



Key

Site Location
(SJ 4543 3996)

enzygo

environmental consultants

Samuel House, 5 Fox Valley Way, Stocksbridge, Sheffield, S36 2AA

CLIENT:

Carlton Holdings Partnership

SCALE:

1:20,000@A3

PROJECT REF:

MAN.244.002

DRAWN:

CH

CHECKED:

MG

DATE:

August 2019

PROJECT:

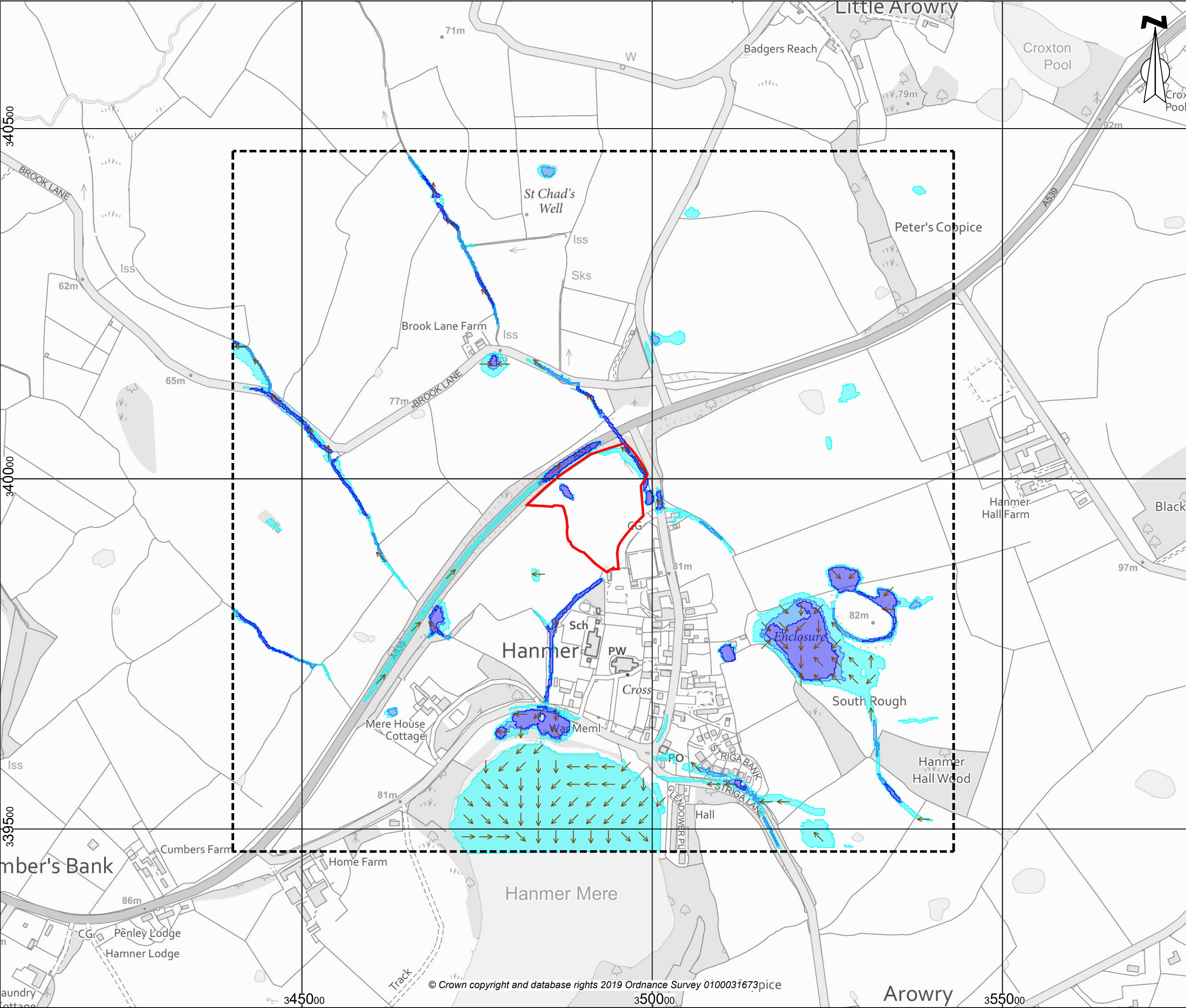
Hanmer Arms, Hanmer

TITLE:

Site Location Plan

DRAWING NO:

MAN.244.002.HY.D.001



Key

- Site Boundary
- Search Extent
- 30 Year Extent
- 100 Year Extent
- 1000 Year Extent
- Flow Direction

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CLIENT:
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SCALE:
1:5,000@A3

PROJECT REF:
MAN.244.002

DRAWN:
CH

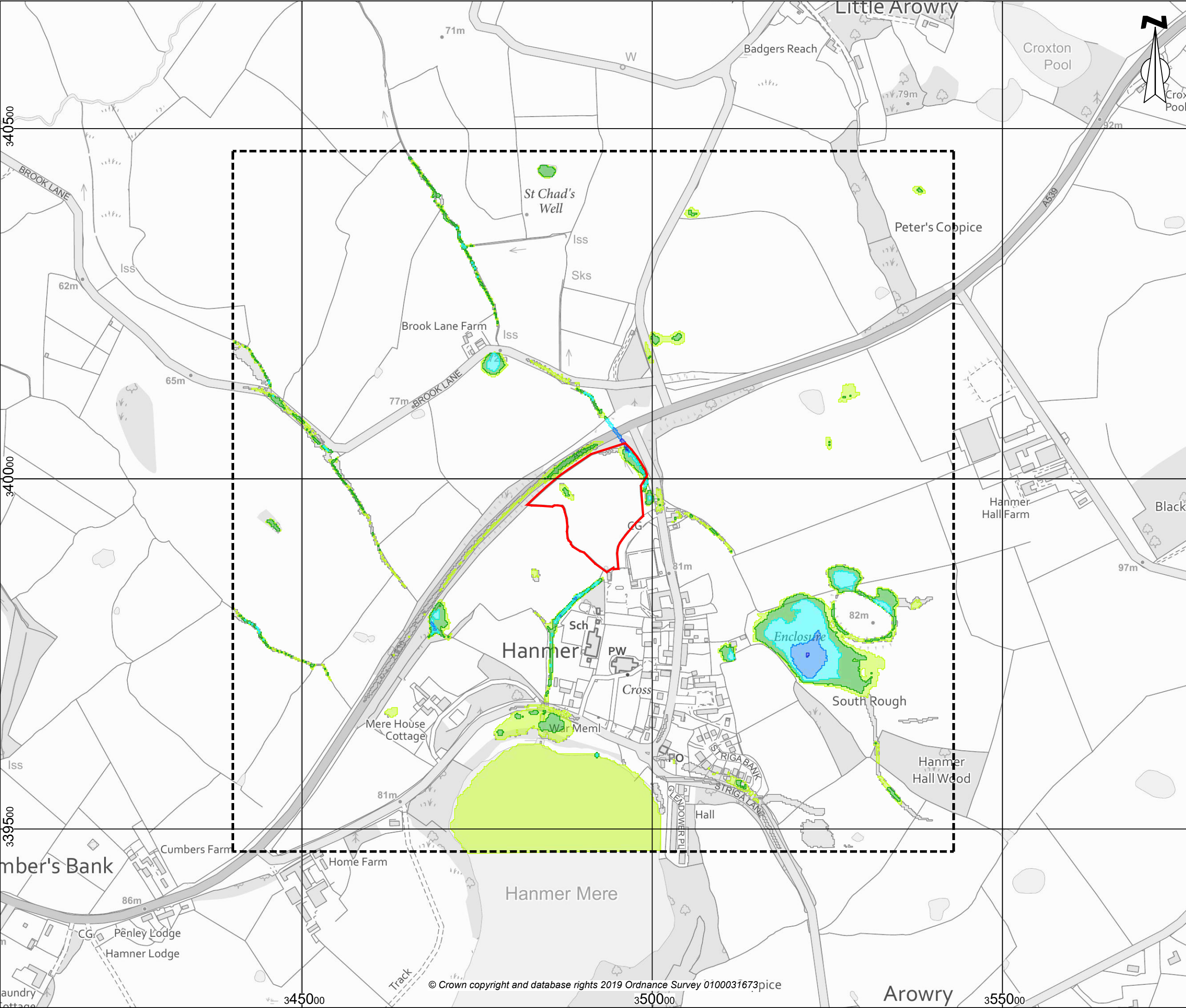
CHECKED:
MG

DATE:
August 2019

PROJECT:
Hanmer Arms, Hanmer

TITLE:
**Environment Agency
Surface Water Flow Paths**

DRAWING NO:
MAN.244.002.HY.D.003.1



Key

- Site Boundary
- Search Extent
- Depth greater than 1.20 (m)
- Depth 0.90 - 1.20 (m)
- Depth 0.60 - 0.90 (m)
- Depth 0.30 - 0.60 (m)
- Depth 0.15 - 0.30 (m)
- Depth 0.0 - 0.15 (m)



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SCALE:
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PROJECT REF:
MAN.244.002

DRAWN:
CH

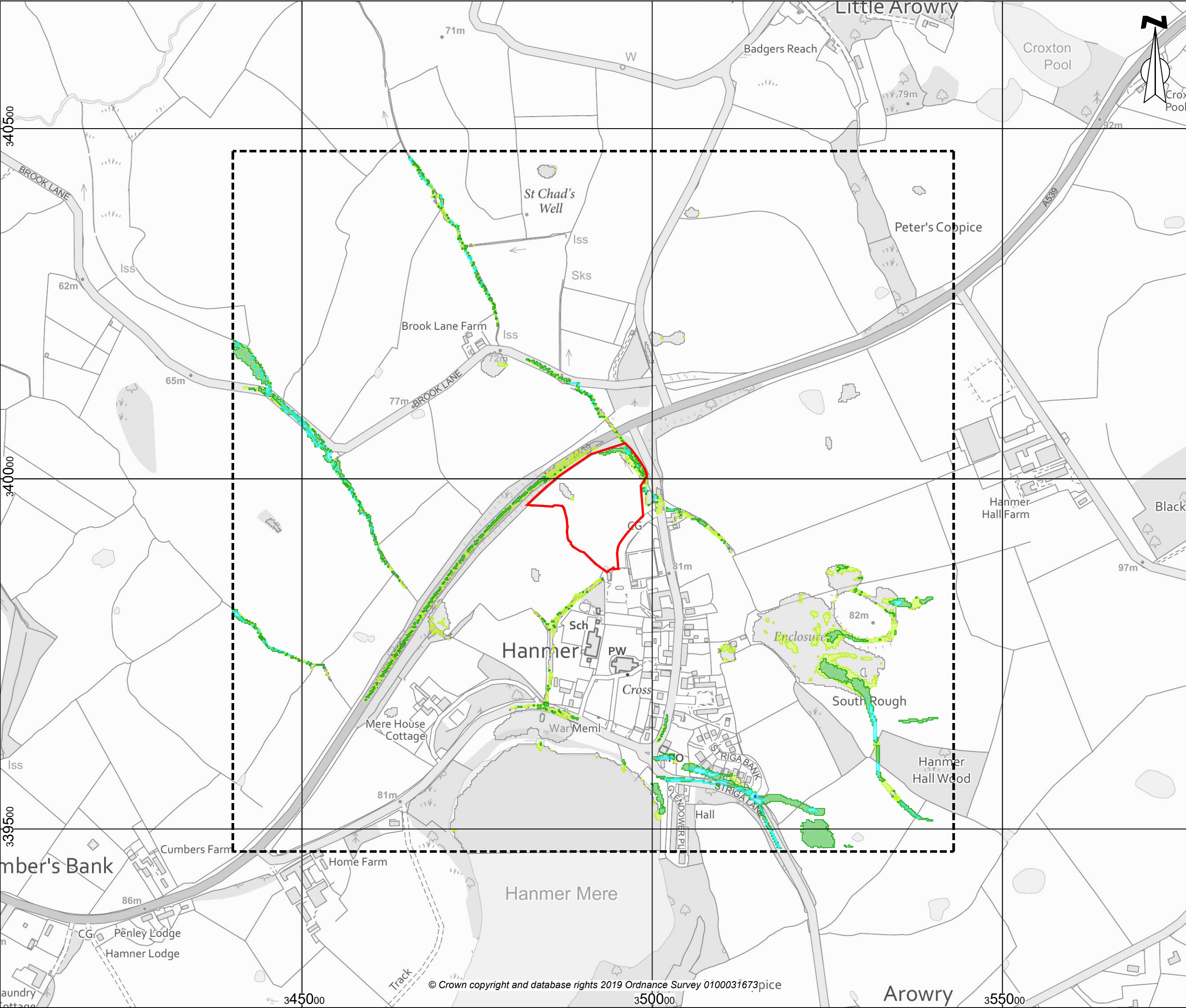
CHECKED:
MG

DATE:
August 2019

PROJECT:
Hanmer Arms, Hanmer

TITLE:
**Environment Agency 1 in 1000
Year Surface Water Depth**

DRAWING NO:
MAN.244.002.HY.D.003.2



Key

Site Boundary

Search Extent

Velocity 2.00 or greater (m/s)

Velocity 1.00 - 2.00 (m/s)

Velocity 0.50 - 1.00 (m/s)

Velocity 0.25 - 0.50 (m/s)

Velocity 0.00 - 0.25 (m/s)

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CLIENT:

Carlton Holdings Partnership

SCALE:

1:5,000@A3

PROJECT REF:

MAN.244.002

DRAWN:

CH

CHECKED:

MG

DATE:

August 2019

PROJECT:

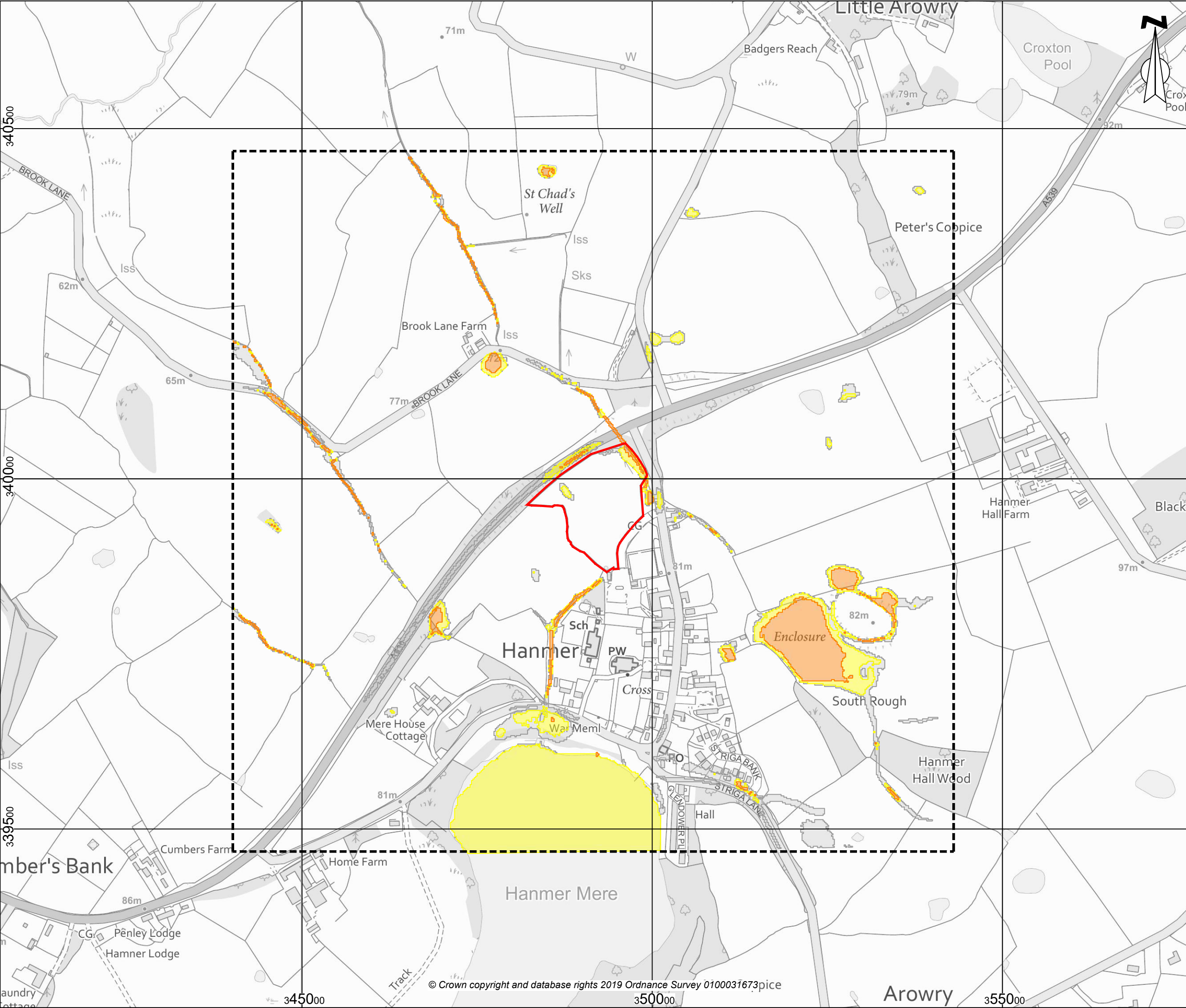
Hanmer Arms, Hanmer

TITLE:

Environment Agency 1 in 1000
Year Surface Water Velocity

DRAWING NO:

MAN.244.002.HY.D.003.3



Key

- Site Boundary
- Search Extent
- Extreme Hazard (> 2.0)
- Significant Hazard (1.25 - 2.00)
- Moderate Hazard (0.75 - 1.25)
- Low Hazard (0.50 - 0.75)

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CLIENT:
Carlton Holdings Partnership

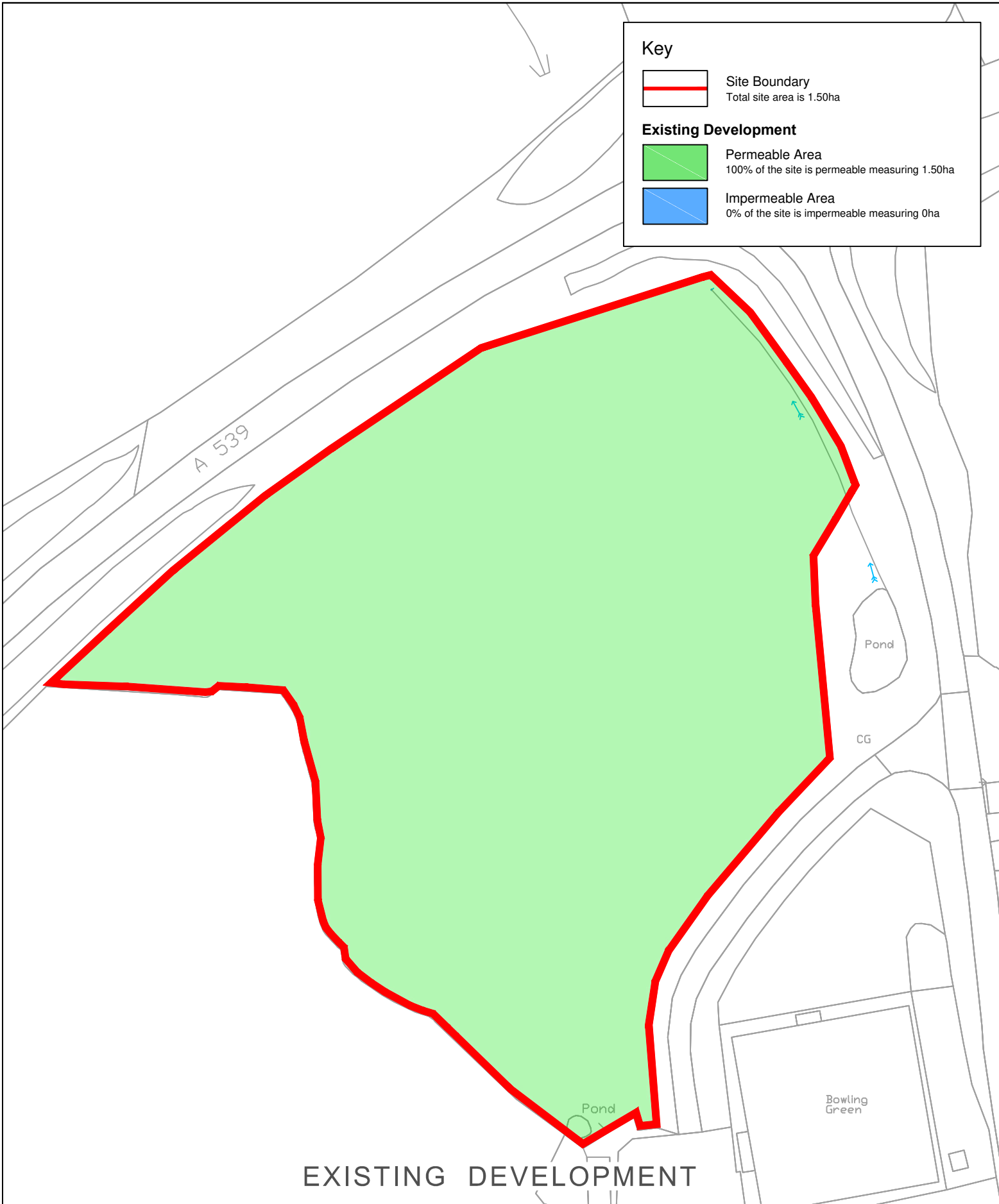
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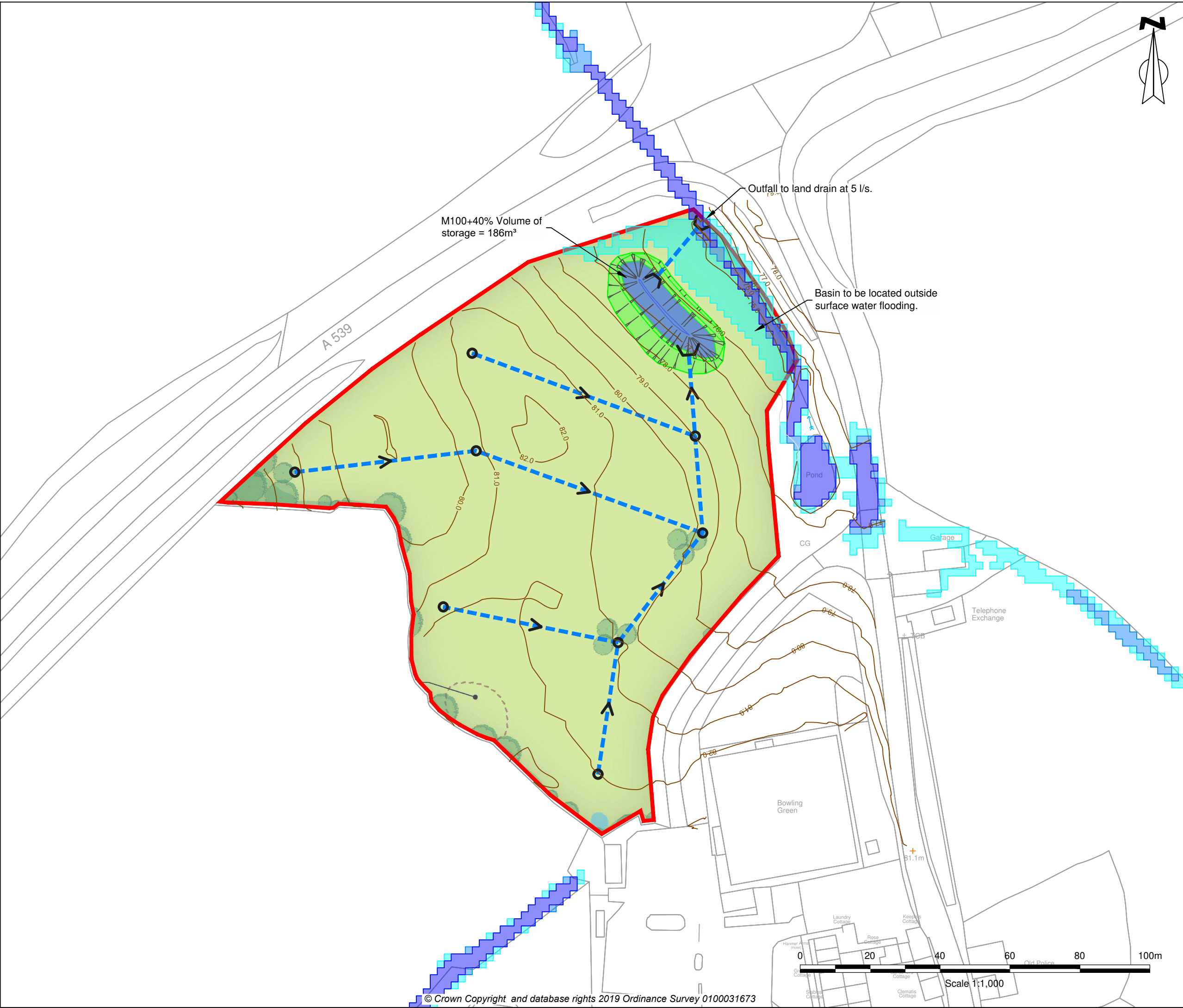
DRAWN: **CH** CHECKED: **MG** DATE: **August 2019**

PROJECT:
Hanmer Arms, Hanmer

TITLE:
Environment Agency Surface Water 1000 Year Hazard Rating

DRAWING NO:
MAN.244.002.HY.D.003.4





M100+40% Volume of storage = 186m³

Outfall to land drain at 5 l/s.

Basin to be located outside surface water flooding.

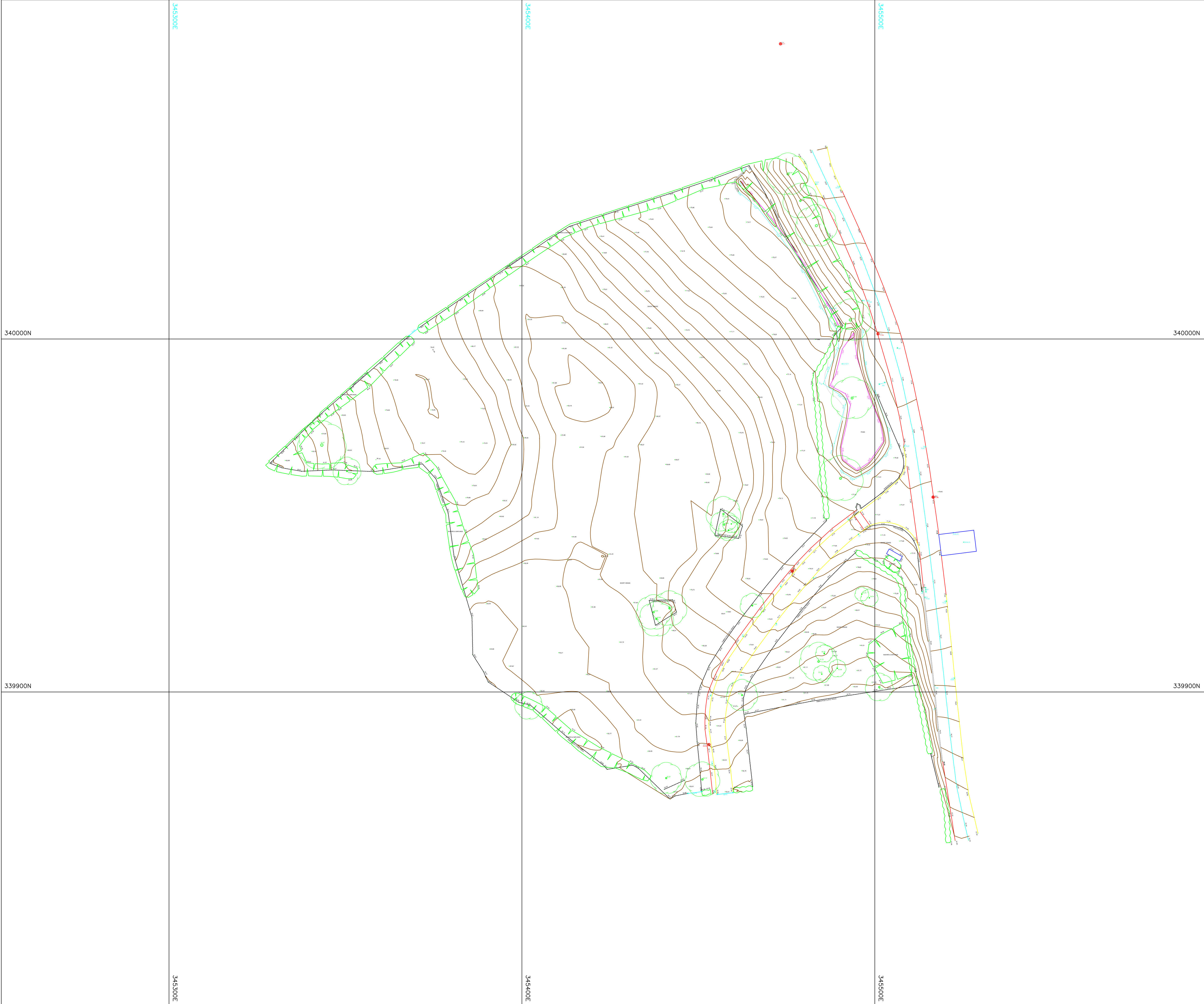
- Key**
- Site Boundary
 - Attenuation Pond
 - Proposed Surface Water
 - Contours
1.0m Intervals (mAOD)
- Surface Water Flood Extent**
- 30 Year Extent
 - 100 Year Extent
 - 1000 Year Extent



Samuel House, 5 Fox Valley Way, Stocksbridge, Sheffield, S36 2AA

CLIENT:		PROJECT REF:
Carlton Holdings Partnership		MAN.244.002
SCALE:	PROJECT REF:	
1:1000@A3	MAN.244.002	
DRAWN:	CHECKED:	DATE:
MG	EO'C	Aug 2018
PROJECT:		
Hanmer Arms, Hanmer		
TITLE:		
Indicative Drainage Design		
DRAWING NO:		
MAN.244.002.HY.D.005		

Appendix 1 – Topographical Survey



COORDINATED STATIONS			
STATION	EASTING	NORTHING	LEVEL (m)
A	345516.492	339955.187	77.099
B	345476.596	339934.224	78.587
C	345500.912	340001.463	77.493
D	345473.264	340083.653	80.773
E	345452.996	339885.056	82.061

ABBREVIATIONS

AV	AIR VALVE/VENT	IC	INSPECT CHAMBER
BOL	BOLLARD	IL	INVERT LEVEL
BB	BELISHA BEACON	JKW	JAPANESE KNOTT WEED
BM	BENCH MARK	LH	LAMP HOLE
BL	BED LEVEL	LP	LAMP POST
BS	BUS STOP	NP	NAME PLATE
BT	BRITISH TELECOM	MH	MANHOLE
CL	COVER LEVEL	PS	POST/SIGN POST
DI	DIAPHRAGM	PB	POST BOX
Dis	DISUSED	PX	UNKNOWN SERVICE
EL	EAVES LEVEL	RE	RODDING EYE
ELE	ELEC JUNCT. BOX	RL	RIDGE LEVEL
EP	ELECTRICITY POLE	RS	ROAD SIGN
FH	FIRE HYDRANT	ST	STOP TAP
FL	FLOOR LEVEL	TH	TRIAL HOLE
FOS	FULL OF SEDIMENT	TL	TRAFFIC LIGHT
FP	FLAG POLE	TP	TELEGRAPH POLE
G	GULLY	TV	CABLE TV BOX
GM	GAS METER	UH	UNABLE TO LIFT
GV	GAS VALVE	WM	WATER METER

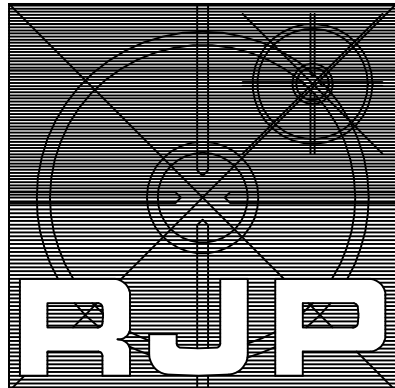
SYMBOLS

	SURVEY STATION		TREE
	O/H ELEC CABLE		BENCH MARK
	O/H PHONE LINE		TRIAL PIT
	CANOPY/HEDGE		BOREHOLE

NOTES

- A) ONLY MANHOLES AND SERVICES VISIBLE AT TIME OF SURVEY SHOWN
- B) O/S USED AND ORIENTATED TO TRUE NORTH
- C) LEVELS IN METRES RELATED TO G.P.S.
- D) DRAINAGE INFORMATION TAKEN FROM LOCAL AUTHORITY RECORDS. INFORMATION MUST BE CHECKED PRIOR TO WORK COMMENCING

Rev	Description	Date
PROPOSED DEVELOPMENT AT HANMER ARMS, PLANNING		
RICHARD LEE PROJECT PLANNING		
TOPOGRAPHICAL SURVEY		
RLP001/T00	Drawn	S. FAIRHURST
	Date	SEPTEMBER 2018
	Scale	1:500 @ A1



RJP

Surveying Consultants Ltd

LAND SURVEYORS & SITE ENGINEERS

AYREFIELD COTTAGE

AYREFIELD ROAD

ROBY MILL

UPHOLLAND

LANCASHIRE

WN8 0QP

TEL: 01257 251554

MOBILE: 07710 308709

WEBSITE : www.rjpsurveyors.co.uk

E-MAIL: mail@rjpsurveyors.co.uk

Appendix 2 – Borehole Logs

Geo - Civil

Hilton House,

Telephone 081-724 8421

Date

Diameter	76mm
----------	------

Ground level

Description of Strata	Legend	Depth	Thick- ness	Sample		SPT 'N' Value	Water levels and General Remarks
				Type	Depth		
TOPSOIL		0.41	0.41				
COMPACT BEDDISH GRAVEL INCLUSIONS		0.84	0.43				
				SPT	0.91	12	
				SPT	1.82	18	
				SPT	2.74	21	
		3.66	2.82				B.H. DRY
BOREHOLE COMPLETE							

55432641
45253980

BOREHOLE RECORD SHEET No. 3

28.11.75

Scale 1:50

GC.75100/WM12

Location: HANMER

Location 76mm

Ground level

Description of Strata	Legend	Depth	Thickness	Sample		SPT 'N' Value	Water levels and General Remarks
				Type	Depth		
TOPSOIL		0.15	0.15				
COMPACT REDDISH BROWN FINE SAND				SPT	0.91	10	
				SPT	1.82	14	
				SPT	2.74	19	
BOREHOLE COMPLETE		3.66	3.51				B.H. ORY

BOREHOLE RECORD SHEET No. 4

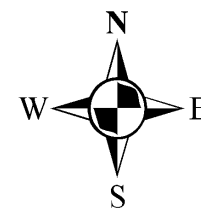
Telephone 081-724 8421

Ground level

Description of Strata	Legend	Depth	Thickness	Sample		SPT 'N' Value	Water levels and General Remarks
				Type	Depth		
CLAY SOIL		0.18	0.18				
COMPACT REDDISH BROWN FINE SAND				SPT	0.91	10	
				SPT	1.82	15	
				SPT	2.74	21	
		3.66	3.48				B.H. DRY
BOREHOLE COMPLETE							

Appendix 3 – Welsh Water Sewer Asset Plans

Land off Hanmer Arms



LEGEND(Representative of most common features)

Waste network:			
	Foul chamber		Surface water chamber
	Combined chamber		Storm Overflow
	Combined sewer overflow		Rising main
	Special purpose chamber		Gravity sewer
	Treatment works		Private sewer
	Pumping station		Private sewer subject to Sect. 104 adoption agreement
			Private Sewer Transfer
			Lateral Drain
			Inspection Chamber

NB: Sewer symbol colour indicates the type.
RED - Combined
GREEN - Surface Water
BROWN - Foul
Purple - Former S24 sewers (for indicative purposes only)

Notes:

Whilst every reasonable effort has been taken to correctly record the pipe material of DCWW assets, there is a possibility that in some cases pipe material (other than Asbestos Cement or Pitch Fibre) may be found to be asbestos cement (AC) or Pitch Fibre (PF). It is therefore advisable that the possible presence of AC or PF pipes be anticipated and considered as part of any risk assessment prior to excavation.

Dŵr Cymru Cyfyngedig ('the Company') gives this information as to the position of its underground apparatus by way of general guidance only and on the strict understanding that it is based on the best information available and no warranty as to its correctness is relied upon in the event of excavations or other works made in the vicinity of the company's apparatus. The onus of locating apparatus before carrying out any excavations rests entirely on you. The information which is supplied by the Company, is done so in accordance with statutory requirements of sections 198 and 199 of the Water Industry Act 1991 which is based upon the best information available and, in particular, but without prejudice to the generality of the foregoing, it should be noted that the records that are available to the Company may not disclose the existence of a water main, service pipe, sewer, lateral drain or disposal main and any associated apparatus laid before 1 September 1989, or, if they do, the particulars thereof including their position underground may not be accurate. It must be understood that the furnishing of this information is entirely without prejudice to the provision of the New Roads and Street Works Act 1991 and the Company's right to be compensated for any damage to its apparatus.

Service pipes are not generally shown but their presence should be anticipated.

**EXACT LOCATIONS OF ALL APPARATUS
TO BE DETERMINED ON SITE.**

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Map Ref: 345389,339879
Map scale: 1:2500
Printed by: John Emma
Printed on: 19 Jul 2019

Appendix 4 – HR Wallingford Calculations

Calculated by:

Site name:

Site location:

Site coordinates

Latitude:

Longitude:

This is an estimation of the greenfield runoff rate limits that are needed to meet normal best practice criteria in line with Environment Agency guidance "Preliminary rainfall runoff management for developments", W5-074/A/TR1/1 rev. E (2012) and the SuDS Manual, C753 (Ciria, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Reference:

Date:

Methodology

FEH Statistical

Site characteristics

Total site area (ha)	0.3
----------------------	-----

Methodology

Qmed estimation method	Calculate from BFI and SAAR
BFI and SPR estimation method	Specify BFI manually
HOST class	N/A
BFI / BFIHOST	0.500
Qmed (l/s)	NaN
Qbar / Qmed Conversion Factor	1.08

Hydrological characteristics

	Default	Edited
SAAR (mm)	703	703
Hydrological region	9	9
Growth curve factor: 1 year	0.88	0.88
Growth curve factor: 30 year	1.78	1.78
Growth curve factor: 100 year	2.18	2.18

Notes:

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

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

Where flow rates are less than 5.0 l/s consents are usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set in which case blockage work must be addressed by using appropriate drainage elements

(3) Is $SPR/SPRHOST \leq 0.3$?

Greenfield runoff rates

	Default	Edited
Qbar (l/s)	NaN	0.96
1 in 1 year (l/s)	NaN	0.84
1 in 30 years (l/s)	NaN	1.7
1 in 100 years (l/s)	NaN	2.09

Appendix 5 – PDS Flow Calculations

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)		Minimum Backdrop Height (m)	0.200
Ratio-R		Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)		Enforce best practice design rules	✓

Nodes

Name	Area (ha)	Cover Level (m)	Diameter (mm)	Depth (m)
1	0.300	100.000	1200	1.800

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.840	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	------

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

Node 1 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	98.200	Product Number	CTL-SHE-0098-5000-1500-5000
Design Depth (m)	1.500	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	98.200
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	120.0	0.0	1.500	120.0	0.0	1.501	0.0	0.0

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	1	90	98.395	0.195	13.8	24.2768	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
120 minute winter	1	Hydro-Brake®	4.4	37.7

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

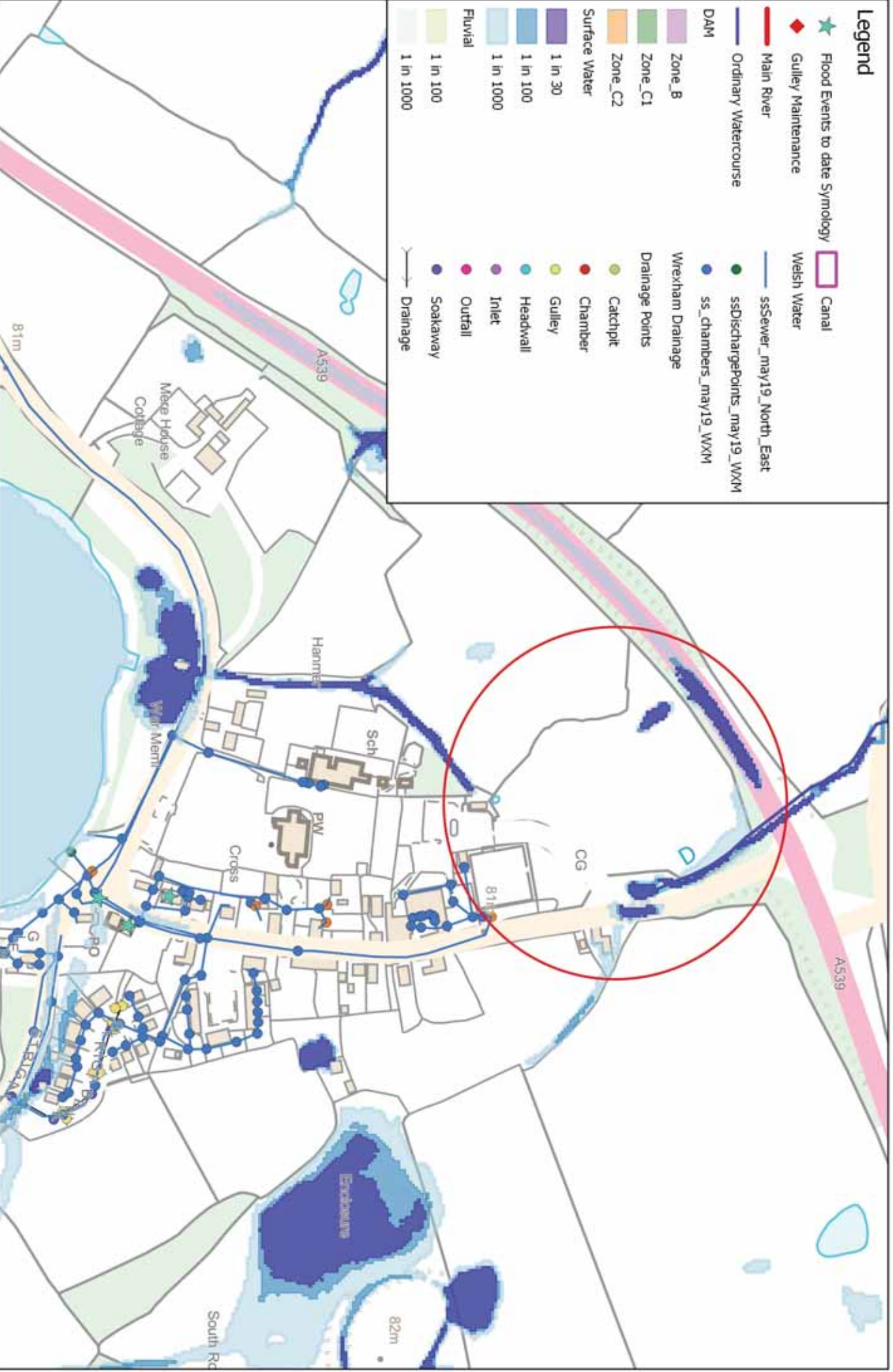
Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	1	180	99.698	1.498	52.9	186.4697	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
180 minute winter	1	Hydro-Brake®	5.0	107.7

Appendix 6 – Wrexham Borough Council Correspondence

Legend

- ★ Flood Events to date Symology
- ◆ Gully Maintenance
- Main River
- Ordinary Watercourse
- DAM
- Zone_B
- Zone_C1
- Zone_C2
- Surface Water
- 1 in 30
- 1 in 100
- 1 in 1000
- Fluvial
- 1 in 100
- 1 in 1000
- ssSewer_may19_North_East
- ssDischargePoints_may19_WXM
- ss_chambers_may19_WXM
- Wrexham Drainage
- Drainage Points
- Catchpit
- Chamber
- Gully
- Headwall
- Inlet
- Outfall
- Soakaway
- Drainage
- Canal
- Welsh Water



Eric O'Connor

From: Carole Wright <Carole.Wright@wrexham.gov.uk>
Sent: 05 August 2019 09:17
To: Eric O'Connor
Subject: RE: FCA Consultation
Attachments: FCA Request for land N of The Hanmer Arms.pdf; Management of Surface Water Generated from New Dev_E_03 19.pdf

Dear Mr O'Conner

Please accept my apologies for the delay in responding to your request. I have attached a constraints map that indicates areas at risk of flooding in relation to your site.

- Can you confirm the flood zone within the site? [See attached map](#)
- Do you hold / have any information relating to the unnamed land drain? [We have no additional drainage information other than supplied by NRW](#)
- Do you have any records of historic flooding events on this site, either from fluvial sources and other sources (i.e. surface water, sewers, groundwater, reservoir etc.)? If you are aware of historical flooding at the site, can you please provide us with details of these historical flood events where it is available, including flood levels, estimated return periods, photographs, and other such data as may be relevant to our study? [The nearest recorded flood incident was in June 19 for a blocked gulley \(records from 09 – present\) 250m South of the site](#)
- Do you have any information on drainage within the site and in the local area, including any known drainage problems on site and in the local area? [We have no additional drainage information](#)
- The proposal is for a development of a greenfield Site, please could you indicate the maximum allowable discharge rate, and any requirements for betterment when discharging to watercourse as well as all other relevant drainage requirements. [Please see attached guidance](#)
- Please can you also indicate to us whether you are aware of any relevant environmentally sensitive receptors (such as aquatic wildlife in receiving watercourses, etc.) in the area around the site that we should be aware of when preparing this Flood Consequence Assessment? [Please contact Ecology Department for this information](#)
- As required by the Building Regulations, we will need to consider discharge of surface water from the site to soakaway / infiltration as a first option. We would be grateful if you could provide us with any information that you have that may assist in our assessment of this option, such as details of sensitive aquifers in the area, known contamination issues, etc. [We have no contamination data. Please contact the Planning Department for this information](#)
- Do you have any information of any surface water flooding within the Site or its immediate vicinity? [There are no recorded issues of surface water flooding within 250m of the site](#)
- Do you have any information on highway drainage, including asset plans and drainage capacity? [We have no other drainage details other than supplied by Welsh Water.](#)

If you require any further information please do not hesitate to contact me.

Kind regards

Carole Wright

Carole Wright - BA MBCS

Swyddog Technegol Cefnogi Llifogydd - Technical Flood Support Officer -



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Waste and Mineral Planning

Flooding, Drainage and Hydrology

Landscape Architecture

Arboriculture

Permitting and Regulation

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