3110.112	OK

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

FEH: 100 years: Increase Rainfall (%): +40: 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
Simple Junction (1)	FEH: 100 years: +40 %: 180 mins: Winter		12.533	12.642	0.110	14.0			14.0	227.755	OK
Simple Junction	FEH: 100 years: +40 %: 1440 mins: Winter		12.852	12.966	0.114	29.1			29.1	4099.107	OK

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

FEH: 30 years: Increase Rainfall (%): +35: 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
Simple Junction (1)	FEH: 30 years: +35 %: 480 mins: Winter		12.533	12.642	0.110	14.0			14.0	622.194	OK
Simple Junction	FEH: 30 years: +35 %: 1440 mins: Winter		12.852	12.960	0.108	26.4			26.4	3731.941	OK

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

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

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)	Half Drain Down Time (mins)	Percentage Available (%)
Swale E (0)	FEH: 2 years: +0 %: 15 mins: Winter	18.767	13.534	0.084	0.234	169.1	45.327	0.000	0.000	122.2	80.122	9	93.335
Swale C (0)	FEH: 2 years: +0 %: 15 mins: Winter	16.282	14.145	0.067	0.145	119.1	12.854	0.000	0.000	92.9	67.545	2	99.221
Swale H2 - Ex	FEH: 2 years: +0 %: 30 mins: Winter	14.492	13.612	0.216	0.312	305.1	42.397	0.000	0.000	301.9	478.898	2	96.310
Swale G - Ex	FEH: 2 years: +0 %: 15 mins: Winter	20.779	17.714	0.109	0.114	276.7	70.597	0.000	0.000	255.4	213.631	8	65.892
Swale D (1)	FEH: 2 years: +0 %: 15 mins: Winter	20.772	17.384	0.031	0.134	33.7	10.596	0.000	0.000	25.7	20.960	9	99.379
Tank (1)	FEH: 2 years: +0 %: 1440 mins: Winter	13.768	13.768	0.493	0.493	266.4	6166.938	0.000	0.000	170.9	20365.512	441	69.165
Swale I - Ex	FEH: 2 years: +0 %: 30 mins: Winter	15.045	14.701	0.550	0.401	860.9	295.591	0.000	0.000	816.9	1271.618	5	77.673
Swale H - Ex	FEH: 2 years: +0 %: 30 mins: Winter	17.181	15.640	0.188	0.148	305.1	31.284	0.000	0.000	300.8	474.409	1	97.163
Swale I -2	FEH: 2 years: +0 %: 15 mins: Winter	15.100	15.022	0.080	0.222	92.0	57.804	0.000	0.000	95.5	48.670	24	94.063
Tank (3)	FEH: 2 years: +0 %: 15 mins: Summer	14.865	14.865	0.065	0.065	1507.2	1364.909	0.000	0.000	0.0	0.000		93.500
Swale F - Ex	FEH: 2 years: +0 %: 30 mins: Winter	21.620	21.443	0.208	0.643	227.3	81.399	0.000	0.000	157.2	290.589	6	94.817
Swale A (0)	FEH: 2 years: +0 %: 15 mins: Winter	16.566	13.155	0.062	0.155	115.3	15.887	0.000	0.000	85.2	56.847	3	97.624
Swale B (0)	FEH: 2 years: +0 %: 30 mins: Winter	19.874	17.166	0.022	0.166	18.7	9.145	0.000	0.000	18.2	25.669	13	99.415
Detention Basin 1	FEH: 2 years: +0 %: 1440 mins: Winter	13.009	13.009	0.296	0.296	29.4	1040.496	0.000	0.000	13.4	1776.582	949	55.917
Detention Basin 2	FEH: 2 years: +0 %: 1440 mins: Winter	13.646	13.646	0.446	0.446	46.1	2099.145	0.000	0.000	23.5	3110.587	902	32.539
Swale D (0)	FEH: 2 years: +0 %: 15 mins: Winter	17.252	13.614	0.077	0.264	136.6	38.496	0.000	0.000	100.9	73.380	10	97.783

Status
OK
OK
OK
OK
OK
OK
OK
OK
OK
OK
OK
OK
OK
OK
OK
OK

FEH: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Outflow

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

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)	Half Drain Down Time (mins)	Percentage Available (%)
Swale E (0)	FEH: 100 years: +40 %: 15 mins: Winter	18.875	13.875	0.192	0.575	697.4	129.751	0.000	0.000	462.2	323.106	7	80.922
Swale C (0)	FEH: 100 years: +40 %: 15 mins: Winter	16.380	14.964	0.165	0.964	559.1	93.851	0.000	0.000	277.0	273.977	7	94.314
Swale H2 - Ex	FEH: 100 years: +40 %: 30 mins: Summer	14.683	14.013	0.407	0.713	1124.1	133.105	0.000	0.000	1302.4	1571.018	1	88.414
Swale G - Ex	FEH: 100 years: +40 %: 15 mins: Winter	20.846	17.791	0.176	0.191	860.3	158.305	0.000	0.000	684.1	552.586	6	23.517
Swale D (1)	FEH: 100 years: +40 %: 15 mins: Winter	20.807	17.497	0.065	0.247	117.8	23.736	0.000	0.000	85.6	59.754	6	98.609
Tank (1)	FEH: 100 years: +40 %: 360 mins: Winter	14.547	14.547	1.272	1.272	1926.8	15897.886	0.000	0.000	241.5	8175.840	624	20.511
Swale I - Ex	FEH: 100 years: +40 %: 30 mins: Winter	15.568	15.466	1.073	1.166	3731.9	1052.362	0.000	0.000	2677.7	5581.294	5	20.512
Swale H - Ex	FEH: 100 years: +40 %: 30 mins: Winter	17.365	15.840	0.371	0.348	1262.1	91.697	0.000	0.000	1247.0	1778.806	1	91.685
Swale I -2	FEH: 100 years: +40 %: 15 mins: Winter	15.493	15.488	0.473	0.688	531.9	418.435	0.000	0.000	673.9	142.843	40	57.020
Tank (3)	FEH: 100 years: +40 %: 720 mins: Summer	15.600	15.600	0.800	0.800	1542.1	16808.385	0.000	0.000	35.6	2132.586	7559	19.960
Swale F - Ex	FEH: 100 years: +40 %: 60 mins: Winter	22.553	22.553	1.141	1.753	777.3	743.513	0.000	0.000	232.0	1287.155	42	52.658
Swale A (0)	FEH: 100 years: +40 %: 15 mins: Winter	16.648	13.599	0.143	0.599	488.2	52.564	0.000	0.000	316.3	229.455	3	92.141
Swale B (0)	FEH: 100 years: +40 %: 15 mins: Winter	19.908	17.230	0.057	0.230	96.1	16.833	0.000	0.000	67.9	45.364	5	98.924
Detention Basin 1	FEH: 100 years: +40 %: 180 mins: Winter	13.132	13.132	0.419	0.419	346.2	1491.847	0.000	0.000	14.0	227.981	1239	36.795
Detention Basin 2	FEH: 100 years: +40 %: 1440 mins: Winter	13.842	13.842	0.642	0.642	97.2	3072.411	0.000	0.000	29.1	4099.625	1060	1.260
Swale D (0)	FEH: 100 years: +40 %: 30 mins: Winter	17.326	14.318	0.151	0.968	420.0	175.959	0.000	0.000	229.9	410.039	8	89.866