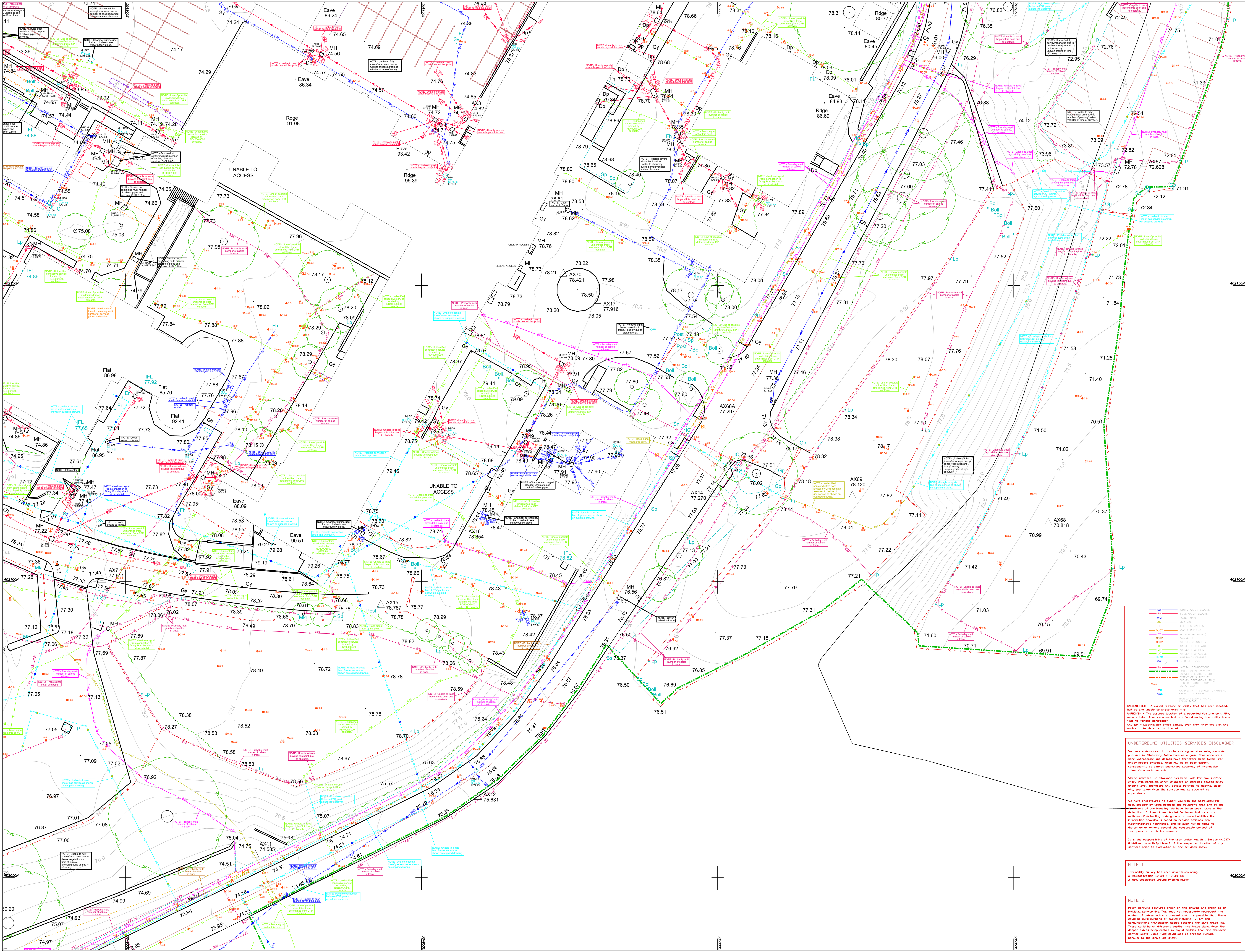




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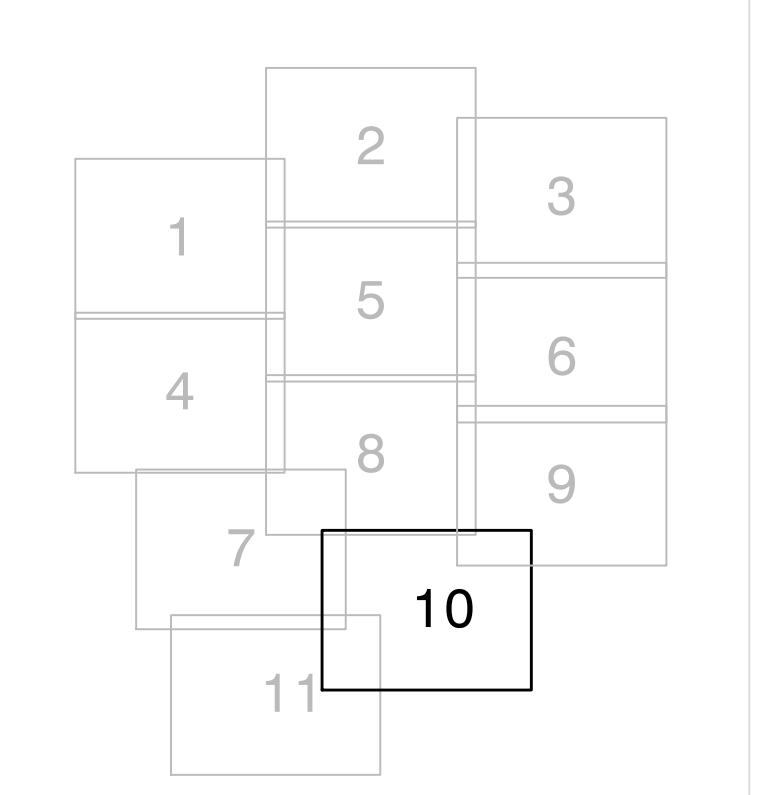
Notes:

All levels relate to Existing Site Datum.
Orientation to Existing Site Grid.

Survey Control Markers established for
Mapping purposes only and should not be
used for Construction without the written
approval of Survey Operations Ltd.

Drainage information must be verified
with local authority records before use

Utility survey added to topographical survey
(3654_30_2013) supplied by client.



SHEET LAYOUT

Survey
OPERATIONS

Smith Street, Salford, Lancs. M6 6PU
Tel: 01695 725662 Fax: 01695 51816
Email: mail@surveys.co.uk - www.surveys.co.uk

Client
S.I. Sealy

Drawing Title
Utility Survey of Land at:
North Manchester General Hospital
Manchester
Sheet 10 of 11

Scale(s)
1:200

Date
MAY 20

Job Number
20B201

Sheet Size & Org Number & Revision
A0 20B201/010

Surveyor
TW/SF/MB

Drawn
IT

Checked
TW/SF/MB/IT

UNIDENTIFIED - A buried feature or utility that has been located, but we are unable to stake and it is:
UNPROVEN - The assumed location of a reported feature or utility, usually taken from records, but not found during the utility trace (due to various conditions)
CAUTION - Existing and buried cables, even when they are live, are unable to be detected or traced.

UNDERGROUND UTILITIES SERVICES DISCLAIMER

We have endeavored to locate existing services using records provided by statutory authorities as a guide. Some operators were untraceable and details have therefore been taken from utility records. Details which may be of poor quality. Consequently we cannot guarantee accuracy of information taken from such records.

Where indicated, no allowance has been made for sub-surface entry into manholes, other chambers or confined spaces below ground level. Therefore any details relating to depths, sizes etc. are taken from the surface and as such will be approximate.

We have endeavored to supply you with the most accurate data possible by using methods and equipment that are at the forefront of our industry. We have been diligent in the detection of pipework and buried features, but as with all methods of detecting underground or buried utilities the information provided is based on results obtained from electromagnetic techniques and as such may be liable to distortion or errors beyond the reasonable control of the operator or his instruments.

It is the responsibility of the user under health & safety (HSE) guidelines to activity in the vicinity of the suspected location of any services prior to excavation of the services shown.

NOTE 1
This utility survey has been undertaken using a Radiodetection GROUND - GROUND TID & Main Geoscience Ground Penetrating Radar.

NOTE 2
Power carrying features shown on this drawing are shown as an indicated service line. This does not necessarily represent the number of cables actually present and it is possible that there could be multi numbers of cables including HV, LV and communications transmission cables following the same trace line. These could be at different depths, the trace signal from the deeper cables being masked by signal emitted from the shallow service above. Cable runs could also be present running parallel to the single line shown.



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Notes:

All levels relate to Existing Site Datum. Orientation to Existing Site Grid.

Survey Control Markers established for Mapping purposes only and should not be used for Construction without the written approval of Survey Operations Ltd.

Drainage information must be verified with local authority records before use

Utility survey added to topographical survey (3654_30_2013) supplied by client.

1 2 3

4 5 6

7 8 9

10 11

SHEET LAYOUT

Survey

OPERATIONS

Smith Street, Salford, Greater Manchester, M6 6PU, UK
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Email: mail@survops.co.uk - www.survops.co.uk

Client

S.I. Sealy

Drawing Title

Utility Survey of Land at:
North Manchester General Hospital
Manchester
Sheet 11 of 11

Scale(s)

1:200

Surveyor

TW/SF/MB

Date

MAY 20

Drawn

IT

Job Number

20B201

Checked

TW/SF/MB/IT

Sheet Size & Org Number & Revision

A0 20B201/011

Appendix D

Borehole records



CABLE PERCUSSIVE BOREHOLE LOCATION



WINDOW SAMPLE BOREHOLE LOCATION



HAND EXCAVATED FOUNDATION PIT LOCATION



HAND EXCAVATED TRIAL PIT LOCATION

Rev:	Description:	Date:	By:	Chkd:
------	--------------	-------	-----	-------



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Structures - Civils - Environmental - Infrastructure - Transport Planning - Sustainability - Expert Advisory Services
Birmingham - Bristol - Cardiff - Douglas - Edinburgh - Kendal - Leeds - Liverpool - London - Manchester - Nottingham

Status:

INFORMATION

Project:

NEW PARK HOUSE

Drg Title:

EXPLORATORY HOLE LOCATION PLAN

Scale:	Size:	First Issue:	Drawn:	Checked:
NTS	A3	27/08/2020	MH	ZH

Drg No:	Rev:
075856-CUR-00-XX-DR-GE-80006	V01

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Borehole Log

Borehole No.

BH01

Sheet 1 of 3

Project Name: New Park House

Project No.
075856

Co-ords: -

Hole Type
CP

Location: North Manchester General Hospital

Level:

Scale
1:50

Client: North Manchester General Hospital

Dates: 20/08/2020 - 21/08/2020

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.15			0.15			MADE GROUND: Black tarmacadam.	
		0.30 - 1.20	B		0.30			MADE GROUND: Reddish brown tiling over dark grey gravelly fine to coarse sand. Gravel is angular to subangular fine to coarse of tarmac, brick and tile.	
		0.50 - 0.60	ES		0.40			MADE GROUND: Concrete slab.	
		1.20		N=10 (1,2/3,3,2,2)				MADE GROUND: Brownish grey gravelly fine to coarse sand with low cobble content. Gravel is angular to subangular fine to coarse of brick. Cobbles are subangular of brick.	1
		1.20 - 1.60	B		1.50			Medium dense brown slightly gravelly fine to coarse SAND. Gravel is angular to subangular fine to medium of sandstone.	
		2.00		N=5 (1,1/1,1,1,2)				From 1.50 to 2.00m loose.	2
		2.00 - 2.45	B						
		2.50 - 2.60	ES						
		3.00		N=26 (3,3/4,5,8,9)				From 3.00 to 3.50m dense.	3
		3.00 - 3.45	B						
		3.00 - 3.45	D						
		4.00		N=22 (5,6/5,5,6,6)					4
		4.00 - 4.45	B						
		4.00 - 4.45	D						
		5.00		N=19 (4,4/4,5,5,5)					5
		5.00 - 5.45	B						
		5.00 - 5.45	D						
		6.00		N=11 (2,2/3,3,2,3)					6
		6.00 - 6.45	B						
		6.00 - 6.45	D						
		7.00	D						7
		7.50		N=14 (1,1/2,3,3,6)					
		7.50 - 7.95	B						
		7.50 - 7.95	D						8
		8.50	D						
		9.00		N=13 (2,2/3,3,4,3)					9
		9.00 - 9.45	B						
		9.00 - 9.45	D						
		10.00	D						10

Continued on next sheet

Remarks

GPR service clearance prior to progression of exploratory hole. Service clearance pit hand excavated to 1.20m bgl.
Groundwater encountered at 16.50m.





Borehole Log

Borehole No.

BH01

Sheet 2 of 3

Project Name: New Park House

Project No.
075856

Co-ords: -

Hole Type
CP

Location: North Manchester General Hospital

Level:

Scale
1:50

Client: North Manchester General Hospital

Dates: 20/08/2020 - 21/08/2020

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		10.50 10.50 - 10.95 10.50 - 10.95	B D	N=3 (3,3/1,1,0,1)	13.70		<i>From 10.50 to 13.50m loose.</i>		11		
		11.50	D								
		12.00 12.00 - 12.45	B	N=5 (1,/1,1,1,2)							
		13.00	D								
		13.50 13.50 - 13.95 13.50 - 13.95	B D	N=15 (1,1/3,3,3,6)							
		14.50	D								
		15.00 - 15.45	U	Ublow=120			Very stiff greyish brown slightly sandy slightly gravelly CLAY frequently interbedded with thin to thick bands of fine to coarse sand. Sand is fine to coarse. Gravel is angular to subangular fine to medium of sandstone.			14	
		15.50	D								
		16.00	D								
		16.50 16.50 - 16.95 16.50 - 16.95	B D	50 (6,6/50 for 295mm)							
		17.50	D								
		18.00 18.00 - 18.45 18.00 - 18.45	B D	N=50 (8,8/50 for 285mm)							
		19.00	D								
		19.50 - 19.95	U	Ublow=105							
		20.00	D								

Remarks

GPR service clearance prior to progression of exploratory hole. Service clearance pit hand excavated to 1.20m bgl.
Groundwater encountered at 16.50m.





Borehole Log

Borehole No.

BH01

Sheet 3 of 3

Project Name: New Park House

Project No.
075856

Co-ords: -

Hole Type
CP

Location: North Manchester General Hospital

Level:

Scale
1:50

Client: North Manchester General Hospital

Dates: 20/08/2020 - 21/08/2020

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		21.00 21.00 21.00 - 22.00	D B	N=41 (8,9/9,10,11,11)					21
		22.50 - 22.95	U	Ublow=110					22
		23.00	D						23
		24.00 24.00 24.00	D D						24
		24.00 - 25.00	B	N=43 (7,8/10,11,10,12)	25.00				25
								End of borehole at 25.00 m	26
									27
									28
									29
									30

Remarks

GPR service clearance prior to progression of exploratory hole. Service clearance pit hand excavated to 1.20m bgl.
Groundwater encountered at 16.50m.





Borehole Log

Borehole No.

BH02

Sheet 1 of 3

Project Name: New Park House

Project No.
075856

Co-ords: -

Hole Type
CP

Location: North Manchester General Hospital

Level:

Scale
1:50

Client: North Manchester General Hospital

Dates: 19/08/2020 - 21/08/2020

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20			MADE GROUND: Black tarmacadam.	
					0.50			MADE GROUND: Brown and grey sandy angular to subangular fine to coarse gravel of dolomite hardcore and tarmacadam. Sand is fine to coarse.	
		1.00	ES		1.00			MADE GROUND: Brown slightly gravelly fine to coarse sand. Gravel is angular to subangular fine to coarse of brick.	1
		1.20 - 1.65	D		1.20			MADE GROUND: Brown slightly sandy slightly gravelly clay. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of brick and terracotta.	
		2.00	B					Medium dense greyish brown slightly clayey fine to coarse SAND frequently interbedded with thin to thick bands of clay.	2
		2.00 - 2.45	D						
		3.00	B						3
		3.00 - 3.45	D						
		4.00	B						4
		4.00 - 4.45	D						
		5.00	B						5
		5.00 - 5.45	D						
		6.50 - 6.95	U						6
		7.00	D						7
		8.00 - 8.45	D					From 8.00 to 11.00m thinly to thickly spaced thin laminations of black sand.	8
		9.00 - 9.95	D						9
									10

Continued on next sheet

Remarks

GPR service clearance prior to progression of exploratory hole. Service clearance pit hand excavated to 1.20m bgl.
Groundwater encountered at 14.50m.





Borehole Log

Borehole No.

BH02

Sheet 2 of 3

Project Name: New Park House

Project No.
075856

Co-ords: -

Hole Type
CP

Location: North Manchester General Hospital

Level:

Scale
1:50

Client: North Manchester General Hospital

Dates: 19/08/2020 - 21/08/2020

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		11.00 - 11.45	D						11	
										12
		12.50 - 12.95	D							13
		14.00 - 14.45	D							14
		15.50 - 15.95	D							15
										16
		17.00 - 17.45	D							17
		18.50 - 18.95	U					18		
		19.00	D					19		
		20.00 - 20.45	D					20		
Continued on next sheet										

Remarks

GPR service clearance prior to progression of exploratory hole. Service clearance pit hand excavated to 1.20m bgl.
Groundwater encountered at 14.50m.





Borehole Log

Borehole No.

BH02

Sheet 3 of 3

Project Name: New Park House

Project No.
075856

Co-ords: -

Hole Type
CP

Location: North Manchester General Hospital

Level:

Scale
1:50

Client: North Manchester General Hospital

Dates: 19/08/2020 - 21/08/2020

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		21.50 - 21.95	U						21
		23.00 - 23.45	D		23.00				22
								Very stiff brownish grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of sandstone.	23
					25.00				24
								End of borehole at 25.00 m	25
									26
									27
									28
									29
									30

Remarks

GPR service clearance prior to progression of exploratory hole. Service clearance pit hand excavated to 1.20m bgl.
Groundwater encountered at 14.50m.





Borehole Log

Borehole No.

BH03

Sheet 1 of 3

Project Name: New Park House

Project No.
075856

Co-ords: -

Hole Type
CP

Location: North Manchester General Hospital

Level:

Scale
1:50

Client: North Manchester General Hospital

Dates: 14/08/2020 - 18/08/2020

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.00 - 0.30	ES		0.50 0.70			Grass over TOPSOIL: Brown slightly sandy slightly gravelly clay with frequent rootlets. Sand is fine to coarse. Gravel is angular to subangular fine to medium of brick and slate.	
		1.20 1.20 - 1.65	D	N=25 (4,4/5,5,7,8)				MADE GROUND: Dark brown slightly sandy slightly gravelly clay. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of brick.	1
		2.00 2.00 - 2.45	B D	N=12 (3,3/3,2,2,5)				Dense brown slightly gravelly clayey fine to coarse SAND intermittently interbedded with thin to thick clay bands. Gravel is angular to subangular fine to coarse of sandstone.	2
		3.00 3.00 - 3.45	B D	N=11 (2,2/1,2,3,5)				From 3.00 to 4.00m slightly sandy gravelly clay.	3
		4.00 4.00 - 4.45	D	N=34 (6,7/34 for 230mm)					4
		5.00 5.00 - 5.45	B U	Ublow=67					5
		5.50	D					From 5.50 to 7.00m thinly to thickly spaced thin laminations of black sand.	6
		6.50 - 6.95	D						7
		8.00 - 8.45	D						8
		9.50 - 9.95	D						9
									10

Continued on next sheet

Remarks

GPR service clearance prior to progression of exploratory hole. Service clearance pit hand excavated to 1.20m bgl.
Groundwater encountered at 18.80m.





Borehole Log

Borehole No.

BH03

Sheet 2 of 3

Project Name: New Park House

Project No.
075856

Co-ords: -

Hole Type
CP

Location: North Manchester General Hospital

Level:

Scale
1:50

Client: North Manchester General Hospital

Dates: 14/08/2020 - 18/08/2020

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		11.00 - 11.45	D						11
		12.50	D						12
		14.00 - 14.45	D						13
		15.50 - 15.95	D						14
		17.00 - 17.45	U						15
		17.50	D						16
		18.50 - 18.95	D						17
		20.00 - 20.45	U						18
					17.80				19
					20.00				20

Firm brownish grey sandy SILT. Sand is fine to coarse.

Continued on next sheet

Remarks

GPR service clearance prior to progression of exploratory hole. Service clearance pit hand excavated to 1.20m bgl.
Groundwater encountered at 18.80m.





Borehole Log

Borehole No.

BH03

Sheet 3 of 3

Project Name: New Park House

Project No.
075856

Co-ords: -

Hole Type
CP

Location: North Manchester General Hospital

Level:

Scale
1:50

Client: North Manchester General Hospital

Dates: 14/08/2020 - 18/08/2020

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		20.50	D		23.00			Very stiff brownish grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of sandstone.	21
		21.50 - 21.95	D						22
								End of borehole at 23.00 m	23
									24
									25
									26
									27
									28
									29
									30

Remarks

GPR service clearance prior to progression of exploratory hole. Service clearance pit hand excavated to 1.20m bgl.
Groundwater encountered at 18.80m.





Borehole Log

Borehole No.

BH04

Sheet 1 of 2

Project Name: New Park House

Project No.
075856

Co-ords: -

Hole Type
CP

Location: North Manchester General Hospital

Level:

Scale
1:50

Client: North Manchester General Hospital

Dates: 14/08/2020 - 18/08/2020

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10			0.10			MADE GROUND: Black tarmacadam.	
		0.40 - 0.50	ES		0.35			MADE GROUND: Dark grey very sandy angular to subrounded fine to coarse gravel of brick and dolomite hardcore. Sand is fine to coarse.	
		1.00 - 1.10	ES		0.70			MADE GROUND: Brown mottled black slightly sandy gravelly clay with low cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of brick and dolomite hardcore. Cobbles are angular of brick.	1
		1.20		N=16 (1,3,4,4,5)				Medium dense brown slightly gravelly fine to coarse SAND. Gravel is subangular fine of sandstone.	
		1.40	D					From 0.70 to 0.80m very clayey.	
		2.00		N=16 (2,2/4,4,5,5)				From 1.20 to 1.40m firm slightly sandy slightly gravelly clay.	2
								From 1.40 to 2.00m no recovery.	
								From 2.00 to 2.10m firm slightly sandy slightly gravelly clay.	
								From 2.10 to 3.50m no recovery.	
		3.50		N=19 (2,3/5,2,3,9)					3
								From 2.50 to 4.50m firm slightly sandy slightly gravelly clay.	
		4.50	D						4
		5.00		N=20 (2,1/4,4,4,8)				From 4.50 to 5.00m no recovery.	
								From 5.00 to 5.20m firm slightly sandy slightly gravelly clay.	5
								From 5.20 to 7.00m no recovery.	
		6.50		N=45 (2,4/6,11,14,14)					6
								From 6.50 to 8.00m very dense.	
		7.80	D					From 7.00 to 8.00m stiff slightly sandy slightly gravelly clay.	7
		8.00		N=50 (3,3/50 for 235mm)	8.00				8
								Very stiff grey slightly sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is angular to subrounded fine to medium of mudstone.	
		9.50	D						9
		9.50		N=41 (1,3/5,7,13,16)	9.50				
								Dense slightly silty fine to coarse SAND.	
								From 9.50 to 9.70m no recovery.	
								From 9.70 to 9.85m firm brown sandy clay.	10
								Continued on next sheet	

Remarks

GPR service clearance prior to progression of exploratory hole. Service clearance pit hand excavated to 1.20m bgl.
Open hole from 17.00m. Groundwater unable to be recorded.





Borehole Log

Borehole No.

BH04

Sheet 2 of 2

Project Name: New Park House

Project No.
075856

Co-ords: -

Hole Type
CP

Location: North Manchester General Hospital

Level:

Scale
1:50

Client: North Manchester General Hospital

Dates: 14/08/2020 - 18/08/2020

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								From 9.85 to 11.00m no recovery.	
		11.00 11.00	D	N=38 (4,9/38 for 245mm)				From 11.00 to 20.00m interbedded sand (no recovery) with thin clay bands.	11
		12.50		N=31 (2,5/6,7,8,10)					12
		14.00		N=32 (2,4/6,6,10,10)					13
		15.50		N=32 (2,2/7,7,8,10)					14
		17.00		N=28 (3,5/9,9,4,6)					15
		18.50		N=29 (3,5/7,7,7,8)					16
		20.00		N=49 (3,4/7,9,13,20)	20.00			End of borehole at 20.00 m	17
									18
									19
									20

Remarks

GPR service clearance prior to progression of exploratory hole. Service clearance pit hand excavated to 1.20m bgl.
Open hole from 17.00m. Groundwater unable to be recorded.





Borehole Log

Borehole No.

BH05

Sheet 1 of 3

Project Name: New Park House

Project No.
075856

Co-ords: -

Hole Type
CP

Location: North Manchester General Hospital

Level:

Scale
1:50

Client: North Manchester General Hospital

Dates: 12/08/2020 - 14/08/2020

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30 - 0.40	ES		0.20			MADE GROUND: Black tarmacadam with decorative gravel.	
					0.70			MADE GROUND: Light grey mottled brown very gravelly fine to coarse sand with low cobble content. Gravel is angular to subangular fine to coarse of brick, concrete and dolomite hardcore.	
		1.20		N=11 (2,3/2,2,3,4)				Firm brown mottled grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to medium of sandstone.	1
		1.20 - 1.65	D		1.65				
		2.00	B	N=18 (3,3/4,4,4,6)				Medium dense brown slightly gravelly clayey fine to coarse SAND. Gravel is angular to subangular fine to coarse of sandstone.	2
		2.00 - 2.45	D						
		2.50	B						
		3.00		N=16 (3,4/4,3,4,5)					3
		3.00 - 3.45	D						
		4.00 - 4.45	B	Ublow=56					4
		4.50	D						
		5.00		N=19 (4,4/5,5,4,5)					5
		5.00 - 5.45	D						
									6
		6.50		N=35 (5,10/35 for 235mm)					
		6.50 - 6.95	D					From 6.50 to 8.00m dense.	7
		8.00		N=21 (4,4/5,5,5,6)					8
		8.00 - 8.45	D						
									9
		9.50		N=20 (4,5/5,4,5,6)					
		9.50 - 9.95	D						10

Continued on next sheet

Remarks

GPR service clearance prior to progression of exploratory hole. Service clearance pit hand excavated to 1.20m bgl.
Groundwater encountered at 18.00m.





Borehole Log

Borehole No.

BH05

Sheet 2 of 3

Project Name: New Park House

Project No.
075856

Co-ords: -

Hole Type
CP

Location: North Manchester General Hospital

Level:

Scale
1:50

Client: North Manchester General Hospital

Dates: 12/08/2020 - 14/08/2020

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		11.00 11.00 - 11.45	D	N=18 (3,3/4,4,5,5)	14.50			11			
		12.50 12.50 - 12.95	D	N=15 (4,4/3,4,4,4)				12			
		14.00 14.00	D	N=15 (3,3/4,4,3,4)				13			
		15.50 15.50 - 15.95	D	N=19 (4,4/5,4,5,5)				14			
		17.00 - 17.45	B	Ublow=46				15			
		17.50	D					16			
		18.50 18.50 - 18.95	D	N=51 (7,9/12,12,12,15)				17			
		20.00 - 20.50	B	Ublow=100				18			
		Stiff grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of sandstone.							19		
		From 18.50 to 21.50m very stiff.							20		
		Continued on next sheet							21		

Remarks

GPR service clearance prior to progression of exploratory hole. Service clearance pit hand excavated to 1.20m bgl.
Groundwater encountered at 18.00m.





Borehole Log

Borehole No.

BH05

Sheet 3 of 3

Project Name: New Park House

Project No.
075856

Co-ords: -

Hole Type
CP

Location: North Manchester General Hospital

Level:

Scale
1:50

Client: North Manchester General Hospital

Dates: 12/08/2020 - 14/08/2020

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		20.50	D						21
		21.50		N=50 (0,0/50 for 165mm)					
		21.50 - 21.95	D						22
		23.00 - 23.45	B	Ublow=100					23
		23.50	D						24
		24.50		N=47 (0,0/47 for 160mm)					
		24.50 - 24.95	D		25.00				25
								End of borehole at 25.00 m	26
									27
									28
									29
									30

Remarks

GPR service clearance prior to progression of exploratory hole. Service clearance pit hand excavated to 1.20m bgl.
Groundwater encountered at 18.00m.



Appendix E

Lead Local Flood Authority Correspondence

United Utilities Correspondence

Andy Losty

From: z.todorovic@manchester.gov.uk on behalf of floodriskmanagement@manchester.gov.uk
Sent: 17 April 2020 10:12
To: Oliver Timmins
Cc: floodriskmanagement@manchester.gov.uk; Marta Wolska
Subject: Re: Redevelopment of North Manchester Hospital
Attachments: NMGH-AJP-00-00-SK-C-0001 - Existing Drainage Network.pdf; UU Sewer Records.pdf; Location Plan.pdf

Oliver

Thank you for the email. We had recently a chance to comment to the architects on this development with regards to the surface water management on site so it would be good to have anyone on the same page, I am copying our response which hopefully respond to your questions raised below:

- Even though the site is completely within Flood Zone 1, do you hold any records of historical flooding, either on the site itself or within the vicinity of the site? *No records of historical flooding*
-
- Should infiltration be unsuitable would the LLFA be happy for the existing outfalls from the site into the UU sewers to be re-used? *Infiltration on site should be checked by undertaking BRE 365 percolation tests. Surface water connection into the River Irk should also be considered given the size of the redevelopment and the opportunity to provide a regional SuDS for the whole site. Any connection into existing sewers as a last resort would have to be agreed with United Utilities.*
-
- Are the LLFA likely to impose any discharge restrictions for the proposed developments, given the existing site currently discharges at unrestricted rates into the UU sewers? *If connection into the River Irk then runoff rates to be agreed with the Environment Agency. Flow restrictions to the sewer should be agreed with United Utilities and also should be in line with MCC SFRA (please see comment below). The more restrictive flows (United Utilities requirement or MCC SFRA) will be applied.*
-
- As the site is located within a CDA, can you confirm that should any of the proposed developments be located on a brownfield site, the proposed surface water discharge rate would be restricted to a 50% betterment on the existing discharge rate, in line with the Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA? *At least a 50% reduction in brownfield runoff rates should be achieved with the aim of restricting to greenfield runoff rates. The existing rates should be based on the existing drainage system and not using rational method as it overestimates actual flows to the sewer from the site.*

If you need further clarifications please let us know.

Regards

Zorica Todorovic

Flood Risk Management
Highways Service, Growth and Neighbourhoods Directorate
Manchester City Council
Tel: 0161 219 6295
Email: floodriskmanagement@manchester.gov.uk
Web: <http://www.manchester.gov.uk/>

POSTAL ADDRESS: Manchester City Council, Public Realm, The Neighbourhood Service, PO Box 532, Town Hall, Manchester M60 2LA

From: Oliver Timmins <Oliver.Timmins@curtins.com>
To: "floodriskmanagement@manchester.gov.uk" <floodriskmanagement@manchester.gov.uk>,
Cc: Marta Wolska <marta.wolska@curtins.com>
Date: 30/03/2020 16:33
Subject: Redevelopment of North Manchester Hospital

To who it may concern,

We have a new development site located at North Manchester General Hospital, Crescent Drive, Crumpsall M8 5RB, GR: 384924 402148 (see attached site location plan).

The proposed development is to rebuild part of the existing hospital.

Please find attached the following documents:

- Location Plan (red line boundary)
- UU Sewer records
- Existing Drainage Plan

Existing Drainage

As you can see on the Existing Drainage Plan there is existing drainage within the site boundary. There is a private existing 600mm combined sewer passing through the South Western area of the site. It is shown on the attached Existing Drainage Plan that this sewer currently drains the existing site.

The public sewer records show that there are existing public sewers along Eyam Road. The records highlight that a 150mm combined sewer runs down Eyam Road towards Crescent Drive turning into a 225mm pipe before running down Crescent Drive as 375mm pipe and then a 525mm pipe.

Surface Water

We are proposing to drain the surface water of the site to the existing 600mm private combined water sewer located within the site – this has been concluded following the drainage hierarchy and as the existing site drains via this method.

The existing run-off rates have been calculated using the modified rational method (as the site is brownfield) and are shown below.

The existing catchment area of the site (excluding landscaped areas) is 21600m². The existing flows are the following:

1 Year = 93.6 l/s

30 Year = 218.5 l/s

100 Year = 288.8 l/s

In accordance with your guidance, developments should look to restrict development flows by 50% of existing. Therefore, on this basis, the proposed flows should be limited to the following:

1 Year = 46.8 l/s

30 Year = 109.2 l/s

100 Year = 144.4 l/s

Based on this we are proposing to restrict the discharge of the site to a maximum of 144.4l/s.

Please could you advise whether this is acceptable?

Further Information

Please could you also advise as to whether there are any records of flooding in this location?

If you need any more information, do not hesitate to contact me.

Kind Regards,

Oliver Timmins
Graduate Engineer
T. 0161 236 2394
oliver.timmins@curtins.com



Merchant Exchange
17-19 Whitworth Street West
Manchester M1 5WG



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This footnote also confirms that this email message has been swept for the presence of computer viruses.

Andy Losty

From: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Sent: 07 April 2020 10:39
To: Oliver Timmins; Wastewater Developer Services
Cc: Marta Wolska
Subject: RE: Pre Development Enquiry, North Manchester Hospital - 4200030989

Dear Customer

We have carried out an assessment of your application which is based on the information provided; this pre development advice will be valid for 12 months

Foul will be allowed to drain to the public combined sewer network at an unrestricted rate. The connection(s) to the public sewer can be at a point(s) convenient to yourself

Surface water can drain to the private combined sewer network within your site at the rates proposed below.

UU have no records of hydraulic flooding in the area

If you require any further guidance please follow <http://www.unitedutilities.com/builders-developers.aspx>

If you need a make further enquiry relating to this matter please send your enquiry to WastewaterDeveloperServices@uuplc.co.uk Please quote your DEXXXX/42XXXXXXX/GEXXXX reference number

Please Note:- enquiries sent to any other United Utilities e-mail address will be deleted.

From: Oliver Timmins [mailto:Oliver.Timmins@curtins.com]
Sent: 30 March 2020 16:23
To: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Cc: Marta Wolska <marta.wolska@curtins.com>
Subject: Pre Development Enquiry, North Manchester Hospital

To who it may concern,

We have a new development site located at North Manchester General Hospital, Crescent Drive, Crumpsall M8 5RB, GR: 384924 402148 (see attached site location plan).

The proposed development is to rebuild part of the existing hospital.

Please find attached the following documents:

- Pre-Development Enquiry Form
- Location Plan
- UU Sewer records
- Existing Drainage Plan
- Modified Rational Method Calculations

Existing Drainage

As you can see on the Existing Drainage Plan there is existing drainage within the site boundary. There is a private existing 600mm combined sewer passing through the South Western area of the site. It is shown on the attached Existing Drainage Plan that this sewer currently drains the existing site.

The public sewer records show that there are existing public sewers along Eyam Road. The records highlight that a 150mm combined sewer runs down Eyam Road towards Crescent Drive turning into a 225mm pipe before running down Crescent Drive as 375mm pipe and then a 525mm pipe.

Foul Water.

We are proposing to drain the foul by a gravity system to the existing private combined sewer located within the South Western area of the site. Foul flow rates have currently not been determined. Please could you advise whether this connection is acceptable?

Surface Water

We are proposing to drain the surface water of the site to the existing 600mm private combined water sewer located within the site – this has been concluded following the drainage hierarchy. The existing run-off rates have been calculated using the modified rational method (as the site is brownfield) and are shown below.

The existing catchment area of the site (excluding landscaped areas) is 21600m². The existing flows are the following:

1 Year = 93.6 l/s

30 Year = 218.5 l/s

100 Year = 288.8 l/s

In line with Manchester City Council guidance, developments should look to restrict development flows by 50% of existing. Therefore, on this basis, the proposed flows should be limited to the following:

1 Year = 46.8 l/s

30 Year = 109.2 l/s

100 Year = 144.4 l/s

Based on this we are proposing to restrict the discharge of the site to a maximum of 144.4l/s. Please could you advise whether this is acceptable?

Further Information

Please could you also advise as to whether there are any records of UU infrastructure flooding in this location?

If you need any more information, do not hesitate to contact me.

Kind Regards,

Oliver Timmins
Graduate Engineer
T. 0161 236 2394
oliver.timmins@curtins.com



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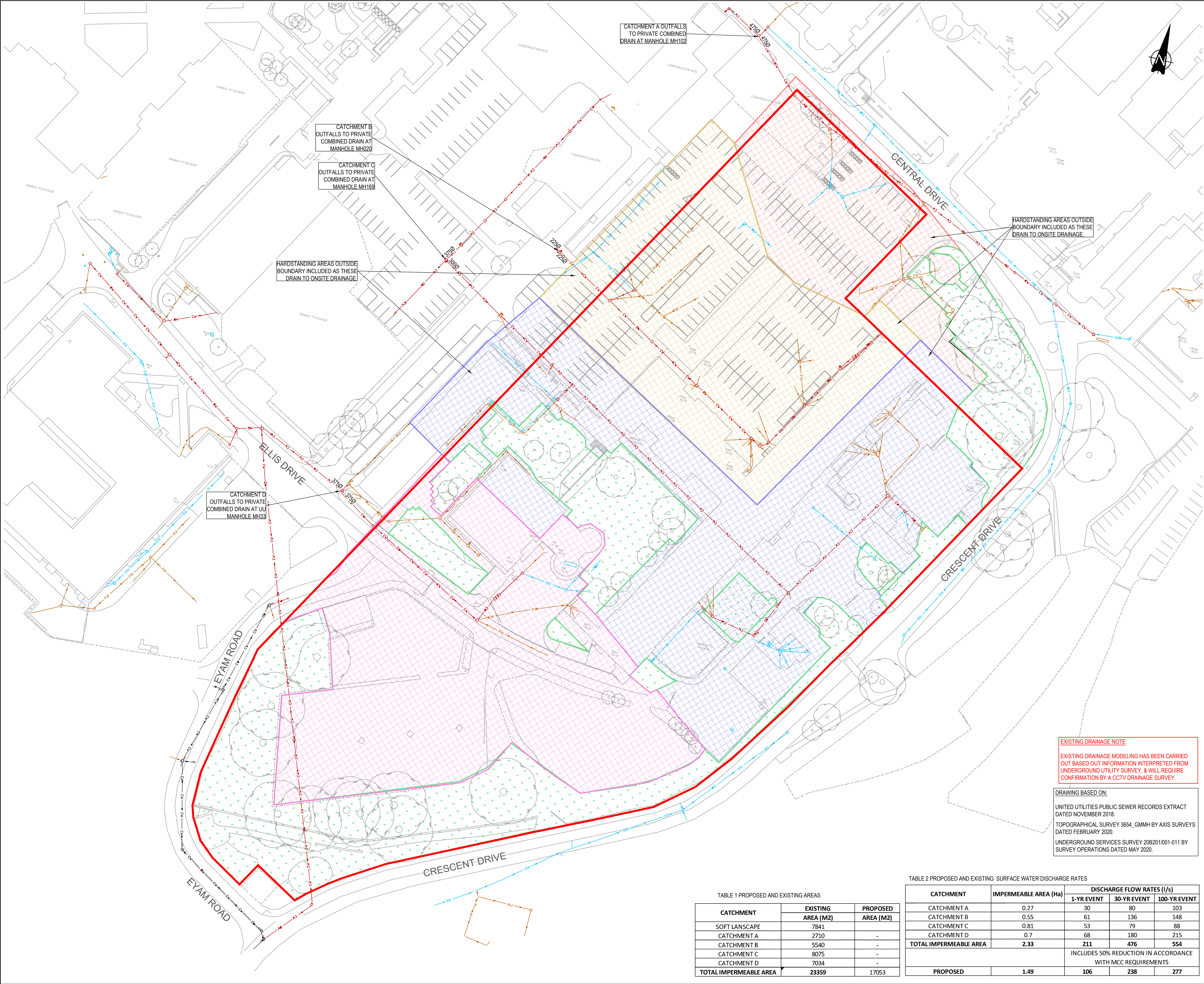
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Appendix F

Existing Impermeable Areas

Existing Drainage Calculations



GENERAL NOTES:

- 1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
- 2. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.

KEY:

- SITE BOUNDARY (INDICATIVE)
- EXISTING IMPERMEABLE AREA: CATCHMENT A
- EXISTING IMPERMEABLE AREA: CATCHMENT B
- EXISTING IMPERMEABLE AREA: CATCHMENT C
- EXISTING IMPERMEABLE AREA: CATCHMENT D
- EXISTING SOFT LANDSCAPE AREA
- CV - CV EXISTING PUBLIC COMBINED SEWER
- CV - CV EXISTING PRIVATE COMBINED DRAINAGE
- SW - SW EXISTING PRIVATE SURFACE WATER DRAINAGE
- PW - PW EXISTING PRIVATE FOUL DRAINAGE

P05	ISSUED FOR PLANNING	16/09/20	ATL	MW
P04	STAGE 2-BOUNDARY AND AREA UPDATED	07/05/20	MW	MW
P03	LEGEND AMENDED	16/04/20	MW	MW
P02	STAGE 2	15/04/20	MW	MW
P01	ISSUED FOR INFORMATION	30/03/20	OJT	MW
Rev:	Description:	Date:	By:	Chkd:

Merchant Exchange, 17-19 Whitworth Street West, Manchester, M1 5WG
0161 235 2384
manchester@curtins.com
www.curtins.com

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Status: **PLANNING**

Project: **NEW PARK HOUSE**

Orig Title: **EXISTING DRAINAGE CATCHMENTS**

Size:	Date:	Drawn By:	Designed By:	Checked By:			
A1	30/03/20	OJT	OJT	MW			
Scale: 1:500							
Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:

075856 - CUR - 00 - XX - DR - C - 92000 - P05

CATCHMENT A OUTFALLS TO PRIVATE COMBINED DRAIN AT MANHOLE MH102

CATCHMENT B OUTFALLS TO PRIVATE COMBINED DRAIN AT MANHOLE MH020

CATCHMENT C OUTFALLS TO PRIVATE COMBINED DRAIN AT MANHOLE MH169

HARDSTANDING AREAS OUTSIDE BOUNDARY INCLUDED AS THESE DRAIN TO ONSITE DRAINAGE

HARDSTANDING AREAS OUTSIDE BOUNDARY INCLUDED AS THESE DRAIN TO ONSITE DRAINAGE

CATCHMENT D OUTFALLS TO PRIVATE COMBINED DRAIN AT UU MANHOLE MH33

EXISTING DRAINAGE NOTE:

EXISTING DRAINAGE MODELING HAS BEEN CARRIED OUT BASED ON INFORMATION INTERPRETED FROM UNDERGROUND UTILITY SURVEY, & WILL REQUIRE CONFIRMATION BY A CCTV DRAINAGE SURVEY.

DRAWING BASED ON:

UNITED UTILITIES PUBLIC SEWER RECORDS EXTRACT DATED NOVEMBER 2018.
TOPOGRAPHICAL SURVEY 3654_GMMH BY AXIS SURVEYS DATED FEBRUARY 2020.
UNDERGROUND SERVICES SURVEY 20B201/001-011 BY SURVEY OPERATIONS DATED MAY 2020.

TABLE 1 PROPOSED AND EXISTING AREAS

CATCHMENT	EXISTING AREA (M2)	PROPOSED AREA (M2)
SOFT LANDSCAPE	7841	-
CATCHMENT A	2710	-
CATCHMENT B	5540	-
CATCHMENT C	8075	-
CATCHMENT D	7034	-
TOTAL IMPERMEABLE AREA	23359	17053

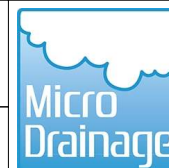
TABLE 2 PROPOSED AND EXISTING SURFACE WATER DISCHARGE RATES

CATCHMENT	IMPERMEABLE AREA (Ha)	DISCHARGE FLOW RATES (l/s)		
		1-YR EVENT	30-YR EVENT	100-YR EVENT
CATCHMENT A	0.27	30	80	103
CATCHMENT B	0.55	61	136	148
CATCHMENT C	0.81	53	79	88
CATCHMENT D	0.7	68	180	215
TOTAL IMPERMEABLE AREA	2.33	211	476	554
INCLUDES 50% REDUCTION IN ACCORDANCE WITH MCC REQUIREMENTS				
PROPOSED	1.49	106	238	277

-
-
-

Date 13/09/2020 14:06
File Existing Drainage.MDX

Designed by losty_a
Checked by



Innovyze

Network 2017.1.2

Existing Network Details for Catchment A

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
1.000	13.448	0.290	46.4	0.021	5.00	0.0	0.600	o	150	Pipe/Conduit
1.001	4.921	1.400	3.5	0.008	0.00	0.0	0.600	o	150	Pipe/Conduit
1.002	11.102	0.190	58.4	0.067	5.00	0.0	0.600	o	150	Pipe/Conduit
1.003	13.253	3.010	4.4	0.020	0.00	0.0	0.600	o	150	Pipe/Conduit
1.004	34.583	0.545	63.5	0.053	0.00	0.0	0.600	o	300	Pipe/Conduit
2.000	4.983	1.415	3.5	0.008	5.00	0.0	0.600	o	100	Pipe/Conduit
2.001	16.183	1.330	12.2	0.025	0.00	0.0	0.600	o	225	Pipe/Conduit
1.005	14.485	0.150	96.6	0.022	0.00	0.0	0.600	o	375	Pipe/Conduit
1.006	20.030	0.195	102.7	0.030	0.00	0.0	0.600	o	450	Pipe/Conduit
1.007	11.766	0.250	47.1	0.018	0.00	0.0	0.600	o	450	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
1.000	74.930	0.021	0.0	1.48	26.2
1.001	74.640	0.029	0.0	5.41	95.7
1.002	73.240	0.096	0.0	1.32	23.3
1.003	73.050	0.116	0.0	4.84	85.5
1.004	69.890	0.169	0.0	1.98	139.7
2.000	72.290	0.008	0.0	4.15	32.6
2.001	70.750	0.033	0.0	3.77	150.0
1.005	69.270	0.224	0.0	1.84	203.7
1.006	69.045	0.254	0.0	2.01	319.0
1.007	68.850	0.272	0.0	2.97	472.3

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Innovyze	Network 2017.1.2	

Manhole Schedules for Catchment A

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
A94	75.950	1.020	Open Manhole	1200	1.000	74.930	150				
A93	75.300	0.660	Open Manhole	1200	1.001	74.640	150	1.000	74.640	150	
A9	74.550	1.310	Open Manhole	1200	1.002	73.240	150	1.001	73.240	150	
A10	74.000	0.950	Open Manhole	1200	1.003	73.050	150	1.002	73.050	150	
A11	73.630	3.740	Open Manhole	1200	1.004	69.890	300	1.003	70.040	150	
A14	73.500	1.210	Open Manhole	1200	2.000	72.290	100				
A13	73.190	2.440	Open Manhole	1200	2.001	70.750	225	2.000	70.875	100	
A12	73.370	4.100	Open Manhole	1200	1.005	69.270	375	1.004	69.345	300	
								2.001	69.420	225	
ANO-REF	72.270	3.225	Open Manhole	1200	1.006	69.045	450	1.005	69.120	375	
A102	71.490	2.640	Open Manhole	1200	1.007	68.850	450	1.006	68.850	450	
A819	71.130	2.530	Open Manhole	1200		OUTFALL		1.007	68.600	450	

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Innovyze Network 2017.1.2		

Area Summary for Catchment A

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.021	0.021	0.021
1.001	-	-	100	0.008	0.008	0.008
1.002	-	-	100	0.067	0.067	0.067
1.003	-	-	100	0.020	0.020	0.020
1.004	-	-	100	0.053	0.053	0.053
2.000	-	-	100	0.008	0.008	0.008
2.001	-	-	100	0.025	0.025	0.025
1.005	-	-	100	0.022	0.022	0.022
1.006	-	-	100	0.030	0.030	0.030
1.007	-	-	100	0.018	0.018	0.018
				Total	Total	Total
				0.272	0.272	0.272

Free Flowing Outfall Details for Catchment A

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.007	A819	71.130	68.600	68.600	1200	0

Simulation Criteria for Catchment A

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	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
Number of Online Controls		0	Number of Time/Area Diagrams
Number of Offline Controls		0	Number of Real Time Controls

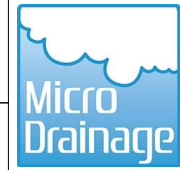
Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	1	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.500	Storm Duration (mins)	30
Ratio R	0.345		

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-
-
-

Designed by	losty_a
Checked by	



Network 2017.1.2

PN	US/MH Name	Surcharged	Flooded			Pipe	Level Status	Exceeded
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)		
1.004	A11	-0.223	0.000	0.15		19.1	OK	
2.000	A14	-0.088	0.000	0.03		1.0	OK	
2.001	A13	-0.200	0.000	0.03		3.6	OK	
1.005	A12	-0.273	0.000	0.16		25.0	OK	
1.006	ANO-REF	-0.350	0.000	0.11		28.1	OK	
1.007	A102	-0.353	0.000	0.11		29.8	OK	

-
-
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Designed by	losty_a
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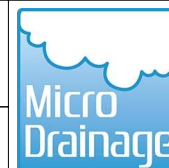
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Network 2017.1.2

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

PN	US/MH Name	Surcharged Flooded		Flow / Cap.	Overflow (l/s)	Pipe	Status	Level Exceeded
		Depth (m)	Volume (m³)			Flow (l/s)		
1.004	A11	-0.169	0.000	0.38		48.8		OK
2.000	A14	-0.080	0.000	0.08		2.4		OK
2.001	A13	-0.183	0.000	0.08		10.4		OK
1.005	A12	-0.200	0.000	0.43		65.1		OK
1.006	ANO-REF	-0.280	0.000	0.30		74.2		OK
1.007	A102	-0.285	0.000	0.28		80.2		OK

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Simulation Criteria

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

Rainfall Model	FSR	Ratio R	0.347
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.500	Cv (Winter)	0.840

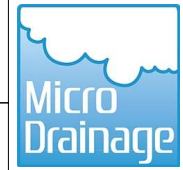
Profile(s)	Summer and Winter
n(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
(s) (years)	1, 30, 100
Change (%)	0, 0, 0

									Water
	US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Level
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	(m)
1.000	A94	15 Winter	100	+0%					74.991
1.001	A93	15 Winter	100	+0%					74.679
1.002	A9	15 Winter	100	+0%	30/15 Summer				73.740
1.003	A10	15 Winter	100	+0%					73.130
1.004	A11	15 Winter	100	+0%					70.040
2.000	A14	15 Winter	100	+0%					72.312
2.001	A13	15 Winter	100	+0%					70.798
1.005	A12	15 Winter	100	+0%					69.473
1.006	ANO-REF	15 Winter	100	+0%					69.240
1.007	A102	15 Winter	100	+0%					69.039

PN	US/MH Name	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level Exceeded
		Depth (m)	Volume (m³)			Flow (l/s)		
1.000	A94	-0.089	0.000	0.34		8.1		OK
1.001	A93	-0.111	0.000	0.15		11.3		OK
1.002	A9	0.350	0.000	1.69		35.5	SURCHARGED	
1.003	A10	-0.070	0.000	0.55		42.6		OK

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

PN	US/MH Name	Surcharged	Flooded	Pipe		Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)		
1.004	A11	-0.150	0.000	0.48		62.1	OK
2.000	A14	-0.078	0.000	0.11		3.1	OK
2.001	A13	-0.177	0.000	0.10		13.4	OK
1.005	A12	-0.172	0.000	0.55		83.0	OK
1.006	ANO-REF	-0.255	0.000	0.38		94.8	OK
1.007	A102	-0.261	0.000	0.36		102.5	OK

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Date 13/09/2020 14:21 File Existing Drainage.MDX	Designed by losty_a Checked by	
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Existing Network Details for Catchment B

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
1.000	15.020	0.310	48.5	0.058	5.00	0.0	0.600	o	150	Pipe/Conduit
1.001	14.913	0.280	53.3	0.058	0.00	0.0	0.600	o	150	Pipe/Conduit
1.002	3.052	0.190	16.1	0.012	0.00	0.0	0.600	o	150	Pipe/Conduit
1.003	3.308	0.025	132.3	0.013	0.00	0.0	0.600	o	150	Pipe/Conduit
1.004	22.098	0.290	76.2	0.086	0.00	0.0	0.600	o	225	Pipe/Conduit
1.005	18.203	0.760	24.0	0.071	0.00	0.0	0.600	o	225	Pipe/Conduit
1.006	17.277	0.760	22.7	0.067	0.00	0.0	0.600	o	225	Pipe/Conduit
2.000	16.133	0.230	70.1	0.063	5.00	0.0	0.600	o	225	Pipe/Conduit
3.000	11.494	0.315	36.5	0.045	5.00	0.0	0.600	o	150	Pipe/Conduit
2.001	7.711	0.340	22.7	0.030	0.00	0.0	0.600	o	225	Pipe/Conduit
4.000	13.097	0.260	50.4	0.051	5.00	0.0	0.600	o	225	Pipe/Conduit
1.007	20.774	1.320	15.7	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit

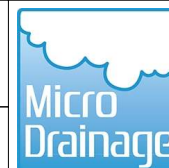
Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
1.000	74.190	0.058	0.0	1.45	25.6
1.001	73.880	0.116	0.0	1.38	24.4
1.002	73.600	0.128	0.0	2.53	44.6
1.003	73.410	0.141	0.0	0.87	15.4
1.004	73.310	0.227	0.0	1.50	59.6
1.005	73.020	0.298	0.0	2.68	106.8
1.006	72.260	0.365	0.0	2.76	109.6
2.000	72.070	0.063	0.0	1.56	62.2
3.000	72.230	0.045	0.0	1.67	29.5
2.001	71.840	0.138	0.0	2.76	109.7
4.000	71.760	0.051	0.0	1.85	73.5
1.007	71.500	0.554	0.0	3.32	131.8

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Date 13/09/2020 14:21
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Manhole Schedules for Catchment B

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	Pipe Out			Pipes In			Backdrop (mm)
					PN	Invert Level (m)	Diameter (mm)	PN	Invert Level (m)	Diameter (mm)	
B8	75.120	0.930	Open Manhole	1200	1.000	74.190	150				
B6	74.950	1.070	Open Manhole	1200	1.001	73.880	150	1.000	73.880	150	
B5	74.790	1.190	Open Manhole	1200	1.002	73.600	150	1.001	73.600	150	
B3	74.740	1.330	Open Manhole	1200	1.003	73.410	150	1.002	73.410	150	
B2	74.720	1.410	Open Manhole	1200	1.004	73.310	225	1.003	73.385	150	
B1	74.560	1.540	Open Manhole	1200	1.005	73.020	225	1.004	73.020	225	
B24	74.240	1.980	Open Manhole	1200	1.006	72.260	225	1.005	72.260	225	
B17	73.130	1.060	Open Manhole	1200	2.000	72.070	225				
B22	73.970	1.740	Open Manhole	1200	3.000	72.230	150				
B19	73.600	1.760	Open Manhole	1200	2.001	71.840	225	2.000	71.840	225	
								3.000	71.915	150	
B21	73.760	2.000	Open Manhole	1200	4.000	71.760	225				
B8	74.110	2.610	Open Manhole	1200	1.007	71.500	225	1.006	71.500	225	
								2.001	71.500	225	
								4.000	71.500	225	
B020	72.860	2.680	Open Manhole	1200		OUTFALL		1.007	70.180	225	

Curtins Consulting Ltd		Page 3
. . .		
Date 13/09/2020 14:21 File Existing Drainage.MDX	Designed by losty_a Checked by	
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Area Summary for Catchment B

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.058	0.058	0.058
1.001	-	-	100	0.058	0.058	0.058
1.002	-	-	100	0.012	0.012	0.012
1.003	-	-	100	0.013	0.013	0.013
1.004	-	-	100	0.086	0.086	0.086
1.005	-	-	100	0.071	0.071	0.071
1.006	-	-	100	0.067	0.067	0.067
2.000	-	-	100	0.063	0.063	0.063
3.000	-	-	100	0.045	0.045	0.045
2.001	-	-	100	0.030	0.030	0.030
4.000	-	-	100	0.051	0.051	0.051
1.007	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.554	0.554	0.554

Free Flowing Outfall Details for Catchment B

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.007	B020	72.860	70.180	70.180	1200	0

Simulation Criteria for Catchment B

Volumetric Runoff Coeff	0.750	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 Coeffiecient	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
Number of Online Controls		0	Number of Time/Area Diagrams
Number of Offline Controls		0	Number of Real Time Controls

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	1	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.500	Storm Duration (mins)	30
Ratio R	0.345		

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Simulation Criteria

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

Rainfall Model	FSR	Ratio R	0.347
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.500	Cv (Winter)	0.840

Profile(s)	Summer and Winter
n(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
(s) (years)	1, 30, 100
Change (%)	0, 0, 0

									Water
	US/MH			Return	Climate	First (X)	First (Y)	First (Z)	Overflow
PN	Name	Storm	Period	Change	Surcharge		Flood	Overflow	Act.
1.000	B8	15 Winter	30	+0%	30/15	Summer			74.545
1.001	B6	15 Winter	30	+0%	30/15	Summer			74.440
1.002	B5	15 Winter	30	+0%	30/15	Summer			74.033
1.003	B3	15 Winter	30	+0%	1/15	Summer			73.808
1.004	B2	15 Winter	30	+0%	30/15	Summer			73.551
1.005	B1	15 Winter	30	+0%	100/15	Summer			73.198
1.006	B24	15 Winter	30	+0%	30/15	Summer			72.753
2.000	B17	15 Winter	30	+0%	100/15	Summer			72.194
3.000	B22	15 Winter	30	+0%	100/15	Summer			72.306
2.001	B19	15 Winter	30	+0%	30/15	Summer			72.164
4.000	B21	15 Winter	30	+0%	30/15	Summer			72.128
1.007	B8	15 Winter	30	+0%	30/15	Summer			72.106

PN	US/MH	Surcharged	Flooded			Pipe	Status	Level Exceeded
	Name	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)		
1.000	B8	0.205	0.000	0.62		14.5	SURCHARGED	
1.001	B6	0.410	0.000	1.20		26.9	SURCHARGED	

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

PN	Surcharged		Flooded	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level Exceeded
	US/MH Name	Depth (m)	Volume (m³)			Flow (l/s)		
1.002	B5	0.283	0.000	1.09		29.7	SURCHARGED	
1.003	B3	0.248	0.000	3.01		32.6	SURCHARGED	
1.004	B2	0.016	0.000	1.03		55.9	SURCHARGED	
1.005	B1	-0.047	0.000	0.81		77.1	OK	
1.006	B24	0.268	0.000	0.93		91.2	SURCHARGED	
2.000	B17	-0.101	0.000	0.34		18.8	OK	
3.000	B22	-0.074	0.000	0.51		13.5	OK	
2.001	B19	0.099	0.000	0.45		37.0	SURCHARGED	
4.000	B21	0.143	0.000	0.20		12.8	SURCHARGED	
1.007	B8	0.381	0.000	1.14		136.1	SURCHARGED	

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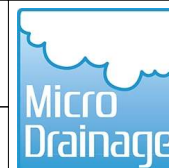
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100 year Return Period Summary of Critical Results by Maximum Level (Rank
1) for Catchment B

PN	US/MH	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level
	Name	Depth (m)	Volume (m³)			Flow (l/s)		Exceeded
1.002	B5	0.695	0.000	1.21		33.0	SURCHARGED	
1.003	B3	0.638	0.000	3.46		37.6	SURCHARGED	
1.004	B2	0.391	0.000	1.08		58.7	SURCHARGED	
1.005	B1	0.374	0.000	0.82		78.5	SURCHARGED	
1.006	B24	0.649	0.000	0.97		94.8	SURCHARGED	
2.000	B17	0.247	0.000	0.38		21.1	SURCHARGED	
3.000	B22	0.206	0.000	0.60		15.9	SURCHARGED	
2.001	B19	0.441	0.000	0.47		38.9	SURCHARGED	
4.000	B21	0.467	0.000	0.24		15.5	SURCHARGED	
1.007	B8	0.701	0.000	1.24		148.0	SURCHARGED	

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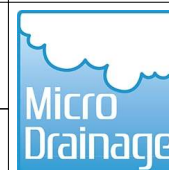
	PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
	1.000	13.005	0.490	26.5	0.040	5.00	0.0	0.600	o	150	Pipe/Conduit
	1.001	15.697	0.720	21.8	0.080	0.00	0.0	0.600	o	150	Pipe/Conduit
	2.000	9.261	0.980	9.5	0.028	5.00	0.0	0.600	o	150	Pipe/Conduit
	1.002	3.653	1.260	2.9	0.011	0.00	0.0	0.600	o	150	Pipe/Conduit
	1.003	40.325	1.445	27.9	0.123	0.00	0.0	0.600	o	150	Pipe/Conduit
	3.000	13.408	1.880	7.1	0.041	5.00	0.0	0.600	o	150	Pipe/Conduit
	3.001	16.056	1.745	9.2	0.049	0.00	0.0	0.600	o	150	Pipe/Conduit
	1.004	77.845	1.370	56.8	0.238	0.00	0.0	0.600	o	150	Pipe/Conduit
	1.005	9.466	0.070	135.2	0.029	0.00	0.0	0.600	o	150	Pipe/Conduit
	4.000	12.811	0.210	61.0	0.039	5.00	0.0	0.600	o	100	Pipe/Conduit
	4.001	12.973	0.300	43.2	0.040	0.00	0.0	0.600	o	100	Pipe/Conduit
	4.002	0.917	0.010	91.7	0.003	0.00	0.0	0.600	o	150	Pipe/Conduit
	4.003	6.035	0.310	19.5	0.018	0.00	0.0	0.600	o	150	Pipe/Conduit
	1.006	8.054	1.075	7.5	0.025	0.00	0.0	0.600	o	150	Pipe/Conduit
	5.000	3.251	1.525	2.1	0.010	5.00	0.0	0.600	o	150	Pipe/Conduit

	PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
	1.000	78.000	0.040	0.0	1.96	34.7
	1.001	77.510	0.120	0.0	2.17	38.3
	2.000	77.770	0.028	0.0	3.30	58.3
	1.002	76.790	0.159	0.0	5.96	105.4
	1.003	75.530	0.282	0.0	1.91	33.8
	3.000	77.710	0.041	0.0	3.80	67.1
	3.001	75.830	0.090	0.0	3.34	59.1
	1.004	74.010	0.610	0.0	1.34	23.6
	1.005	72.640	0.639	0.0	0.86	15.2
	4.000	73.450	0.039	0.0	0.99	7.8
	4.001	73.240	0.079	0.0	1.18	9.2
	4.002	72.890	0.082	0.0	1.05	18.6
	4.003	72.880	0.100	0.0	2.29	40.5
	1.006	72.570	0.764	0.0	3.70	65.5
	5.000	73.020	0.010	0.0	6.96	122.9

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Date 13/09/2020 14:34
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Manhole Schedules for Catchment C

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	Pipe Out			Pipes In			Backdrop
					PN	Invert Level (m)	Diameter (mm)	PN	Invert Level (m)	Diameter (mm)	(mm)
C71	78.640	0.640	Open Manhole	1200	1.000	78.000	150				
CBEND	78.160	0.650	Open Manhole	1200	1.001	77.510	150	1.000	77.510	150	
C76	78.540	0.770	Open Manhole	1200	2.000	77.770	150				
C70	78.350	1.560	Open Manhole	1200	1.002	76.790	150	1.001	76.790	150	
								2.000	76.790	150	
C72	77.850	2.320	Open Manhole	1200	1.003	75.530	150	1.002	75.530	150	
C58	78.920	1.210	Open Manhole	1200	3.000	77.710	150				
C59	78.490	2.660	Open Manhole	1200	3.001	75.830	150	3.000	75.830	150	
C67	78.090	4.080	Open Manhole	1200	1.004	74.010	150	1.003	74.085	150	75
								3.001	74.085	150	75
C25	74.190	1.550	Open Manhole	1200	1.005	72.640	150	1.004	72.640	150	
C110	74.500	1.050	Open Manhole	1200	4.000	73.450	100				
C108	74.580	1.340	Open Manhole	1200	4.001	73.240	100	4.000	73.240	100	
C31	74.690	1.800	Open Manhole	1200	4.002	72.890	150	4.001	72.940	100	
C107	74.690	1.810	Open Manhole	1200	4.003	72.880	150	4.002	72.880	150	
CJUNCTION	73.920	1.350	Open Manhole	1200	1.006	72.570	150	1.005	72.570	150	
								4.003	72.570	150	
C30	74.440	1.420	Open Manhole	1200	5.000	73.020	150				
C26	73.790	2.370	Open Manhole	1200	1.007	71.420	225	1.006	71.495	150	
								5.000	71.495	150	
C29	73.000	1.870	Open Manhole	1200	1.008	71.130	300	1.007	71.205	225	
C169	73.000	2.330	Open Manhole	1200		OUTFALL		1.008	70.670	300	

Curtins Consulting Ltd		Page 4
. . .		
Date 13/09/2020 14:34 File Existing Drainage.MDX		
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Area Summary for Catchment C

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.040	0.040	0.040
1.001	-	-	100	0.080	0.080	0.080
2.000	-	-	100	0.028	0.028	0.028
1.002	-	-	100	0.011	0.011	0.011
1.003	-	-	100	0.123	0.123	0.123
3.000	-	-	100	0.041	0.041	0.041
3.001	-	-	100	0.049	0.049	0.049
1.004	-	-	100	0.238	0.238	0.238
1.005	-	-	100	0.029	0.029	0.029
4.000	-	-	100	0.039	0.039	0.039
4.001	-	-	100	0.040	0.040	0.040
4.002	-	-	100	0.003	0.003	0.003
4.003	-	-	100	0.018	0.018	0.018
1.006	-	-	100	0.025	0.025	0.025
5.000	-	-	100	0.010	0.010	0.010
1.007	-	-	100	0.065	0.065	0.065
1.008	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.839	0.839	0.839

Free Flowing Outfall Details for Catchment C

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D, L (mm)	W (mm)
1.008	C169	73.000	70.670	70.670	1200	0

Simulation Criteria for Catchment C

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/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
Number of Online Controls		0	Number of Time/Area Diagrams
Number of Offline Controls		0	Number of Real Time Controls

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	1	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.500	Storm Duration (mins)	30
Ratio R	0.345		

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. . .		
Date 13/09/2020 14:34 File Existing Drainage.MDX	Designed by losty_a Checked by	
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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Catchment C

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	0
Number of Online Controls	0	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	0.347
Region England and Wales	Cv (Summer)	0.750	
M5-60 (mm)	18.500 Cv (Winter)	0.840	

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	C71	15 Winter	1	+0%	30/15 Summer			
1.001	CBEND	15 Winter	1	+0%	30/15 Summer	30/15 Summer		
2.000	C76	15 Winter	1	+0%	30/15 Summer			
1.002	C70	15 Winter	1	+0%	30/15 Summer			
1.003	C72	15 Winter	1	+0%	1/15 Summer	30/15 Summer		
3.000	C58	15 Winter	1	+0%	30/15 Summer			
3.001	C59	15 Winter	1	+0%	1/15 Summer	100/15 Summer		
1.004	C67	15 Winter	1	+0%	1/15 Summer	30/15 Summer		
1.005	C25	15 Winter	1	+0%	1/15 Summer	100/15 Summer		
4.000	C110	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
4.001	C108	15 Winter	1	+0%	30/15 Summer			
4.002	C31	15 Winter	1	+0%	30/15 Summer			
4.003	C107	15 Winter	1	+0%	30/15 Summer			
1.006	CJUNCTION	15 Winter	1	+0%	30/15 Summer			
5.000	C30	15 Winter	1	+0%				
1.007	C26	15 Winter	1	+0%	1/15 Summer			
1.008	C29	15 Winter	1	+0%				

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. . .		
Date 13/09/2020 14:34 File Existing Drainage.MDX	Designed by losty_a Checked by	
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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Catchment C

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	0
Number of Online Controls	0	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	0.347
Region England and Wales	Cv (Summer)	0.750	
M5-60 (mm)	18.500 Cv (Winter)	0.840	

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	C71	15 Winter	30	+0%	30/15 Summer			
1.001	CBEND	15 Winter	30	+0%	30/15 Summer	30/15 Summer		
2.000	C76	15 Winter	30	+0%	30/15 Summer			
1.002	C70	15 Winter	30	+0%	30/15 Summer			
1.003	C72	30 Winter	30	+0%	1/15 Summer	30/15 Summer		
3.000	C58	15 Winter	30	+0%	30/15 Summer			
3.001	C59	15 Winter	30	+0%	1/15 Summer	100/15 Summer		
1.004	C67	15 Winter	30	+0%	1/15 Summer	30/15 Summer		
1.005	C25	15 Winter	30	+0%	1/15 Summer	100/15 Summer		
4.000	C110	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
4.001	C108	15 Winter	30	+0%	30/15 Summer			
4.002	C31	15 Winter	30	+0%	30/15 Summer			
4.003	C107	15 Winter	30	+0%	30/15 Summer			
1.006	CJUNCTION	15 Winter	30	+0%	30/15 Summer			
5.000	C30	15 Winter	30	+0%				
1.007	C26	15 Winter	30	+0%	1/15 Summer			
1.008	C29	15 Winter	30	+0%				

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PN	US/MH Name	Water	Surcharged	Flooded	Pipe		Status	Level Exceeded	
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)			Flow (l/s)
1.000	C71	78.226	0.076	0.000	0.34		10.8	SURCHARGED	
1.001	CBEND	78.162	0.502	2.259	0.72		25.3	FLOOD	12
2.000	C76	78.058	0.138	0.000	0.14		7.3	SURCHARGED	
1.002	C70	78.031	1.091	0.000	0.36		25.4	SURCHARGED	
1.003	C72	77.884	2.204	33.603	1.05		34.3	FLOOD	21
3.000	C58	78.413	0.553	0.000	0.17		10.3	SURCHARGED	
3.001	C59	78.366	2.386	0.000	0.38		21.0	FLOOD RISK	3
1.004	C67	78.095	3.935	4.855	1.76		41.0	FLOOD	12
1.005	C25	74.026	1.236	0.000	3.28		44.3	FLOOD RISK	4
4.000	C110	74.264	0.714	0.000	0.97		7.1	FLOOD RISK	4
4.001	C108	74.074	0.734	0.000	1.53		13.3	SURCHARGED	
4.002	C31	73.394	0.354	0.000	1.27		13.8	SURCHARGED	
4.003	C107	73.348	0.318	0.000	0.48		16.2	SURCHARGED	
1.006	CJUNCTION	73.285	0.565	0.000	1.12		63.6	SURCHARGED	
5.000	C30	73.039	-0.131	0.000	0.04		3.0	OK	
1.007	C26	72.020	0.375	0.000	1.66		79.4	SURCHARGED	
1.008	C29	71.291	-0.139	0.000	0.56		79.2	OK	

Curtins Consulting Ltd		Page 9
. . .		
Date 13/09/2020 14:34 File Existing Drainage.MDX	Designed by losty_a Checked by	
Innovyze	Network 2017.1.2	

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

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	0
Number of Online Controls	0	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	0.347
Region England and Wales	Cv (Summer)	0.750	
M5-60 (mm)	18.500 Cv (Winter)	0.840	

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

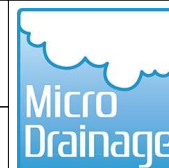
Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	C71	15 Winter	100	+0%	30/15 Summer			
1.001	CBEND	30 Winter	100	+0%	30/15 Summer	30/15 Summer		
2.000	C76	15 Winter	100	+0%	30/15 Summer			
1.002	C70	15 Winter	100	+0%	30/15 Summer			
1.003	C72	60 Winter	100	+0%	1/15 Summer	30/15 Summer		
3.000	C58	15 Winter	100	+0%	30/15 Summer			
3.001	C59	15 Winter	100	+0%	1/15 Summer	100/15 Summer		
1.004	C67	30 Winter	100	+0%	1/15 Summer	30/15 Summer		
1.005	C25	30 Winter	100	+0%	1/15 Summer	100/15 Summer		
4.000	C110	15 Winter	100	+0%	30/15 Summer	100/15 Summer		
4.001	C108	15 Winter	100	+0%	30/15 Summer			
4.002	C31	15 Winter	100	+0%	30/15 Summer			
4.003	C107	15 Winter	100	+0%	30/15 Summer			
1.006	CJUNCTION	15 Winter	100	+0%	30/15 Summer			
5.000	C30	15 Winter	100	+0%				
1.007	C26	15 Winter	100	+0%	1/15 Summer			
1.008	C29	15 Winter	100	+0%				

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

PN	US/MH Name	Water	Surcharged	Flooded	Pipe		Status	Level Exceeded
		Level (m)	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Flow (l/s)		
1.000	C71	78.278	0.128	0.000	0.48	15.1	SURCHARGED	
1.001	CBEND	78.167	0.507	6.863	0.59	21.0	FLOOD	12
2.000	C76	78.105	0.185	0.000	0.20	10.5	SURCHARGED	
1.002	C70	78.063	1.123	0.000	0.40	27.8	FLOOD RISK	
1.003	C72	77.911	2.231	60.606	1.06	34.6	FLOOD	21
3.000	C58	78.605	0.745	0.000	0.23	14.0	SURCHARGED	
3.001	C59	78.490	2.510	0.455	0.47	25.8	FLOOD	3
1.004	C67	78.104	3.944	14.468	1.77	41.1	FLOOD	12
1.005	C25	74.191	1.401	0.927	3.47	46.9	FLOOD	4
4.000	C110	74.501	0.951	1.069	1.33	9.7	FLOOD	4
4.001	C108	74.450	1.110	0.000	1.63	14.2	FLOOD RISK	
4.002	C31	73.687	0.647	0.000	1.40	15.1	SURCHARGED	
4.003	C107	73.635	0.605	0.000	0.56	18.9	SURCHARGED	
1.006	CJUNCTION	73.541	0.821	0.000	1.17	66.5	SURCHARGED	
5.000	C30	73.042	-0.128	0.000	0.05	3.9	OK	
1.007	C26	72.166	0.521	0.000	1.85	88.3	SURCHARGED	
1.008	C29	71.303	-0.127	0.000	0.63	88.1	OK	

Existing Network Details for Catchment D

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
1.000	27.576	1.400	19.7	0.088	5.00	0.0	0.600	o	225	Pipe/Conduit
2.000	13.730	0.000	0.0	0.043	5.00	0.0	0.600	o	150	Pipe/Conduit
2.001	9.306	0.362	25.7	0.029	0.00	0.0	0.600	o	150	Pipe/Conduit
2.002	9.652	0.173	55.8	0.031	0.00	0.0	0.600	o	150	Pipe/Conduit
1.001	41.157	2.950	14.0	0.131	0.00	0.0	0.600	o	225	Pipe/Conduit
1.002	13.485	0.960	14.0	0.043	0.00	0.0	0.600	o	225	Pipe/Conduit
3.000	4.263	0.060	71.0	0.014	5.00	0.0	0.600	o	150	Pipe/Conduit
3.001	5.610	0.110	51.0	0.018	0.00	0.0	0.600	o	150	Pipe/Conduit
3.002	5.721	0.080	71.5	0.018	0.00	0.0	0.600	o	150	Pipe/Conduit
3.003	14.951	0.260	57.5	0.048	0.00	0.0	0.600	o	150	Pipe/Conduit
3.004	3.819	0.080	47.7	0.051	0.00	0.0	0.600	o	150	Pipe/Conduit
3.005	12.359	0.310	39.9	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit
3.006	2.446	0.395	6.2	0.008	0.00	0.0	0.600	o	150	Pipe/Conduit
1.003	29.903	4.950	6.0	0.095	0.00	0.0	0.600	o	225	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
1.000	77.380	0.088	0.0	2.96	117.8
2.000	76.590	0.043	0.0	0.00	0.0
2.001	76.590	0.072	0.0	1.99	35.2
2.002	76.228	0.103	0.0	1.35	23.8
1.001	75.980	0.322	0.0	3.52	140.0
1.002	73.030	0.365	0.0	3.51	139.6
3.000	73.440	0.014	0.0	1.19	21.1
3.001	73.380	0.032	0.0	1.41	25.0
3.002	73.270	0.050	0.0	1.19	21.0
3.003	73.190	0.098	0.0	1.33	23.5
3.004	72.930	0.149	0.0	1.46	25.8
3.005	72.850	0.149	0.0	1.60	28.3
3.006	72.540	0.157	0.0	4.08	72.0
1.003	72.070	0.617	0.0	5.36	213.1

Manhole Schedules for Catchment D

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
D104	78.010	0.630	Open Manhole	1200	1.000	77.380	225				
D54	77.820	1.230	Open Manhole	1200	2.000	76.590	150				
D52	77.640	1.050	Open Manhole	1200	2.001	76.590	150	2.000	76.590	150	
D50	77.450	1.222	Open Manhole	1200	2.002	76.228	150	2.001	76.228	150	
D48	77.300	1.320	Open Manhole	1200	1.001	75.980	225	1.000	75.980	225	
								2.002	76.055	150	
D47	75.280	2.250	Open Manhole	1200	1.002	73.030	225	1.001	73.030	225	
D122	74.860	1.420	Open Manhole	1200	3.000	73.440	150				
D121	74.860	1.480	Open Manhole	1200	3.001	73.380	150	3.000	73.380	150	
D120	74.860	1.590	Open Manhole	1200	3.002	73.270	150	3.001	73.270	150	
D119	74.870	1.680	Open Manhole	1200	3.003	73.190	150	3.002	73.190	150	
D118	75.240	2.310	Open Manhole	1200	3.004	72.930	150	3.003	72.930	150	
D116	74.670	1.820	Open Manhole	1200	3.005	72.850	150	3.004	72.850	150	
D34	73.970	1.430	Open Manhole	1200	3.006	72.540	150	3.005	72.540	150	
D33	74.000	1.930	Open Manhole	1200	1.003	72.070	225	1.002	72.070	225	
								3.006	72.145	150	
D45	74.470	7.350	Open Manhole	1200		OUTFALL		1.003	67.120	225	

Area Summary for Catchment D						
Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.088	0.088	0.088
2.000	-	-	100	0.043	0.043	0.043
2.001	-	-	100	0.029	0.029	0.029
2.002	-	-	100	0.031	0.031	0.031
1.001	-	-	100	0.131	0.131	0.131
1.002	-	-	100	0.043	0.043	0.043
3.000	-	-	100	0.014	0.014	0.014
3.001	-	-	100	0.018	0.018	0.018
3.002	-	-	100	0.018	0.018	0.018
3.003	-	-	100	0.048	0.048	0.048
3.004	-	-	100	0.051	0.051	0.051
3.005	-	-	100	0.000	0.000	0.000
3.006	-	-	100	0.008	0.008	0.008
1.003	-	-	100	0.095	0.095	0.095
				Total	Total	Total
				0.617	0.617	0.617

Free Flowing Outfall Details for Catchment D						
Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.003	D45	74.470	67.120	0.000	1200	0

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

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR M5-60 (mm)	18.500	Cv (Summer)	0.750
Region England and Wales	Ratio R	0.347	Cv (Winter)	0.840

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Margin for Flood Risk Warning (mm) 300.0 DTS Status    ON Inertia Status OFF
Analysis Timestep    Fine DVD Status OFF
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Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 0

										Water	Surcharged	Flooded	Pipe			
	US/MH			Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Level	Depth	Volume	Flow /	Overflow	Flow	
PN	Name	Storm	Period	Change		Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)	Cap.	(l/s)	(l/s)	Status
1.000	D104	15 Winter	30	+0%						77.455	-0.150	0.000	0.24		26.3	OK
2.000	D54	15 Winter	30	+0%	30/15	Summer				76.823	0.083	0.000	2.58		12.7	SURCHARGED
2.001	D52	15 Winter	30	+0%	100/15	Summer				76.705	-0.035	0.000	0.67		20.9	OK
2.002	D50	15 Winter	30	+0%	30/15	Summer				76.545	0.167	0.000	1.41		29.7	SURCHARGED
1.001	D48	15 Winter	30	+0%						76.125	-0.080	0.000	0.72		96.3	OK
1.002	D47	15 Winter	30	+0%	100/15	Summer				73.200	-0.055	0.000	0.90		109.2	OK
3.000	D122	15 Winter	30	+0%	30/15	Summer				73.779	0.189	0.000	0.28		4.3	SURCHARGED
3.001	D121	15 Winter	30	+0%	30/15	Summer				73.774	0.244	0.000	0.42		8.7	SURCHARGED
3.002	D120	15 Winter	30	+0%	30/15	Summer				73.761	0.341	0.000	0.75		13.1	SURCHARGED
3.003	D119	15 Winter	30	+0%	30/15	Summer				73.737	0.397	0.000	1.00		21.6	SURCHARGED
3.004	D118	15 Winter	30	+0%	30/15	Summer				73.493	0.413	0.000	1.88		33.3	SURCHARGED
3.005	D116	15 Winter	30	+0%	30/15	Summer				73.202	0.202	0.000	1.29		33.2	SURCHARGED
3.006	D34	15 Winter	30	+0%	100/15	Summer				72.651	-0.039	0.000	0.89		34.9	OK
1.003	D33	15 Winter	30	+0%	100/15	Summer				72.235	-0.060	0.000	0.86		171.1	OK

	US/MH	Level
PN	Name	Exceeded
1.000	D104	
2.000	D54	
2.001	D52	
2.002	D50	
1.001	D48	
1.002	D47	
3.000	D122	
3.001	D121	
3.002	D120	
3.003	D119	
3.004	D118	
3.005	D116	
3.006	D34	
1.003	D33	

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

Synthetic Rainfall Details					
Rainfall Model	FSR M5-60 (mm)	18.500	Cv (Summer)	0.750	
Region	England and Wales	Ratio R	0.347	Cv (Winter)	0.840
Margin for Flood Risk Warning (mm)	300.0	DTS Status	ON	Inertia Status	OFF
Analysis Timestep	Fine	DVD Status	OFF		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 0

									Water	Surcharged	Flooded				Pipe	
	US/MH			Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Level	Depth	Volume	Flow /	Overflow	Flow	
PN	Name	Storm	Period	Change		Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)	Cap.	(1/s)	(1/s)	Status
1.000	D104	15 Winter	100	+0%						77.466	-0.139	0.000	0.31		34.0	OK
2.000	D54	15 Winter	100	+0%	30/15	Summer				77.016	0.276	0.000	3.07		15.1	SURCHARGED
2.001	D52	15 Winter	100	+0%	100/15	Summer				76.895	0.155	0.000	0.79		24.4	SURCHARGED
2.002	D50	15 Winter	100	+0%	30/15	Summer				76.670	0.292	0.000	1.64		34.7	SURCHARGED
1.001	D48	15 Winter	100	+0%						76.150	-0.055	0.000	0.91		120.5	OK
1.002	D47	15 Winter	100	+0%	100/15	Summer				73.578	0.323	0.000	1.10		133.1	SURCHARGED
3.000	D122	15 Winter	100	+0%	30/15	Summer				74.152	0.562	0.000	0.33		5.0	SURCHARGED
3.001	D121	15 Winter	100	+0%	30/15	Summer				74.146	0.616	0.000	0.50		10.2	SURCHARGED
3.002	D120	15 Winter	100	+0%	30/15	Summer				74.128	0.708	0.000	0.88		15.4	SURCHARGED
3.003	D119	15 Winter	100	+0%	30/15	Summer				74.090	0.750	0.000	1.14		24.7	SURCHARGED
3.004	D118	15 Winter	100	+0%	30/15	Summer				73.792	0.712	0.000	2.14		37.9	SURCHARGED
3.005	D116	15 Winter	100	+0%	30/15	Summer				73.424	0.424	0.000	1.47		37.8	SURCHARGED
3.006	D34	15 Winter	100	+0%	100/15	Summer				72.800	0.110	0.000	1.05		41.4	SURCHARGED
1.003	D33	15 Winter	100	+0%	100/15	Summer				72.437	0.142	0.000	1.01		201.4	SURCHARGED

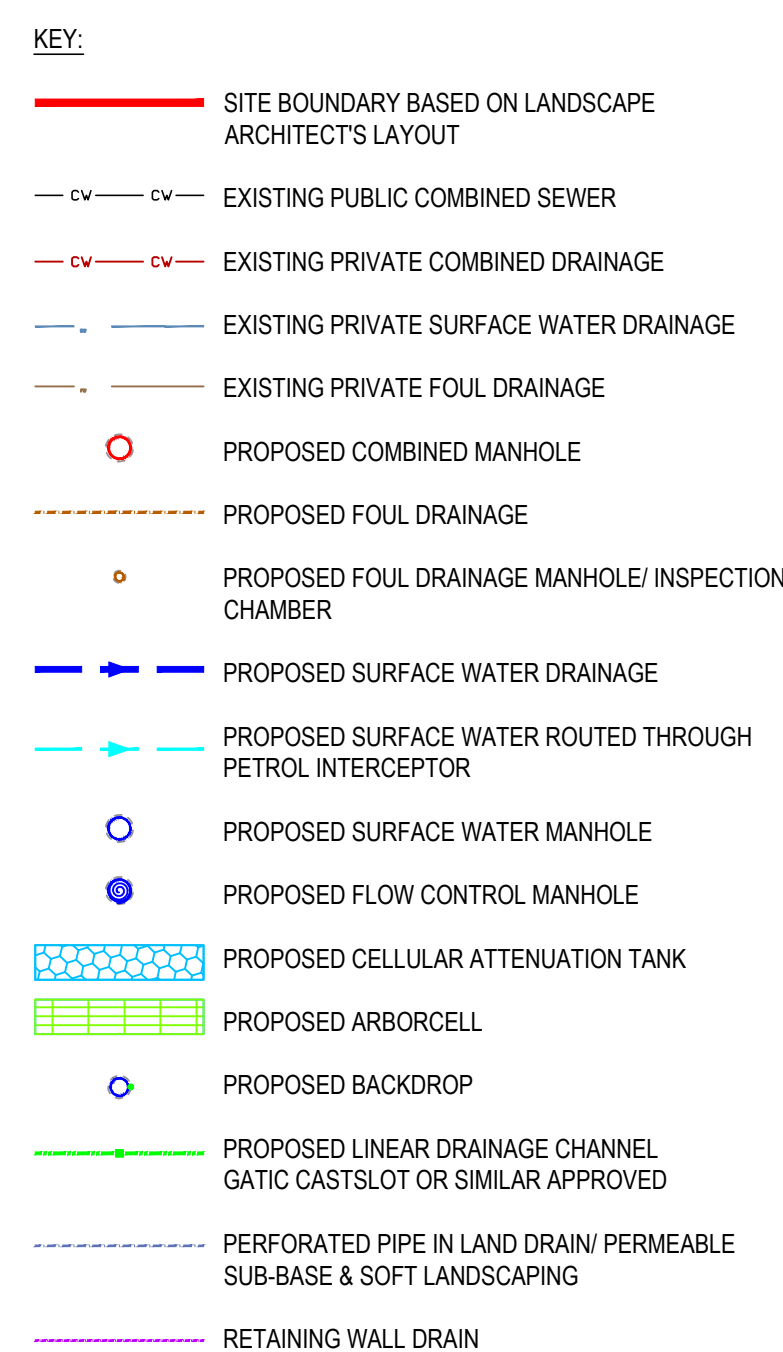
	US/MH	Level
PN	Name	Exceeded
1.000	D104	
2.000	D54	
2.001	D52	
2.002	D50	
1.001	D48	
1.002	D47	
3.000	D122	
3.001	D121	
3.002	D120	
3.003	D119	
3.004	D118	
3.005	D116	
3.006	D34	
1.003	D33	

Appendix G

Proposed Drainage Strategy

Proposed Impermeable Areas

Proposed Drainage Calculations



DRAINAGE TO BE ABANDONED NOT SHOWN FOR CLARITY. REFER TO
DRAINAGE REMOVAL DRAWING NMGNPH-VV-XX-DR-C-9254

NOTE: SOME SYMBOLS & LABELS NOT NOTED FOR CLARITY - REFER TO 1:200 DRAINAGE LAYOUTS FOR FULL KEY.

DESIGN PHILOSOPHY

SURFACE WATER DESIGN
THE DESIGN PROVIDES CAPACITY UP TO THE 1 IN 100-YEAR STORM EVENT
+40% CLIMATE CHANGE EVENT.
SW FLOW RATE: 50% REDUCTION OF EXISTING FLOWS, BASED ON MCC
REQUIREMENTS. (REFER TO TABLE 1 FOR FLOWS) AS AGREED WITH UNITED
UTILITIES (REFER TO E-MAIL DATED 16.12.20)

STORAGE REQUIREMENT: 374M³
ATTENUATION PROVIDED WITHIN CELLULAR ATTENUATION TANKS
& OVERSIZED PIPES.
FOR DETAILS REFER TO TABLE 2

OUTFALLS:
WESTERN SIDE (OUTFALL 1) OUTFALLS TO EXISTING COMBINED DRAINAGE AT
MANHOLE C1
EASTERN SIDE (OUTFALL 2) OUTFALLS TO EXISTING COMBINED DRAINAGE AT
MANHOLE C2
CAR PARK (OUTFALL 3) OUTFALLS TO FUTURE CONNECTION TO MASTERPLAN
DRAINAGE

LEVELS INDICATE THAT PUMPING WILL NOT BE REQUIRED.
POLLUTION TREATMENT: HARDSTANDING SLOPES TOWARDS SOFT
LANDSCAPE. PARTIAL INFILTRATION WITHIN SOFT LANDSCAPE AND TY
SUB-BASE AREAS.
REFER TO EXTERNAL WORKS PLAN NMGNPH-VV-XX-DR-C-9470 & 9471

FOUL WATER DESIGN
FW PEAK FLOW RATE: 35.9 L/S (BASED ON ESTIMATES USING DISCHARGE UNIT METHOD. CONFIRMATION OF DISCHARGE UNITS REQUIRED FROM M&E DESIGNER).

OUTFALL: DRAINAGE OUTFALLS TO EXISTING COMBINED DRAINAGE AT
MANHOLES CA2 & CB2.
LEVELS INDICATE THAT PUMPING WILL NOT BE REQUIRED.

DESIGN NOTES:

- DISCHARGE RATES ARE BASED ON A 50% REDUCTION OF EXISTING RATES AS PER LLFA REQUIREMENTS AND AGREEMENT WITH UU.
- ONLY MAIN DRAINAGE RUNS ARE LABELLED FOR CLARITY; REFER TO DRAWINGS NMGNPH-CUR-00-XX-DR-C-9251 - 9253 FOR 1:200 DRAINAGE LAYOUTS.
- FULL DRAINAGE HAS BEEN DESIGNED USING ESTIMATES TAKEN BASED ON DISCHARGE UNIT METHOD. CONFIRMATION OF DISCHARGE UNITS REQUIRED FROM M&E DESIGNER.

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DESIGN BASED ON TOPOGRAPHICAL SURVEY AND UNDERGROUND UTILITY SURVEY INFORMATION AVAILABLE AT THE TIME OF DESIGN.
3. ALL EXISTING SEWERS, CONNECTIONS, PIPE SIZES AND INVERT LEVELS TO BE CONFIRMED BY CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS TO ENSURE CONNECTIVITY. ANY VARIANCE FROM THE INFORMATION SHOWN SHOULD BE REPORTED TO THE ENGINEER FOR REVIEW.
4. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
5. ALL DIMENSIONS ARE IN METRES AND LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE NOTED.
6. WHERE EXISTING DRAINAGE IS BEING USED, ALLOWANCES SHOULD BE MADE TO REMEDIATE THIS DRAINAGE IN LINE WITH AVAILABLE CCTV SURVEY INFORMATION.
7. ALL EXISTING SERVICES TO BE LOCATED PRIOR TO COMMENCEMENT OF ANY DRAINAGE WORKS, AND WHERE NECESSARY PROTECTION OR DIVERSIONS TO BE UNDERTAKEN TO AVOID CONFLICT WITH THE PROPOSED WORK.
8. BUILDING LOCATIONS ARE APPROXIMATE AND SHALL BE CONFIRMED BY ARCHITECT/ LANDSCAPE ARCHITECT.
9. OUTFALL CONNECTION(S) SUBJECT TO AGREEMENT WITH THE APPROVING AUTHORITY.
10. THIS DRAWING IS PRELIMINARY AND IS SUBJECT TO CHANGE AT LATER STAGES.
11. CONNECTION AND OUTFALL TO THE EXISTING SEWER NETWORK WITHIN THE EASTERN AREA OF THE SITE IS SUBJECT TO APPROVAL.

FOR FULL DRAINAGE NOTES REFER TO DRAWING
NMGNPH-CUR-VV-XX-DR-C-9260

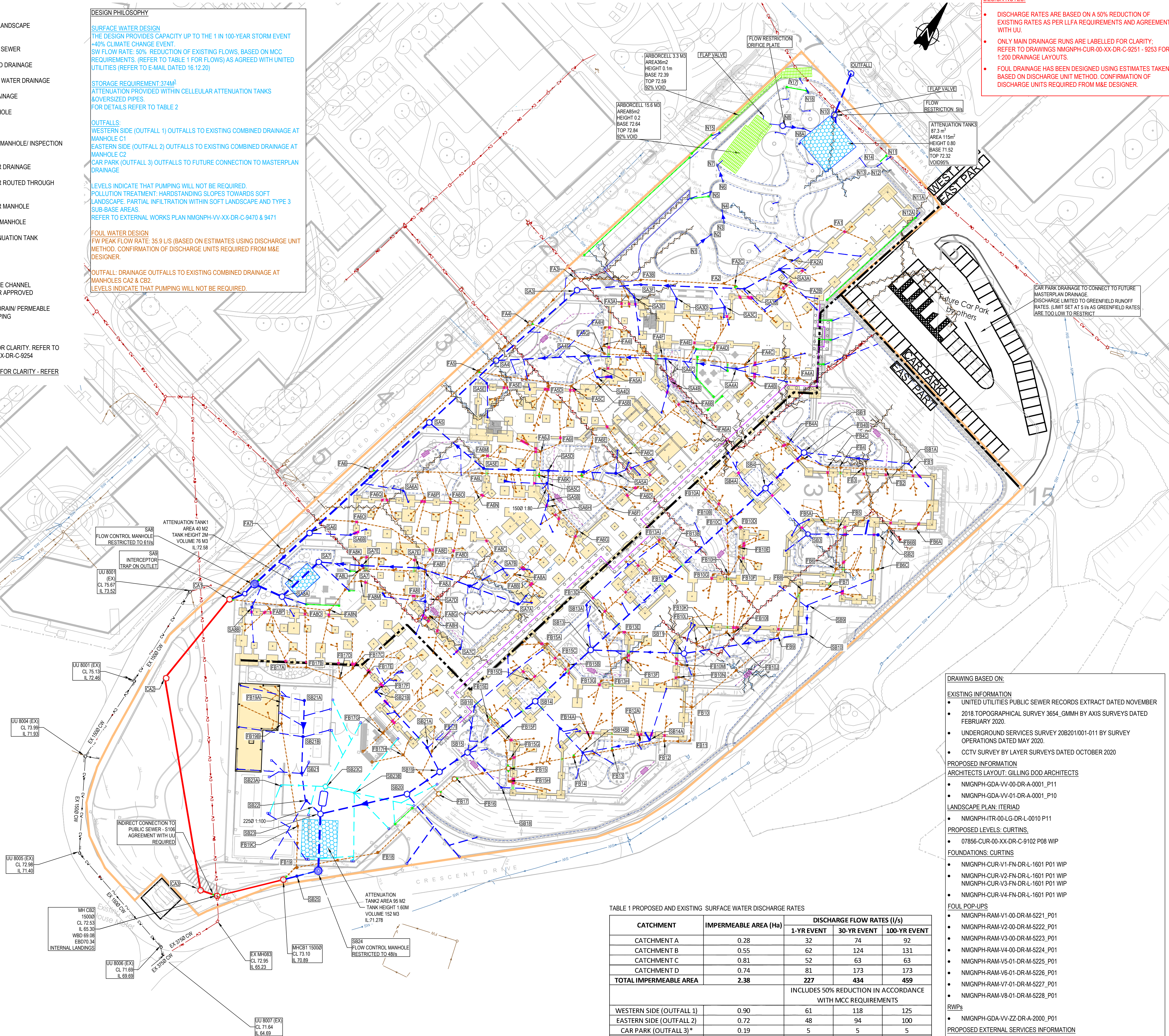


TABLE 1 PROPOSED AND EXISTING SURFACE WATER DISCHARGE RATES

CATCHMENT	IMPERMEABLE AREA (Ha)	DISCHARGE FLOW RATES (l/s)		
		1-YR EVENT	30-YR EVENT	100-YR EVENT
CATCHMENT A	0.28	32	74	92
CATCHMENT B	0.55	62	124	131
CATCHMENT C	0.81	52	63	63
CATCHMENT D	0.74	81	173	173
TOTAL IMPERMEABLE AREA	2.38	227	434	459
INCLUDES 50% REDUCTION IN ACCORDANCE WITH MCC REQUIREMENTS				
WESTERN SIDE (OUTFALL 1)	0.90	61	118	125
EASTERN SIDE (OUTFALL 2)	0.72	48	94	100
CAR PARK (OUTFALL 3)*	0.19	5	5	5
PROPOSED	1.83	114	217	230

*CAR PARK DISCHARGE RATE SET AT 5 l/s AS CALCULATED GREENFIELD RUN-OFF IS TOO LOW TO RESTRICT

DRAWING BASED ON:

EXISTING INFORMATION

- UNITED UTILITIES PUBLIC SEWER RECORDS EXTRACT DATED NOVEMBER 2019
- 2018 TOPOGRAPHICAL SURVEY 3654_GMMH BY AXIS SURVEYS DATED FEBRUARY 2020.
- UNDERGROUND SERVICES SURVEY 20B201/001-011 BY SURVEY OPERATIONS DATED MAY 2020.
- CCTV SURVEY BY LAYER SURVEYS DATED OCTOBER 2020

PROPOSED INFORMATICS

ARCHITECTS LAYOUT: GILLING DOD ARCHITECTS

- NMGNPH-GDA-VV-00-DR-A-0001_P11
- NMGNPH-GDA-VV-01-DR-A-0001_P10

LANDSCAPE PLAN: ITERIAD

- NMGNPH-ITR-00-LG-DR-L-0010 P11

PROPOSED LEVELS: CURTAINS

- 07856-CUR-00-XX-DR-C-9102 P08 WIF

FOUNDATIONS: CURTINS

- NMGNPH-CUR-V1-FN-DR-L-1601 P01 WIP
- NMGNPH-CUR-V2-FN-DR-L-1601 P01 WIP
NMGNPH-CUR-V3-FN-DR-L-1601 P01 WIP
- NMGNPH-CUR-V4-FN-DR-L-1601 P01 WIP

FOUL POP-UPS

- NMGNPH-RAM-V1-00-DR-M-5221_P01
- NMGNPH-RAM-V2-00-DR-M-5222_P01
- NMGNPH-RAM-V3-00-DR-M-5223_P01
- NMGNPH-RAM-V4-00-DR-M-5224_P01
- NMGNPH-RAM-V5-01-DR-M-5225_P01
- NMGNPH-RAM-V6-01-DR-M-5226_P01
- NMGNPH-RAM-V7-01-DR-M-5227_P01
- NMGNPH-RAM-V8-01-DR-M-5228_P01

RWP's

- NMGNPH-GDA-VV-ZZ-DR-A-2000_P01

PROPOSED EXTERNAL SERVICES INFORMATION

- NMGNPH-RAM-VV-00-DR-E-6321 P02
- NMGNPH-RAM-VV-00-DR-P-5800 P06

P12	UPDATES TO IHP COMMENTS	01/06/22	LK	AR
P11	ISSUED FOR DISCHARGE CONDITIONS	27/05/22	TK	MW
P10	ISSUED FOR S106 APPLICATION	14/01/22	TH	ATL
P09	ISSUED FOR PLANNING UPDATE	17/12/21	ATL	ATL
P08	ISSUED FOR PLANNING CONDITION DISCHARGE	22/11/21	ATL	MW
P07	ISSUED FOR STAGE 4	29/10/21	ATL	MW
P06	AMENDED TO VALUE ENGINEERING DESIGN	24/06/21	RH	CG
P05	STAGE 3 ISSUE	18/01/21	ATL	MW
P04	ISSUED FOR PLANNING	16/09/20	ATL	MW
P04	ISSUED FOR PLANNING	16/09/20	ATL	MW
Rev:	Description:	Date:	By:	Chkd:



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Status	
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STAGE 4

Project	
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NEW PARK HOUSE

Drg Tit

PROPOSED DRAINAGE LAYOUT

Size:	Date:	Drawn By:	Designed By:	Checked By:			
A1	30/03/20	OJT	OJT	MW			
Scale: 1:500							
Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
68900000	CMB	VIII	B	S		68900000	D-1

NMGNPH - CUR - VV - XX - DR - C - 9250 - P12