

Response to Lead Local Flood Authority Comments

Land East of Claydon Road, Cropredy

Application No. 23/00977/OUT

1.0 Introduction

1.1 This response has been prepared by Glanville Consultants on behalf of Obsidian Strategic Asset Management to address comments in a consultation response provided by Oxfordshire County Council (OCC), acting in its role as Lead Local Flood Authority (LLFA), in relation to outline planning application ref. 23/00977/OUT for:

“Residential development of up to 60 dwellings (Use Class C3) including a community facility, new vehicular and pedestrian access off Claydon Road, public open space and associated landscaping, earthworks, parking, engineering works and infrastructure”.

1.2 This response should be read in conjunction with the Flood Risk Assessment (FRA) produced by Glanville, dated 11 April 2023 (ref: 008_8210439_SM_Flood_Risk_Assessment) that accompanied the planning application.

1.3 Comments from the LLFA dated 25 May 2023 are provided at Appendix A and have been reproduced in red in Section 2 with the associated response included beneath.

1.4 The key issues to be addressed are:

- Clarification required on the drainage strategy.
- Greenfield run-off rate calculations to be provided.
- Outfall located outside the site boundary.

2.0 Response to LLFA Comments

Drainage Strategy

2.1 *[LLFA]: The Drainage strategy drawing shows an attenuation tank however in the drainage report permeable paving has been considered. The use of permeable paving can be implemented to attenuate flows in the car parking area.*

2.2 Drawing 8210439– SK01 has been updated and now shows permeable paving within the private drives and community facility parking area. Permeable paving will provide additional storage, however, to provide a robust strategy at this stage, the permeable paving shown in the drainage strategy drawing has been excluded from the associated hydraulic calculations. The proposed attenuation ponds and geo-cellular crates have been sized to accommodate all surface water run-off generated by the development. An updated drainage strategy drawing has been included at Appendix B.

2.3 Permeable paving proposed within the community facility parking area has been utilised for surface water treatment and conveyance to the attenuation tank. At the appropriate design stage sub-base depths will be confirmed and the attenuation volume provided by the voids in the sub-base of the permeable paving will be utilised to subsequently resize the attenuation tank.

Greenfield Run-off Rate

- 2.4 *[LLFA]: Provide greenfield run off calculations. The final discharge rate from the development should be based on QBAR or 2l/s/ha whichever is greater.*
- 2.5 Greenfield run-off rate calculations have been included at Appendix C and confirm a QBAR value of 21.8 l/s.
- 2.6 The site measures approximately 5ha in area 2 l/s/ha to the site area gives a discharge rate of 10.0 l/s.
- 2.7 Whilst the final discharge rate of 15.2 l/s utilised within the FRA was based on the QMED value for the development area on-site, in response to the LLFA's comments a final discharge rate of 21.8 l/s has been utilised within the updated hydraulic calculations as the calculated QBAR value offers a higher rate.
- 2.8 Given the increase in discharge rate, the proposed north-eastern pond has been resized and the updated MicroDrainage calculations provided at Appendix D confirm that all the attenuation features have sufficient capacity to accommodate run-off from all storms up to, and including, the 1 in 100 +40% climate change allowance storm event without flooding from surface water, with FEH rainfall data utilised to calculate storage volumes.

Outfall Location

- 2.9 *[LLFA]: The outfall is shown to be outside the site boundary, consent to be provided from the relevant party to make drainage connection to the existing ditch. Should the ditch be located within the Applications land ownership, a title plan needs to be provided to illustrate this.*
- 2.10 An updated site location plan has been included at Appendix E which shows the extent of land controlled by Obsidian Strategic Asset Management outlined in blue. This plan confirms that whilst the drainage outfall falls outside of the application red line boundary, it is located within the ownership boundary and therefore does not cross third party land.

3.0 Summary

- 3.1 This response addresses the consultation response provided by Oxfordshire County Council, acting in its role as Lead Local Flood Authority, in relation to outline planning application ref. 23/00977/OUT)
- 3.2 This response has provided the following:
- Clarification of the drainage strategy.
 - Greenfield run-off rate calculations.
 - Confirmation that the outfall is not located outside the ownership boundary.
- 3.3 It is considered that the comments raised by the LLFA in respect of the development proposals have been adequately addressed by this response and therefore, the LLFA should be able to confirm that it would be able to remove its objection to the planning application.

Appendices

Appendix A

LLFA Consultation Response

Application no: 23/00977/OUT

Location: OS Parcel 9195 North Of, Claydon Road, Cropredy

Lead Local Flood Authority

Recommendation:

Objection

Key issues:

- Clarification required on the drainage strategy.
- Greenfield run off rate calculations to be provided.
- Outfall located outside the site boundary.

Detailed comments:

The drainage strategy drawing shows an attenuation tank however in the drainage report permeable paving has been considered. The use of permeable paving can be implemented to attenuate flows in the car parking area.

Provide greenfield run off rate calculations. The final discharge rate from the development should be based on Qbar or 2l/s/ha whichever is greater.

The outfall is shown to be outside the site boundary, consent to be provided from the relevant party to make drainage connection to the existing ditch. Should the ditch be located within the applicants land ownership, a title plan needs to be provided to illustrate this.

Officer's Name: Kabier Salam

Officer's Title: LLFA Engineer

Date: 24/05/2023

Appendix B
Updated Drainage Strategy



- NOTES:**
- Dimensions not to be scaled from this drawing for construction purposes.
 - This drawing should be read in conjunction with the associated Flood Risk Assessment and all relevant standards.
 - Sewer runs and SuDS features shown in outline only and are subject to detailed design.
 - All levels shown in meters above ordnance datum (m AOD).
 - Topographical survey taken from Greenhatch group drawing number 43382_T, dated March 2022.
 - All cover and invert levels of existing drainage infrastructure and ditch bed levels to be confirmed and relayed to engineer for confirmation of design.
 - Illustrative site layout taken from Carter Jonas drawing number J0050867_008, dated April 2023.
 - Thames Water sewer records taken from asset records, reference ALSIALS Standard/2021_452420.

- KEY:**
- Proposed surface water sewer
 - Proposed foul water sewer
 - Proposed foul water rising main
 - Existing Thames Water surface water sewer
 - Existing Thames Water foul water sewer
 - Proposed flow control chamber
 - Headwall
 - Direction of flow arrow
 - Geocellular Crates
 - SuDS Basin/Pond
 - Permeable Paving

P2	Amended Drainage Strategy.	20/7/2023 JD	JB
P1	Issued to client.	4/4/2023 SM	JB
Rev.	Description	Date	Chkd

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Client: Obsidian Strategic Asset Management Limited

Project: Land East of Claydon Road, Cropredy

Title: Outline Drainage Strategy

Project Engineer: S McNair Scale: 1:500 @ A1
 Project Director: J Birch Date: April 2023
 Status: PLANNING

Drawing No. 8210439 - SK101 Rev P2

Existing Thames Water surface water network discharges to ordinary watercourse along Claydon Road, before ultimately discharging to Oxford Canal, to the north of existing Marina.

Surface and foul water networks shown indicatively and subject to reserved matters application

Outfall to existing ditch within current landowners control. Continuous right of access to be granted for maintenance.

MicroDrainage Ref: SPond1
 Max. Attenuation Volume: 1039m³
 Depth of Storage - 1.20m with additional 300mm residual uncertainty allowance.

Flow control to restrict discharge from the site for all storm events up to 1:100+40%CC to 21.80 l/s (QBAR)

Adoptable foul water rising main to be constructed up to highpoint in South-west corner of the site. Break chamber to be provided before gravity connection to the existing Thames Water network. Location and Extent of break chamber and gravity network to be confirmed at appropriate design stage following confirmation of site layout and existing network details.

Community facility to provide attenuation within car park area and restrict discharge to wider network to 1.20 l/s (QMED for catchment).
 MicroDrainage Ref: SCrates
 Max. Attenuation Volume: 241m³
 Geocellular Crate Dims: 21.50m x 10m x 1.20m

Adoptable foul water pump station. Compound dimensions 12m x 8m, with distance from wet well to habitable rooms a minimum of 20m.

MicroDrainage Ref: SPond2
 Max. Attenuation Volume: 77m³
 Depth of Storage - 0.90m with additional 300mm residual uncertainty allowance.
 Max. discharge for design event: 7.5 l/s

Surface and foul water networks shown indicatively and subject to reserved matters application

Existing Thames Water Sewer
 MH Ref: 7892
 CL: 108.35
 IL: 105.85

Gravity sewer approximately 115m in length, therefore IL of break chamber approx. 107.35m - TBC at appropriate design stage.

Existing Thames Water foul and surface water networks drawn indicatively from Thames Water asset records - locations and details of key chambers to be confirmed at appropriate design stage.

Creampot Lane

Appendix C
Greenfield Run-off Calculations

Cornerstone Court
62 Foxhall Road
Didcot OX11 7AD



Date 20/07/2023 13:52
File

Designed by jdunesby
Checked by

Micro Drainage

Source Control 2020.1.3

ICP SUDS Mean Annual Flood

Input

Return Period (years)	2	Soil	0.450
Area (ha)	4.960	Urban	0.000
SAAR (mm)	700	Region Number	Region 6

Results 1/s

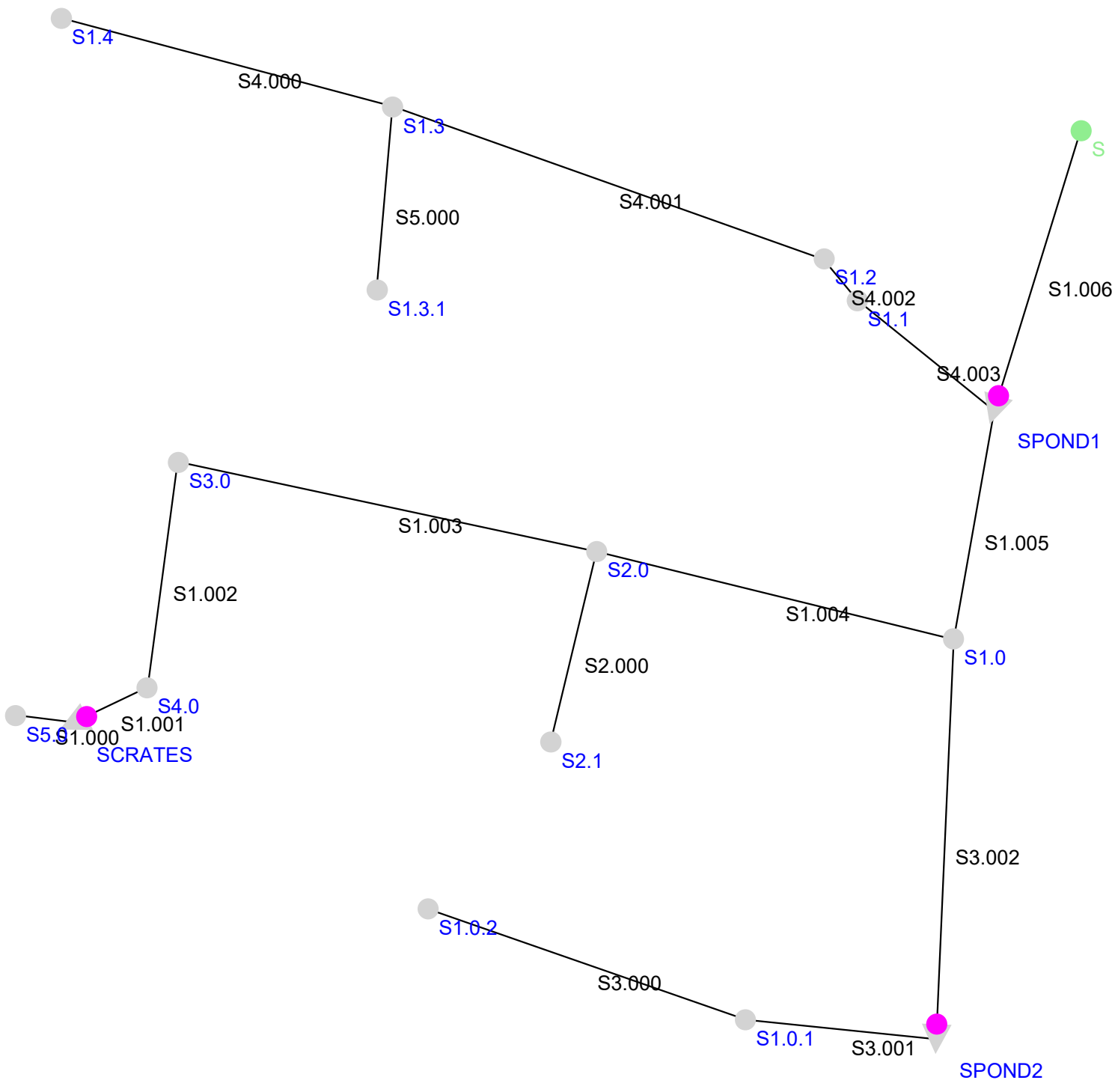
QBAR Rural 21.8
QBAR Urban 21.8


Q2 years 19.2

Q1 year 18.5
Q30 years 49.4
Q100 years 69.5

Appendix D

Updated MicroDrainage Calculations



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Cornerstone Court 62 Foxhall Road Didcot OX11 7AD	Land At Cropredy Marina Claydon Road, Cropredy FEH RESULTS	
Date 20/07/2023 14:53 File 8210439 - Land East of ...	Designed by J Dunesby Checked by J Birch	
Micro Drainage	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	100
FEH Rainfall Version	1999
Site Location GB 447100 246900 SP 47100 46900	
C (1km)	-0.024
D1 (1km)	0.337
D2 (1km)	0.356
D3 (1km)	0.223
E (1km)	0.295
F (1km)	2.505
Maximum Rainfall (mm/hr)	50
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.900
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	1.500
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.889	4-8	0.629	8-12	0.114	12-16	0.005

Total Area Contributing (ha) = 1.638


Total Pipe Volume (m³) = 46.387

Network Design Table for Storm

« - Indicates pipe capacity < flow


PN (m)	Length (m)	Fall (1:X)	Slope (ha)	I.Area (mins)	T.E. (Flow)	Base (l/s)	k (mm)	HYD SECT (mm)	DIA (mm)	Section Type	Auto Design
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Network Results Table
















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Micro Drainage	Network 2020.1.3	

Network Design Table for Storm

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
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Micro Drainage Network 2020.1.3		

Network Design Table for Storm


PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	9.769	2.050	4.8	0.000	10.00	0.0	0.600	o	150	Pipe/Conduit	
S1.001	13.723	0.090	152.5	0.243	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.002	38.152	0.535	71.3	0.065	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.003	71.778	0.650	110.4	0.173	0.00	0.0	0.600	o	375	Pipe/Conduit	
S2.000	32.855	0.220	149.3	0.043	10.00	0.0	0.600	o	150	Pipe/Conduit	
S1.004	61.596	0.700	88.0	0.243	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.000	56.380	0.335	168.3	0.059	10.00	0.0	0.600	o	225	Pipe/Conduit	
S3.001	32.175	0.215	149.7	0.101	0.00	0.0	0.600	o	225	Pipe/Conduit	
S3.002	67.187	1.325	50.7	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.005	38.998	2.575	15.1	0.218	0.00	0.0	0.600	o	375	Pipe/Conduit	
S4.000	57.517	1.025	56.1	0.131	10.00	0.0	0.600	o	225	Pipe/Conduit	
S5.000	30.796	0.375	82.1	0.057	10.00	0.0	0.600	o	225	Pipe/Conduit	
S4.001	76.761	0.940	81.7	0.128	0.00	0.0	0.600	o	300	Pipe/Conduit	
S4.002	8.950	0.060	149.2	0.128	0.00	0.0	0.600	o	375	Pipe/Conduit	
S4.003	29.370	1.250	23.5	0.049	0.00	0.0	0.600	o	375	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	E I.Area (ha)	E Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	10.04	107.400	0.000	0.0	0.0	0.0	4.65	82.1	0.0
S1.001	50.00	10.32	105.350	0.243	0.0	0.0	0.0	0.81	14.3<	39.5
S1.002	50.00	10.85	105.260	0.308	0.0	0.0	0.0	1.19	21.1<	50.0
S1.003	50.00	11.54	104.500	0.481	0.0	0.0	0.0	1.72	190.4	78.2
S2.000	50.00	10.67	104.295	0.043	0.0	0.0	0.0	0.82	14.5	7.0
S1.004	50.00	12.08	103.850	0.767	0.0	0.0	0.0	1.93	213.4	124.6
S3.000	50.00	10.94	105.250	0.059	0.0	0.0	0.0	1.00	40.0	9.6
S3.001	50.00	11.44	104.915	0.160	0.0	0.0	0.0	1.07	42.4	26.0
S3.002	50.00	12.23	104.700	0.160	0.0	0.0	0.0	1.42	25.0<	26.0
S1.005	50.00	12.37	103.150	1.145	0.0	0.0	0.0	4.68	516.5	186.1
S4.000	50.00	10.55	104.000	0.131	0.0	0.0	0.0	1.75	69.6	21.3
S5.000	50.00	10.36	103.350	0.057	0.0	0.0	0.0	1.44	57.4	9.3
S4.001	50.00	11.28	102.900	0.316	0.0	0.0	0.0	1.74	123.1	51.3
S4.002	50.00	11.38	101.885	0.444	0.0	0.0	0.0	1.48	163.6	72.1
S4.003	50.00	11.51	101.900	0.493	0.0	0.0	0.0	3.75	414.4	80.1

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Micro Drainage	Network 2020.1.3	

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.006	49.050	0.325	150.9	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.006	50.00	12.86	100.500	1.638	0.0	0.0	0.0	1.65	262.8«	266.2



Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdr (mm)
S5.0	108.000	0.600	Open Manhole	1200	S1.000	107.400	150				
SCRATES	107.750	2.400	Open Manhole	1200	S1.001	105.350	150	S1.000	105.350	150	
S4.0	107.250	1.990	Open Manhole	1500	S1.002	105.260	150	S1.001	105.260	150	
S3.0	106.100	1.600	Open Manhole	1500	S1.003	104.500	375	S1.002	104.725	150	
S2.1	105.695	1.400	Open Manhole	1500	S2.000	104.295	150				
S2.0	105.250	1.400	Open Manhole	1500	S1.004	103.850	375	S1.003	103.850	375	
								S2.000	104.075	150	
S1.0.2	106.650	1.400	Open Manhole	1500	S3.000	105.250	225				
S1.0.1	106.315	1.400	Open Manhole	1500	S3.001	104.915	225	S3.000	104.915	225	
SPOND2	105.900	1.200	Open Manhole	1200	S3.002	104.700	150	S3.001	104.700	225	
S1.0	104.750	1.600	Open Manhole	1500	S1.005	103.150	375	S1.004	103.150	375	
								S3.002	103.375	150	
S1.4	105.400	1.400	Open Manhole	1500	S4.000	104.000	225				
S1.3.1	104.750	1.400	Open Manhole	1500	S5.000	103.350	225				
S1.3	104.300	1.400	Open Manhole	1500	S4.001	102.900	300	S4.000	102.975	225	
								S5.000	102.975	225	
S1.2	103.300	1.415	Open Manhole	1500	S4.002	101.885	375	S4.001	101.960	300	
S1.1	103.300	1.475	Open Manhole	1500	S4.003	101.900	375	S4.002	101.825	375	
SPOND1	102.000	1.500	Open Manhole	1350	S1.006	100.500	450	S1.005	100.575	375	
								S4.003	100.650	375	
S	101.000	0.825	Open Manhole	150		OUTFALL		S1.006	100.175	450	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S5.0	446821.327	247002.429	446821.327	247002.429	Required	
SCRATES	446831.019	247001.201	446831.019	247001.201	Required	
S4.0	446843.404	247007.112	446843.404	247007.112	Required	
S3.0	446848.644	247044.903	446848.644	247044.903	Required	
S2.1	446911.143	246998.003	446911.143	246998.003	Required	

Cornerstone Court
62 Foxhall Road
Didcot OX11 7AD

Land At Cropredy Marina
Claydon Road, Cropredy
FEH RESULTS



Date 20/07/2023 14:53
File 8210439 - Land East of ...


Designed by J Dunesby
Checked by J Birch

Micro Drainage

Network 2020.1.3

Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S2.0	446918.845	247029.942	446918.845	247029.942	Required	
S1.0.2	446890.549	246970.034	446890.549	246970.034	Required	
S1.0.1	446943.767	246951.417	446943.767	246951.417	Required	
SPOND2	446975.780	246948.185	446975.780	246948.185	Required	
S1.0	446978.678	247015.310	446978.678	247015.310	Required	
S1.4	446829.029	247119.393	446829.029	247119.393	Required	
S1.3.1	446882.013	247073.833	446882.013	247073.833	Required	
S1.3	446884.589	247104.521	446884.589	247104.521	Required	
S1.2	446957.002	247079.053	446957.002	247079.053	Required	
S1.1	446962.562	247072.039	446962.562	247072.039	Required	
SPOND1	446985.506	247053.705	446985.506	247053.705	Required	
S	447000.115	247100.530			No Entry	

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Micro Drainage	Network 2020.1.3	


PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	150	S5.0	108.000	107.400	0.450	Open Manhole	1200
S1.001	o	150	SCRATES	107.750	105.350	2.250	Open Manhole	1200
S1.002	o	150	S4.0	107.250	105.260	1.840	Open Manhole	1500
S1.003	o	375	S3.0	106.100	104.500	1.225	Open Manhole	1500
S2.000	o	150	S2.1	105.695	104.295	1.250	Open Manhole	1500
S1.004	o	375	S2.0	105.250	103.850	1.025	Open Manhole	1500
S3.000	o	225	S1.0.2	106.650	105.250	1.175	Open Manhole	1500
S3.001	o	225	S1.0.1	106.315	104.915	1.175	Open Manhole	1500
S3.002	o	150	SPOND2	105.900	104.700	1.050	Open Manhole	1200
S1.005	o	375	S1.0	104.750	103.150	1.225	Open Manhole	1500
S4.000	o	225	S1.4	105.400	104.000	1.175	Open Manhole	1500
S5.000	o	225	S1.3.1	104.750	103.350	1.175	Open Manhole	1500
S4.001	o	300	S1.3	104.300	102.900	1.100	Open Manhole	1500
S4.002	o	375	S1.2	103.300	101.885	1.040	Open Manhole	1500

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	9.769	4.8	SCRATES	107.750	105.350	2.250	Open Manhole	1200
S1.001	13.723	152.5	S4.0	107.250	105.260	1.840	Open Manhole	1500
S1.002	38.152	71.3	S3.0	106.100	104.725	1.225	Open Manhole	1500
S1.003	71.778	110.4	S2.0	105.250	103.850	1.025	Open Manhole	1500
S2.000	32.855	149.3	S2.0	105.250	104.075	1.025	Open Manhole	1500
S1.004	61.596	88.0	S1.0	104.750	103.150	1.225	Open Manhole	1500
S3.000	56.380	168.3	S1.0.1	106.315	104.915	1.175	Open Manhole	1500
S3.001	32.175	149.7	SPOND2	105.900	104.700	0.975	Open Manhole	1200
S3.002	67.187	50.7	S1.0	104.750	103.375	1.225	Open Manhole	1500
S1.005	38.998	15.1	SPOND1	102.000	100.575	1.050	Open Manhole	1350
S4.000	57.517	56.1	S1.3	104.300	102.975	1.100	Open Manhole	1500
S5.000	30.796	82.1	S1.3	104.300	102.975	1.100	Open Manhole	1500
S4.001	76.761	81.7	S1.2	103.300	101.960	1.040	Open Manhole	1500
S4.002	8.950	149.2	S1.1	103.300	101.825	1.100	Open Manhole	1500

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S4.003	o	375	S1.1	103.300	101.900	1.025	Open Manhole	1500
S1.006	o	450	SPOND1	102.000	100.500	1.050	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S4.003	29.370	23.5	SPOND1	102.000	100.650	0.975	Open Manhole	1350
S1.006	49.050	150.9	S	101.000	100.175	0.375	Open Manhole	150

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.000	0.000	0.000
1.001	-	-	100	0.243	0.243	0.243
1.002	-	-	100	0.065	0.065	0.065
1.003	-	-	100	0.173	0.173	0.173
2.000	-	-	100	0.043	0.043	0.043
1.004	-	-	100	0.243	0.243	0.243
3.000	-	-	100	0.059	0.059	0.059
3.001	-	-	100	0.101	0.101	0.101
3.002	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.218	0.218	0.218
4.000	-	-	100	0.131	0.131	0.131
5.000	-	-	100	0.057	0.057	0.057
4.001	-	-	100	0.128	0.128	0.128
4.002	-	-	100	0.128	0.128	0.128
4.003	-	-	100	0.049	0.049	0.049
1.006	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				1.638	1.638	1.638

Free Flowing Outfall Details for Storm


Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D, L (mm)	W (mm)
S1.006	S	101.000	100.175	100.175	150	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.900	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1
Number of Input Hydrographs	0	Number of Storage Structures	3
Number of Online Controls	3	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0


Synthetic Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 447100 246900 SP 47100 46900
C (1km)	-0.024
D1 (1km)	0.337

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Synthetic Rainfall Details

D2 (1km) 0.356
 D3 (1km) 0.223
 E (1km) 0.295
 F (1km) 2.505
 Summer Storms Yes
 Winter Storms Yes
 Cv (Summer) 0.900
 Cv (Winter) 0.840
 Storm Duration (mins) 30

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: SCRATES, DS/PN: S1.001, Volume (m³): 2.9

Unit Reference	MD-SHE-0049-1200-1200-1200
Design Head (m)	1.200
Design Flow (l/s)	1.2
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	49
Invert Level (m)	105.350
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200


Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.200	1.2
Flush-Flo™	0.215	0.9
Kick-Flo®	0.438	0.8
Mean Flow over Head Range	-	0.9

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	0.9	1.200	1.2	3.000	1.8	7.000	2.7
0.200	0.9	1.400	1.3	3.500	2.0	7.500	2.8
0.300	0.9	1.600	1.4	4.000	2.1	8.000	2.9
0.400	0.8	1.800	1.4	4.500	2.2	8.500	2.9
0.500	0.8	2.000	1.5	5.000	2.3	9.000	3.0
0.600	0.9	2.200	1.6	5.500	2.4	9.500	3.1
0.800	1.0	2.400	1.6	6.000	2.5		
1.000	1.1	2.600	1.7	6.500	2.6		

Hydro-Brake® Optimum Manhole: SPOND2, DS/PN: S3.002, Volume (m³): 2.6

Unit Reference	MD-SCU-0088-7500-0900-7500
Design Head (m)	0.900
Design Flow (l/s)	7.5
Flush-Flo™	Calculated
Objective	Linear discharge profile
Application	Surface
Sump Available	Yes
Diameter (mm)	88
Invert Level (m)	104.700
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

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Hydro-Brake® Optimum Manhole: SPOND2, DS/PN: S3.002, Volume (m³): 2.6

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.900	7.5
Flush-Flo™	0.111	3.1
Kick-Flo®	0.130	3.1
Mean Flow over Head Range	-	5.1

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.0	1.200	8.6	3.000	13.3	7.000	19.9
0.200	3.7	1.400	9.2	3.500	14.3	7.500	20.6
0.300	4.5	1.600	9.8	4.000	15.2	8.000	21.3
0.400	5.1	1.800	10.4	4.500	16.1	8.500	21.9
0.500	5.7	2.000	10.9	5.000	17.0	9.000	22.5
0.600	6.2	2.200	11.4	5.500	17.7	9.500	23.1
0.800	7.1	2.400	11.9	6.000	18.5		
1.000	7.9	2.600	12.4	6.500	19.2		


Hydro-Brake® Optimum Manhole: SPOND1, DS/PN: S1.006, Volume (m³): 9.4

Unit Reference	MD-SHE-0204-2180-1175-2180
Design Head (m)	1.175
Design Flow (l/s)	21.8
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	204
Invert Level (m)	100.500
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.175	21.8
Flush-Flo™	0.374	21.8
Kick-Flo®	0.818	18.4
Mean Flow over Head Range	-	18.5


The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	7.0	0.300	21.6	0.500	21.5	0.800	18.8
0.200	19.4	0.400	21.8	0.600	21.1	1.000	20.2

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Hydro-Brake® Optimum Manhole: SPOND1, DS/PN: S1.006, Volume (m³): 9.4

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
1.200	22.0	2.400	30.7	5.000	43.7	8.000	54.9
1.400	23.7	2.600	31.9	5.500	45.8	8.500	56.5
1.600	25.3	3.000	34.2	6.000	47.7	9.000	58.1
1.800	26.7	3.500	36.8	6.500	49.6	9.500	59.7
2.000	28.1	4.000	39.2	7.000	51.4		
2.200	29.4	4.500	41.5	7.500	53.2		

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Storage Structures for Storm

Cellular Storage Manhole: SCRATES, DS/PN: S1.001

Invert Level (m) 105.350 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	215.0	215.0	1.300	0.0	290.6
1.200	215.0	290.6			

Infiltration Basin Manhole: SPOND2, DS/PN: S3.002


Invert Level (m) 104.700 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 1.00
 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	44.2	1.200	169.8

Infiltration Basin Manhole: SPOND1, DS/PN: S1.006

Invert Level (m) 100.500 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 1.00
 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	571.0	1.200	1031.9	1.500	1160.2

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Storage Structures 3
Number of Online Controls 3 Number of Time/Area Diagrams 0
Number of Offline Controls 0 Number of Real Time Controls 0


Synthetic Rainfall Details

Rainfall Model FEH
FEH Rainfall Version 1999
Site Location GB 447100 246900 SP 47100 46900
C (1km) -0.024
D1 (1km) 0.337
D2 (1km) 0.356
D3 (1km) 0.223
E (1km) 0.295
F (1km) 2.505
Cv (Summer) 0.950
Cv (Winter) 0.950

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status OFF
Inertia Status OFF


Profile(s) Summer and Winter
Duration(s) (mins) 60, 120, 180, 240, 360, 480, 600, 720, 960,
1440, 2160, 2880, 4320, 5760, 7200, 8640,
10080
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Event	Duration (mins)	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)
S1.000	S5.0	60 minute 1 year Summer I+0%	60	108.000	107.400	-0.150	0.000
S1.001	SCRATES	1440 minute 1 year Summer I+0%	1440	107.750	105.557	0.057	0.000
S1.002	S4.0	60 minute 1 year Summer I+0%	60	107.250	105.322	-0.088	0.000
S1.003	S3.0	60 minute 1 year Summer I+0%	60	106.100	104.592	-0.283	0.000
S2.000	S2.1	60 minute 1 year Summer I+0%	60	105.695	104.350	-0.095	0.000
S1.004	S2.0	60 minute 1 year Summer I+0%	60	105.250	103.980	-0.245	0.000
S3.000	S1.0.2	60 minute 1 year Summer I+0%	60	106.650	105.306	-0.169	0.000
S3.001	S1.0.1	60 minute 1 year Summer I+0%	60	106.315	105.011	-0.129	0.000
S3.002	SPOND2	120 minute 1 year Summer I+0%	120	105.900	104.908	0.058	0.000

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm


PN	US/MH Name	Flow / Cap.	Maximum Vol (m ³)	Pipe	Status
				Flow (l/s)	
S1.000	S5.0	0.00	0.000	0.0	OK
S1.001	SCRATES	0.07	42.459	0.9	SURCHARGED
S1.002	S4.0	0.36	0.144	7.3	OK
S1.003	S3.0	0.14	0.154	24.6	OK
S2.000	S2.1	0.29	0.088	4.0	OK
S1.004	S2.0	0.26	0.439	52.2	OK
S3.000	S1.0.2	0.14	0.091	5.4	OK
S3.001	S1.0.1	0.38	0.269	15.1	OK
S3.002	SPOND2	0.15	11.561	3.8	SURCHARGED

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Micro Drainage	Network 2020.1.3	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

PN	US/MH Name	Event	Duration (mins)	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)
S1.005	S1.0	60 minute 1 year Summer I+0%	60	104.750	103.251	-0.274	0.000
S4.000	S1.4	60 minute 1 year Summer I+0%	60	105.400	104.064	-0.161	0.000
S5.000	S1.3.1	60 minute 1 year Summer I+0%	60	104.750	103.397	-0.178	0.000
S4.001	S1.3	60 minute 1 year Summer I+0%	60	104.300	103.002	-0.198	0.000
S4.002	S1.2	60 minute 1 year Summer I+0%	60	103.300	102.047	-0.213	0.000
S4.003	S1.1	60 minute 1 year Summer I+0%	60	103.300	101.989	-0.286	0.000
S1.006	SPOND1	360 minute 1 year Summer I+0%	360	102.000	100.735	-0.215	0.000

PN	US/MH Name	Flow / Cap.	Maximum Vol (m ³)	Pipe Flow (l/s)	Status
S1.005	S1.0	0.16	0.251	76.9	OK
S4.000	S1.4	0.18	0.105	12.1	OK
S5.000	S1.3.1	0.10	0.075	5.3	OK
S4.001	S1.3	0.25	0.174	29.4	OK
S4.002	S1.2	0.39	0.346	41.6	OK
S4.003	S1.1	0.13	0.519	46.4	OK
S1.006	SPOND1	0.09	144.040	21.0	OK

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Storage Structures 3
Number of Online Controls 3 Number of Time/Area Diagrams 0
Number of Offline Controls 0 Number of Real Time Controls 0


Synthetic Rainfall Details

Rainfall Model FEH
FEH Rainfall Version 1999
Site Location GB 447100 246900 SP 47100 46900
C (1km) -0.024
D1 (1km) 0.337
D2 (1km) 0.356
D3 (1km) 0.223
E (1km) 0.295
F (1km) 2.505
Cv (Summer) 0.950
Cv (Winter) 0.950

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status OFF
Inertia Status OFF


Profile(s) Summer and Winter
Duration(s) (mins) 60, 120, 180, 240, 360, 480, 600, 720, 960,
1440, 2160, 2880, 4320, 5760, 7200, 8640,
10080
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH		Event	Duration (mins)	US/CL (m)	Water	Surcharged	Flooded
	Name					Level (m)	Depth (m)	Volume (m ³)
S1.000	S5.0	60 minute	30 year Summer I+0%	60	108.000	107.400	-0.150	0.000
S1.001	SCRATES	960 minute	30 year Winter I+0%	960	107.750	105.914	0.414	0.000
S1.002	S4.0	60 minute	30 year Summer I+0%	60	107.250	105.389	-0.021	0.000
S1.003	S3.0	60 minute	30 year Summer I+0%	60	106.100	104.667	-0.208	0.000
S2.000	S2.1	60 minute	30 year Summer I+0%	60	105.695	104.395	-0.050	0.000
S1.004	S2.0	60 minute	30 year Summer I+0%	60	105.250	104.100	-0.125	0.000
S3.000	S1.0.2	60 minute	30 year Summer I+0%	60	106.650	105.347	-0.128	0.000
S3.001	S1.0.1	60 minute	30 year Summer I+0%	60	106.315	105.237	0.097	0.000
S3.002	SPOND2	60 minute	30 year Winter I+0%	60	105.900	105.208	0.358	0.000

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm


PN	US/MH Name	Flow / Cap.	Maximum Vol (m ³)	Pipe	Status
				Flow (l/s)	
S1.000	S5.0	0.00	0.000	0.0	OK
S1.001	SCRATES	0.07	115.785	0.9	SURCHARGED
S1.002	S4.0	1.00	0.326	20.4	OK
S1.003	S3.0	0.40	0.286	72.5	OK
S2.000	S2.1	0.78	0.168	10.8	OK
S1.004	S2.0	0.77	1.382	153.9	OK
S3.000	S1.0.2	0.38	0.162	14.7	OK
S3.001	S1.0.1	0.95	1.887	37.7	SURCHARGED
S3.002	SPOND2	0.23	34.642	5.7	SURCHARGED

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

PN	US/MH Name	Event	Duration (mins)	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)
S1.005	S1.0	60 minute 30 year Summer I+0%	60	104.750	103.333	-0.192	0.000
S4.000	S1.4	60 minute 30 year Summer I+0%	60	105.400	104.112	-0.113	0.000
S5.000	S1.3.1	60 minute 30 year Summer I+0%	60	104.750	103.429	-0.146	0.000
S4.001	S1.3	60 minute 30 year Summer I+0%	60	104.300	103.086	-0.114	0.000
S4.002	S1.2	60 minute 30 year Summer I+0%	60	103.300	102.274	0.014	0.000
S4.003	S1.1	60 minute 30 year Summer I+0%	60	103.300	102.056	-0.219	0.000
S1.006	SPOND1	240 minute 30 year Summer I+0%	240	102.000	101.110	0.160	0.000

PN	US/MH Name	Flow / Cap.	Maximum Vol (m ³)	Pipe Flow (l/s)	Status
S1.005	S1.0	0.48	0.675	223.2	OK
S4.000	S1.4	0.49	0.188	32.9	OK
S5.000	S1.3.1	0.27	0.131	14.3	OK
S4.001	S1.3	0.68	0.451	80.9	OK
S4.002	S1.2	1.09	1.587	116.8	SURCHARGED
S4.003	S1.1	0.36	0.811	130.3	OK
S1.006	SPOND1	0.09	414.553	21.7	SURCHARGED

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Micro Drainage	Network 2020.1.3	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	3
Number of Online Controls	3	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0


Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	1999
Site Location	GB 447100 246900 SP 47100 46900
C (1km)	-0.024
D1 (1km)	0.337
D2 (1km)	0.356
D3 (1km)	0.223
E (1km)	0.295
F (1km)	2.505
Cv (Summer)	0.950
Cv (Winter)	0.950

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF


Profile(s)	Summer and Winter
Duration(s) (mins)	60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Event	Duration (mins)	US/CL (m)	Water Surcharged	
					Level (m)	Depth (m)
S1.000	S5.0	60 minute 100 year Summer I+40%	60	108.000	107.400	-0.150
S1.001	SCRATES	1440 minute 100 year Winter I+40%	1440	107.750	106.522	1.022
S1.002	S4.0	60 minute 100 year Summer I+40%	60	107.250	106.441	1.031
S1.003	S3.0	60 minute 100 year Summer I+40%	60	106.100	105.075	0.200
S2.000	S2.1	60 minute 100 year Summer I+40%	60	105.695	105.176	0.731
S1.004	S2.0	60 minute 100 year Summer I+40%	60	105.250	104.767	0.542
S3.000	S1.0.2	60 minute 100 year Summer I+40%	60	106.650	106.220	0.745
S3.001	S1.0.1	60 minute 100 year Summer I+40%	60	106.315	106.035	0.895
S3.002	SPOND2	60 minute 100 year Winter I+40%	60	105.900	105.595	0.745

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Micro Drainage	Network 2020.1.3	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm


PN	US/MH Name	Flooded		Pipe		Status
		Volume (m³)	Flow / Cap.	Maximum Vol (m³)	Flow (l/s)	
S1.000	S5.0	0.000	0.00	0.000	0.0	OK
S1.001	SCRATES	0.000	0.09	240.726	1.2	SURCHARGED
S1.002	S4.0	0.000	1.60	2.296	32.6	SURCHARGED
S1.003	S3.0	0.000	0.69	1.335	124.7	SURCHARGED
S2.000	S2.1	0.000	1.71	1.548	23.9	SURCHARGED
S1.004	S2.0	0.000	1.33	9.767	266.3	SURCHARGED
S3.000	S1.0.2	0.000	0.78	1.706	30.2	SURCHARGED
S3.001	S1.0.1	0.000	1.88	4.153	74.6	FLOOD RISK
S3.002	SPOND2	0.000	0.30	76.838	7.5	SURCHARGED

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Micro Drainage	Network 2020.1.3	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Event	Duration (mins)	US/CL (m)	Water Level (m)	Surcharged Depth (m)
S1.005	S1.0	60 minute 100 year Summer I+40%	60	104.750	103.415	-0.110
S4.000	S1.4	60 minute 100 year Summer I+40%	60	105.400	104.724	0.499
S5.000	S1.3.1	60 minute 100 year Summer I+40%	60	104.750	103.938	0.363
S4.001	S1.3	60 minute 100 year Summer I+40%	60	104.300	103.836	0.636
S4.002	S1.2	60 minute 100 year Summer I+40%	60	103.300	102.468	0.208
S4.003	S1.1	60 minute 100 year Summer I+40%	60	103.300	102.121	-0.154
S1.006	SPOND1	360 minute 100 year Winter I+40%	360	102.000	101.681	0.731

PN	US/MH Name	Flooded			Pipe		Status
		Volume (m³)	Flow / Cap.	Maximum Vol (m³)	Flow (l/s)		
S1.005	S1.0	0.000	0.83	1.312	388.9	OK	
S4.000	S1.4	0.000	0.97	1.271	64.8	SURCHARGED	
S5.000	S1.3.1	0.000	0.56	1.030	30.0	SURCHARGED	
S4.001	S1.3	0.000	1.21	4.423	143.0	SURCHARGED	
S4.002	S1.2	0.000	1.94	3.020	207.8	SURCHARGED	
S4.003	S1.1	0.000	0.64	1.103	235.0	OK	
S1.006	SPOND1	0.000	0.09	933.563	21.8	SURCHARGED	

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Micro Drainage	Network 2020.1.3	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Storage Structures 3
Number of Online Controls 3 Number of Time/Area Diagrams 0
Number of Offline Controls 0 Number of Real Time Controls 0


Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.413
Region England and Wales Cv (Summer) 0.950
M5-60 (mm) 19.800 Cv (Winter) 0.950

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status OFF
Inertia Status OFF

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60
Return Period(s) (years) 100
Climate Change (%) 40

PN	US/MH Name	Event	Duration (mins)	US/CL (m)	Water Level (m)	Surcharged Depth (m)
S1.000	S5.0	15 minute 100 year Summer I+40%	15	108.000	107.400	-0.150
S1.001	SCRATES	60 minute 100 year Summer I+40%	60	107.750	105.963	0.463
S1.002	S4.0	15 minute 100 year Summer I+40%	15	107.250	107.197	1.787
S1.003	S3.0	15 minute 100 year Summer I+40%	15	106.100	105.686	0.811
S2.000	S2.1	15 minute 100 year Summer I+40%	15	105.695	105.486	1.041
S1.004	S2.0	15 minute 100 year Summer I+40%	15	105.250	105.245	1.020
S3.000	S1.0.2	15 minute 100 year Summer I+40%	15	106.650	106.147	0.672
S3.001	S1.0.1	15 minute 100 year Summer I+40%	15	106.315	106.010	0.870
S3.002	SPOND2	60 minute 100 year Winter I+40%	60	105.900	105.484	0.634
S1.005	S1.0	15 minute 100 year Summer I+40%	15	104.750	103.459	-0.066
S4.000	S1.4	15 minute 100 year Summer I+40%	15	105.400	104.699	0.474
S5.000	S1.3.1	15 minute 100 year Summer I+40%	15	104.750	104.086	0.511
S4.001	S1.3	15 minute 100 year Summer I+40%	15	104.300	104.020	0.820
S4.002	S1.2	15 minute 100 year Summer I+40%	15	103.300	102.545	0.285
S4.003	S1.1	15 minute 100 year Summer I+40%	15	103.300	102.144	-0.131
S1.006	SPOND1	60 minute 100 year Winter I+40%	60	102.000	101.355	0.405

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Micro Drainage	Network 2020.1.3	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded		Pipe		Status
		Volume (m³)	Flow / Cap.	Maximum Vol (m³)	Flow (l/s)	
S1.000	S5.0	0.000	0.00	0.000	0.0	OK
S1.001	SCRATES	0.000	0.07	126.002	0.9	SURCHARGED
S1.002	S4.0	0.000	1.78	3.633	36.2	FLOOD RISK
S1.003	S3.0	0.000	0.81	2.734	145.2	SURCHARGED
S2.000	S2.1	0.000	1.94	2.096	27.1	FLOOD RISK
S1.004	S2.0	0.000	1.53	10.772	305.6	FLOOD RISK
S3.000	S1.0.2	0.000	0.87	1.577	33.6	SURCHARGED
S3.001	S1.0.1	0.000	2.11	4.109	84.0	SURCHARGED
S3.002	SPOND2	0.000	0.29	63.049	7.0	SURCHARGED
S1.005	S1.0	0.000	0.99	1.694	461.5	OK
S4.000	S1.4	0.000	1.01	1.227	67.5	SURCHARGED
S5.000	S1.3.1	0.000	0.64	1.291	34.3	SURCHARGED
S4.001	S1.3	0.000	1.23	5.132	145.9	FLOOD RISK
S4.002	S1.2	0.000	2.16	3.594	231.9	SURCHARGED
S4.003	S1.1	0.000	0.73	1.194	267.5	OK
S1.006	SPOND1	0.000	0.09	621.052	21.6	SURCHARGED

Appendix E
Updated Site Location Plan

PROJECT TITLE
**OBSIDIAN STRATEGIC
LAND AT CROPREDY MARINA**

DRAWING TITLE
**RED AND BLUE LINE
LOCATION PLAN**

DWG. NO. J0043785_009

ISSUED BY London
DATE July 2023
SCALE@A3 1:2500
STATUS Draft

T: 020 7016 0720
DRAWN MH
CHECKED JC
APPROVED JC

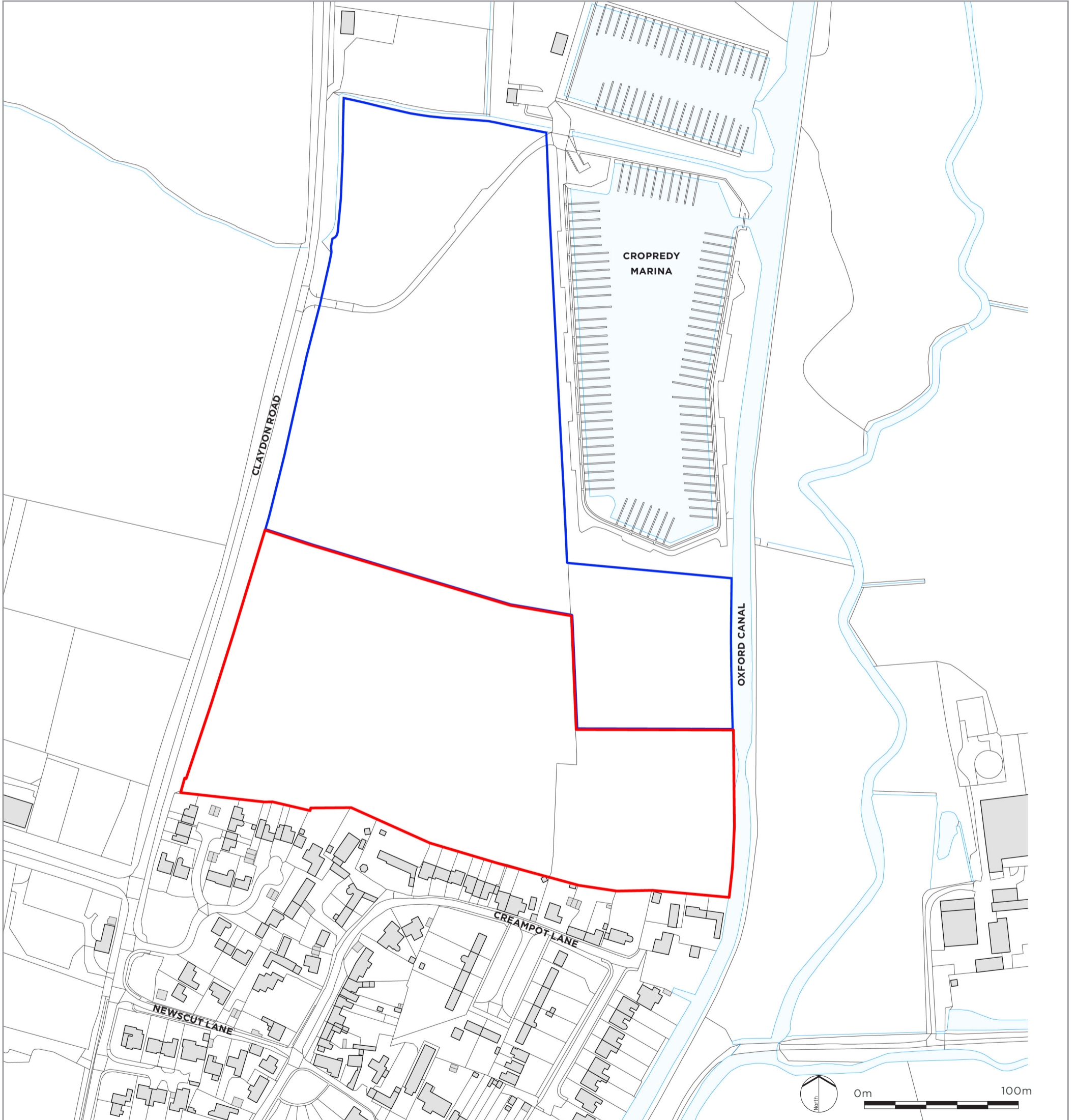


Carter Jonas



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No dimensions are to be scaled from this drawing.
All dimensions are to be checked on site.
Area measurements for indicative purposes only.

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LEGEND

-  Site boundary (4.96 Ha)
-  Land in client's ownership