Viewport 001

Scale 1:1000

Viewport 002

1055

1057 - Viewport 001

1056

1057 - Viewport 002

Site Location Plan
Scale 1:1000

Do Not Scale

DESIGN REVIEW

Design review by:	**	Checked by:	**

Residual hazards:

Health, Safety & Environmental Notes

NOTES

General Notes

Architectural Site Plan
- *Acanthus WSM*
- *4035-20-AWSM-XX-XX-DR-A-1000-P16 - Site Layout*

Existing Topographical Survey
- *Blue Hills topo survey 3D*

1. All Coordinates relate to Topographical survey coordination
2. All Dimension in mm unless notified otherwise
3. All Levels in mADD in relation to Topographical survey coordination unless notified otherwise

Key:

Site Layout =

Phase 1 Boundary =

Proposed Foul Sewer =

Proposed Surface Water =

Proposed Rising Main =

Existing Foul Network =

Date	Description	By	Chk	Rev
06.03.25	Initial Issue	OCB	RP	P1

ADEPT
CIVIL AND STRUCTURAL CONSULTING ENGINEERS

Web: www.adeptcsce.com
Email: inbox@adeptcsce.com
Tel: 0113 239 4518 (Leeds)
Tel: 0161 974 3620 (Manchester)

Originating Office
1912 Mills, Sunny Bank Mills,
Farsley, Leeds, LS28 5UJ

Project
Blue Hills Farm,
Birkenshaw

Title
Drainage Strategy
Sheet 3 of 3

Client
Vistry Partnerships

Scale @ A0	Initial author	Initial checker	Approver	Initial Date
1:200	OCB	RP	RP	Mar 25

Status	Purpose	Adept Ref
S2	Preliminary	09.21011

Project Number	Originator	Volume	Level	Type	Role	Drg. No.	Rev.
09.21011-ACE-00-ZZ-DR-C-1057							P1

Do Not Scale

DESIGN REVIEW

Design review by:	**	Checked by:	**

Residual hazards:

Health, Safety & Environmental Notes

NOTES

1. Land drain to be 150mm perforated pipe wrapped in permeable geotextile

Key:

- Land Ownership Boundary
- Perforated land drainage pipe 150Ø
- Carrier pipe 150Ø
- French Drain
- Retention < 600mm - Flag on Edge Type 2a & 2b (FOE) Note: Not to be used within Vehicle influence zone
- Retention < 600mm - Flag on Edge Type 2c & 2d (FOE) Note: Can be used within Vehicle influence zone
- Retention < 600mm - Gravel Board Type 1a, 1b & 1c(GB) Note: Not to be used within Vehicle influence zone
- Retention < 1500mm - Cavity Filled Wall Type 3E/4E/5E Retention Note: Not to be used within Vehicle influence zone
- Retention <1500mm - Cavity Filled Wall Type 3F/4F/5F Retention Note: Can be used within Vehicle influence zone
- Retention >1500mm - Retaining Wall Type 4a & 4b
- Retention Contiguos Piled Wall
- Retention Redi-Rock Wall or similar wall type to Highways approval
- Underbuild
- Overbuild
- Banking
- Contours, Minor (0.1m)
- Contours. Major (0.5m)
- Phase 2 Banking Extents
- Gabion Wall

Date	Description	By	Chk	Rev
17.01.25	Drawing updated to suit new architects layout & client comments - Construction Issue	OCB	TT	C1
27.09.23	Amended following client comments	OCB	RP	P6
05.09.23	Amended following client comments	OCB	RP	P5
14.07.23	Amended following client comments	JS	RP	P4
07.06.23	Amended following client comments	JS	JS	P3
19.05.23	Amended to new site layout	JS	JS	P2
05.05.23	Initial Issue	OCB	JS	P1

ADEPT
CIVIL AND STRUCTURAL CONSULTING ENGINEERS

Web: www.adeptcsce.com
Email: inbox@adeptcsce.com
Tel: 0113 239 4518 (Head Office)

Originating Office: Leeds
1912 Mills, Sunny Bank Mills, Farsley, Leeds, LS28 5UJ
Tel: 0113 239 4518

Project
Blue Hills Farm, Birkenshaw

Title
Land Drainage
Phase 1, Sheet 1 of 2

Client
Vistry Partnerships

Scale @ A0	Initial author	Initial checker	Approver	Initial Date
1:250	OCB	JS	RP	Apr 23

Status	Purpose	Adopt Ref
A	Construction	09.21011

Project Number	Originator	Volume	Level	Type	Role	Org. No.	Rev.
09.21011-ACE-00-ZZ-DR-C-1150							C1

Scale 1:1000

7.5m easement for overhead electrical cables, subject to confirmation.

PROW SPE/14/20

PROW SPE/14/10

PROW SPE/13/50

PHASE 2 BOUNDARY

Bin collection area

Bin collection area

Bin collection area

Depth and location of land drain to be coordinated with specialist wall designer

Plot41 Plot42 Plot43 Plot44 Plot45 Plot46 Plot47 Plot48 Plot49 Plot50 Plot51 Plot52 Plot53 Plot54 Plot55 Plot56 Plot57 Plot58 Plot59 Plot60 Plot61 Plot62 Plot63 Plot64 Plot65 Plot66 Plot67 Plot68 Plot69 Plot70 Plot71 Plot72 Plot73 Plot74 Plot75 Plot76 Plot77

PPIC (4500) CL 165.00 IL 164.40

PPIC (4500) CL 164.70 IL 163.70

CL 164.20 IL 163.60

PPIC CL 162.80 IL 162.60

PPIC (4500) CL 161.24 IL 160.64

IL 160.30

IL 159.90

PPIC Catchpit (4500) CL 160.50 IL 159.90

PPIC (4500) CL 160.24 IL 159.54

IL 165.90

IL 169.100

IL 169.100

PPIC Catchpit (4500) CL 171.11 IL 168.48

PPIC Catchpit (4500) CL 170.39 IL 168.33*

PPIC Catchpit (4500) CL 168.83 IL 167.95*

PPIC Catchpit (4500) CL 169.684 IL 167.790

PPIC Catchpit (4500) CL 170.633 IL 167.600

PPIC (4500) CL 165.000 IL 167.000

PPIC Catchpit (4500) CL 165.148 IL 160.998

IL 161.516

PPIC (4500) CL 160.60 IL 160.00

Do Not Scale

DESIGN REVIEW

Design review by:	**	Checked by:	**

Residual hazards:

Health, Safety & Environmental Notes

NOTES

1. Land drain to be 150mm perforated pipe wrapped in permeable geotextile

Key:

- Land Ownership Boundary
- Perforated land drainage pipe 150Ø
- Carrier pipe 150Ø
- French Drain
- Retention < 600mm - Flag on Edge Type 2a & 2b (FOE) Note: Not to be used within Vehicle influence zone
- Retention < 600mm - Flag on Edge Type 2c & 2d (FOE) Note: Can be used within Vehicle influence zone
- Retention < 600mm - Gravel Board Type 1a, 1b & 1c(GB) Note: Not to be used within Vehicle influence zone
- Retention < 1500mm - Cavity Filled Wall Type 3E/4E/5E Retention Note: Not to be used within Vehicle influence zone
- Retention <1500mm - Cavity Filled Wall Type 3F/4F/5F Retention Note: Can be used within Vehicle influence zone
- Retention >1500mm - Retaining Wall Type 4a & 4b
- Retention Contiguos Piled Wall
- Retention Redi-Rock Wall or similar wall type to Highways approval
- Underbuild
- Overbuild
- Banking
- Contours, Minor (0.1m)
- Contours. Major (0.5m)
- Phase 2 Banking Extents
- Gabion Wall

Date	Description	By	Chk	Rev
17.01.25	Drawing updated to suit new architects layout & client comments - Construction Issue	OCB	TT	C1
27.09.23	Amended following comments from client	OCB	RP	P6
05.09.23	Amended following comments from client	OCB	RP	P5
14.07.23	Amended following client comments	JS	RP	P4
07.06.23	Amended following client comments	JS	JS	P3
19.05.23	Amended to suit new layout	JS	JS	P2
05.05.23	Initial Issue	OCB	JS	P1

ADEPT
CIVIL AND STRUCTURAL CONSULTING ENGINEERS

Web: www.adeptcsce.com
Email: inbox@adeptcsce.com
Tel: 0113 239 4518 (Head Office)

Originating Office: Leeds
1912 Mills, Sunny Bank Mills, Farsley, Leeds, LS28 5UJ
Tel: 0113 239 4518

Project
Blue Hills Farm, Birkenshaw

Title
Land Drainage
Phase 1, Sheet 2 of 2

Client
Vistry Partnerships

Scale @ A0	Initial author	Initial checker	Approver	Initial Date
1:250	OCB	JS	RP	Apr' 23

Status	Purpose	Project Ref
A	Construction	09.21011

Project Number	Originator	Volume	Level	Type	Role	Org No.	Rev.
09.21011-ACE-00-ZZ-DR-C-1151							C1

Scale 1:1000

PROW SPE/14/10

Plot55 Plot66 Plot67 Plot68 Plot69 Plot70 Plot78 Plot79 Plot88 Plot87 Plot86 Plot85 Plot84 Plot83 Plot82 Plot81 Plot80 Plot76 Plot77 Plot71 Plot72 Plot73 Plot74 Plot75 Plot52 Plot51 Plot50 Plot49 Plot46 Plot48 Plot47 Plot31 Plot30 Plot29 Plot27 Plot26 Plot23 Plot22 Plot21 Plot20 Plot19 Plot89 Plot90 Plot91

IL 165.90 IL 169.100 IL 169.100

PPIC (450Ø) CL 165.00 IL 164.40

PPIC (450Ø) CL 164.70 IL 163.70

CL 164.20 IL 163.60

PPIC (450Ø) CL 162.87 IL 162.60

CL 162.800 IL 162.000

PPIC (450Ø) CL 161.24 IL 160.64

IL 159.90

PPIC Catchpit (450Ø) CL 160.50 IL 159.90

PPIC (450Ø) CL 160.24 IL 159.64

PPIC (450Ø) CL 159.37 IL 158.77

CL 155.280 IL 154.000

PPIC (450Ø) CL 159.13 IL 156.90*

IL 161.516

IL 154.90

PPIC Catchpit (450Ø)

Bin collection area

Existing building to be demolished

Private Drive

Indicative diverted PROW route, subject to agreement with LA.

Exiting car parking to be retained.

Bin collection area

Indicative extents of existing car parking

Exiting car parking to be retained.

Defensible planting

PHASE 2 BOUNDARY

Depth and location of land drain to be coordinated with specialist wall designer

PROW SPE/14/10

Do Not Scale

DESIGN REVIEW

Design review by:	**	Checked by:	**

Residual hazards:

Health, Safety & Environmental Notes

NOTES

1. Land drain to be 150mm perforated pipe wrapped in permeable geotextile

Key:

- Land Ownership Boundary
- Retaining Structure
- Perforated land drainage pipe 150Ø
- Carrier pipe 150Ø

Date	Description	By	Chk	Rev
06.03.25	Initial Issue	OCB	RP	P1

ADEPT
CIVIL AND STRUCTURAL CONSULTING ENGINEERS

Web: www.adeptcsce.com
Email: inbox@adeptcsce.com
Tel: 0113 239 4518 (Head Office)

Originating Office: Leeds
1912 Mills, Sunny Bank Mills, Farsley, Leeds, LS28 5UJ
Tel: 0113 239 4518

Project
Blue Hills Farm, Birkenshaw

Title
Land Drainage Phase 2

Client
Vistry Partnerships

Scale @ A0	Initial author	Initial checker	Approver	Initial Date
1:250	OCB	RP	RP	Mar' 25

Status	Purpose	Suitability
S2	Preliminary	09.21011

Project Number	Originator	Volume	Level	Type	Role	Dtg. No.	Rev.
09.21011-ACE-00-ZZ-DR-C-1153							P1

Do Not Scale

DESIGN REVIEW

Design review by:	**	Checked by:	**

Residual hazards:

Health, Safety & Environmental Notes

NOTES

General Notes

Drawing Ref:

Architectural Master Plan
- Acanthus WSM
- 4035-20-AWSM-XX-XX-DR-A-1000-P14 - Site Layout

Topographical Survey
- A.M.I.C.E.S
- Blue Hills topo survey 3D

1. All Coordinates relate to Topographical Survey coordination
2. All Dimensions in mm unless notified otherwise
3. All levels in mAOD in relation to Topographical Survey coordination unless notified otherwise

Date	Description	By	Chk	Rev
06.03.25	Phase 2 added to drawing	OCB	RP	P4
12.03.24	Architect Site Layout Updated	BHB	OCB	P3
16.05.23	Overland flow route updated to suit new levels	OCB	JS	P2
09.05.21	Initial Issue	NP	RP	P1

ADEPT
CIVIL AND STRUCTURAL CONSULTING ENGINEERS
Web: www.adeptcsce.com
Email: inbox@adeptcsce.com
Tel: 0113 239 4518 (Leeds)
Tel: 0161 974 3620 (Manchester)
Originating Office
1912 Mills, Sunny Bank Mills, Farsley, Leeds, LS28 5UJ

Project
Blue Hills Farm, Birkenshaw

Title
Overland Flow Routing

Client
Vistry Partnerships

Scale @ A1	Initial author	Initial checker	Approver	Initial Date
1:500	NP	RP	RP	May 22

Status	Purpose	Adept Ref
S2	Preliminary	09.21011

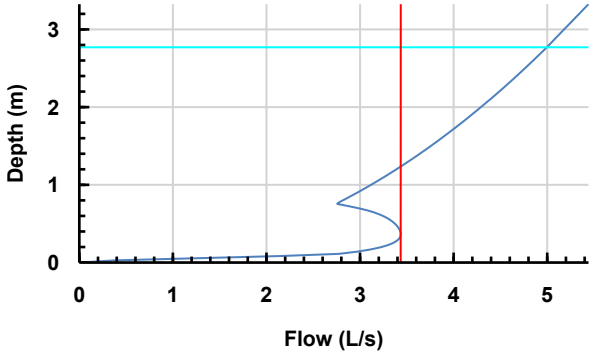
Project Number	Originator	Volume	Level	Type	Role	Drg. No.	Rev.
09.21011-ACE-00-ZZ-DR-C-1021							P4

Project:	Date: 03/02/2022		
	Designed by: oliver.boyes	Checked by:	Approved By:
Report Details: Type: Junctions Storm Phase: Phase	Company Address:		

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
SW1 (Surface Water Network - S104)	Outlet	SW1.000 (Surface Water Network - S104)	Free Discharge
SW2 (Surface Water Network - S104)	Outlet	SW1.001 (Surface Water Network - S104)	Free Discharge
SW8 (Surface Water Network - S104)	Outlet	SW3.000 (Surface Water Network - S104)	Free Discharge
SW3 (Surface Water Network - S104)	Outlet	SW1.002 (Surface Water Network - S104)	Free Discharge
SW7 (Surface Water Network - S104)	Outlet	SW2.001 (Surface Water Network - S104)	Free Discharge
SW4 (Surface Water Network - S104)	Outlet	SW1.003 (Surface Water Network - S104)	Free Discharge
SW6 (Surface Water Network - S104)	Outlet	SW2.000 (Surface Water Network - S104)	Free Discharge
SW9 (Surface Water Network - S104)	Outlet	SW2.002 (Surface Water Network - S104)	Free Discharge
SW5 (Surface Water Network - S104)	Outlet	SW1.004 (Surface Water Network - S104)	Free Discharge
SW10 (Surface Water Network - S104)	Outlet	SW1.005 (Surface Water Network - S104)	Free Discharge
SW12 (Surface Water Network - S104)	Outlet	SW4.000 (Surface Water Network - S104)	Free Discharge
SW16 (Surface Water Network - S104)	Outlet	SW5.000 (Surface Water Network - S104)	Free Discharge
SW13 (Surface Water Network - S104)	Outlet	SW4.001 (Surface Water Network - S104)	Free Discharge
SW14 (Surface Water Network - S104)	Outlet	SW4.002 (Surface Water Network - S104)	Free Discharge
SW11 (Surface Water Network - S104)	Outlet	SW1.006 (Surface Water Network - S104)	Free Discharge
SW17 (Surface Water Network - S104)	Outlet	Pipe	Free Discharge
SW18 (Surface Water Network - S104)	Outlet	SW5.002 (Surface Water Network - S104)	Free Discharge
SW15 (Surface Water Network - S104)	Outlet	SW1.007 (Surface Water Network - S104)	Free Discharge
SW19 (Surface Water Network - S104)	Outlet	SW1.008 (Surface Water Network - S104)	Free Discharge
SW20 (Surface Water Network - S104)	Outlet	SW1.009 (Surface Water Network - S104)	Free Discharge
SW24 (Surface Water Network - S104)	Outlet	SW6.002 (Surface Water Network - S104)	Free Discharge
SW25 (Surface Water Network - S104)	Outlet	SW6.003 (Surface Water Network - S104)	Free Discharge
SW23 (Surface Water Network - S104)	Outlet	SW6.001 (Surface Water Network - S104)	Free Discharge
SW21 (Surface Water Network - S104)	Outlet	SW1.010 (Surface Water Network - S104)	Free Discharge
SW22 (Surface Water Network - S104)	Outlet	SW6.000 (Surface Water Network - S104)	Free Discharge
SW27 (Surface Water Network - S104)	Outlet	SW6.005 (Surface Water Network - S104)	Free Discharge
SW26 (Surface Water Network - S104)	Outlet	SW6.004 (Surface Water Network - S104)	Free Discharge
	Outlet	SW1.013 (Surface Water Network - S104)	Hydro-Brake®

Project:	Date: 03/02/2022		
	Designed by: oliver.boyes	Checked by:	Approved By:
Report Details: Type: Junctions Storm Phase: Phase	Company Address:		

Junction	Outlet Name	Outgoing Connection	Outlet Type
SW29 (Surface Water Network - S104)	Invert Level (m)	149.325	
	Design Depth (m)	2.770	
	Design Flow (L/s)	5.0	
	Objective	Minimise Upstream Storage Requirements	
	Application	Surface Water Only	
	Sump Available	☑	
	Unit Reference	SHE-0085-5000-2770-5000	
			
SW31 (Surface Water Network - S104)	Outlet	SW1.014 (Surface Water Network - S104)	Free Discharge
Manhole (1)	Outlet	Pipe (3)	Free Discharge
SW16a	Outlet	SW5.000 (Surface Water Network - S104) (1)	Free Discharge
SW16b	Outlet	Pipe (4)	Free Discharge
SW33	Outlet	Pipe (6)	Free Discharge
SW34	Outlet	Pipe (7)	Free Discharge
SW35	Outlet	Pipe (8)	Free Discharge
SW36	Outlet	Pipe (9)	Free Discharge
SW37	Outlet	SW1.010 (Surface Water Network - S104) (1)	Free Discharge
SW30	Outlet	SW1.013 (Surface Water Network - S104) (1)	Free Discharge
SW29a	Outlet	SW1.013 (Surface Water Network - S104) (2)	Free Discharge

Project:	Date: 03/02/2022		
	Designed by: oliver.boyes	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address:		

Tank

Type : Tank

Dimensions

Exceedance Level (m)	153.800
Depth (m)	4.420
Base Level (m)	149.380
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	87.43
Average Slope (1:X)	0.00
Total Volume (m³)	877.469

Depth (m)	Area (m²)	Volume (m³)
0.000	334.00	0.000
3.000	334.00	876.049

Inlets

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	SW1.010 (Surface Water Network - S104) (1)
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe (2)
Outlet Type	Free Discharge

Advanced

Perimeter	Rectangular
Length (m)	35.522

Project:	Date: 03/02/2022		
	Designed by: oliver.boyes	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address:		

Tank (1)

Type : Tank

Dimensions

Exceedance Level (m)	157.296
Depth (m)	6.493
Base Level (m)	150.803
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	95
Average Slope (1:X)	0.00
Total Volume (m³)	157.739

Depth (m)	Area (m²)	Volume (m³)
0.000	97.25	0.000
1.655	97.25	152.901

Inlets

Inlet

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

Outlets

Outlet

Outgoing Connection	Pipe (1)
Outlet Type	Free Discharge

Advanced

Perimeter	Circular
Length (m)	20.988

Project:	Date: 03/02/2022		
	Designed by: oliver.boyes	Checked by:	Approved By:
Report Details: Type: Connections Storm Phase: Phase	Company Address:		

Name	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Upstream Cover Level (m)	Upstream Invert Level (m)
SW1.008 (Surface Water Network - S104)	21.352	Pipe	24.486	0.009		375	158.380	156.025
SW1.009 (Surface Water Network - S104)	6.087	Pipe	12.550	0.009		375	156.728	155.153
SW1.007 (Surface Water Network - S104)	20.481	Pipe	109.523	0.009		375	159.753	156.212
SW1.000 (Surface Water Network - S104)	21.385	Pipe	21.449	0.009		150	168.177	166.827
SW1.001 (Surface Water Network - S104)	22.680	Pipe	13.232	0.009		150	167.180	165.830
SW1.002 (Surface Water Network - S104)	11.900	Pipe	13.006	0.009		225	165.466	164.041
SW1.003 (Surface Water Network - S104)	13.081	Pipe	13.003	0.009		225	164.645	163.126
SW1.004 (Surface Water Network - S104)	34.910	Pipe	13.959	0.009		225	163.671	162.120
SW1.006 (Surface Water Network - S104)	17.321	Pipe	199.089	0.009		375	160.556	156.299
SW5.002 (Surface Water Network - S104)	13.566	Pipe	169.579	0.009		225	160.102	158.122
SW2.000 (Surface Water Network - S104)	11.452	Pipe	134.734	0.009		150	164.431	163.081
SW2.001 (Surface Water Network - S104)	16.607	Pipe	23.423	0.009		225	164.661	162.891
SW2.002 (Surface Water Network - S104)	10.408	Pipe	167.878	0.009		225	164.100	162.182
SW3.000 (Surface Water Network - S104)	8.449	Pipe	51.206	0.009		150	165.082	163.161
SW4.000 (Surface Water Network - S104)	42.523	Pipe	112.792	0.009		225	160.298	158.170
SW4.002 (Surface Water Network - S104)	22.523	Pipe	36.743	0.009		225	160.544	157.062
SW6.000 (Surface Water Network - S104)	12.517	Pipe	50.069	0.009		100	153.145	151.859
SW6.003 (Surface Water Network - S104)	55.362	Pipe	152.512	0.009		225	153.707	151.302
SW6.004 (Surface Water Network - S104)	14.035	Pipe	22.933	0.009		300	154.757	150.864
SW6.005 (Surface Water Network - S104)	9.849	Pipe	43.009	0.009		375	155.513	150.177
SW6.001 (Surface Water Network - S104)	9.506	Pipe	100.067	0.009		150	153.347	151.559
SW6.002 (Surface Water Network - S104)	8.658	Pipe	99.513	0.009		150	153.538	151.464
SW1.014 (Surface Water Network - S104)	11.140	Pipe	15.408	0.009		150	152.433	148.983
SW1.005 (Surface Water Network - S104)	12.372	Pipe	20.793	0.009		300	161.208	159.544
SW4.001 (Surface Water Network - S104)	18.035	Pipe	24.671	0.009		225	161.182	157.793
Pipe	19.293	Pipe	11.998		0.6	150	160.371	157.332
Pipe (3)	4.235	Pipe	11.998		0.6	150	157.828	152.661
Pipe (2)	12.939	Pipe	2587.710		0.6	600	153.800	149.380
SW5.000 (Surface Water Network - S104)	16.643	Pipe	61.414	0.009		150	160.767	158.950
SW5.000 (Surface Water Network - S104) (1)	12.291	Pipe	99.930	0.009		150	160.536	158.679
Pipe (4)	4.686	Pipe	13.053		0.6	100	160.388	159.088
Pipe (1)	13.075	Pipe	100.576		0.6	150	157.296	150.803
Pipe (6)	14.374	Pipe	100.520		0.6	150	154.794	150.673
Pipe (7)	8.061	Pipe	99.521		0.6	150	156.775	150.530
Pipe (8)	21.395	Pipe	84.565		0.6	150	156.180	150.449
SW1.010 (Surface Water Network - S104)	9.698	Pipe	438.618		0.6	600	156.245	149.723

SW1.010 (Surface Water Network - S104) (1)	9.400	Pipe	1057.492		0.6	600	155.353	149.701
Pipe (9)	4.456	Pipe	101.280		0.6	150	155.608	150.196
SW1.013 (Surface Water Network - S104) (1)	17.353	Pipe	99.731	0.009		150	152.772	149.157
SW1.013 (Surface Water Network - S104)	4.132	Pipe	100.780	0.009		150	154.984	149.325
SW1.013 (Surface Water Network - S104) (2)	12.749	Pipe	100.389	0.009		150	155.018	149.284

Name	Downstream Cover Level (m)	Downstream Invert Level (m)	Part Family	Lock	Flow Restriction (L/s)	Culvert Type	Culvert Entrance
SW1.008 (Surface Water Network - S104)	156.728	155.153		All		(None)	(None)
SW1.009 (Surface Water Network - S104)	156.245	154.668		All		(None)	(None)
SW1.007 (Surface Water Network - S104)	158.380	156.025		All		(None)	(None)
SW1.000 (Surface Water Network - S104)	167.180	165.830		All		(None)	(None)
SW1.001 (Surface Water Network - S104)	165.466	164.116		All		(None)	(None)
SW1.002 (Surface Water Network - S104)	164.645	163.126		All		(None)	(None)
SW1.003 (Surface Water Network - S104)	163.671	162.120		All		(None)	(None)
SW1.004 (Surface Water Network - S104)	161.208	159.619		All		(None)	(None)
SW1.006 (Surface Water Network - S104)	159.753	156.212		All		(None)	(None)
SW5.002 (Surface Water Network - S104)	159.753	158.042		Levels		(None)	(None)
SW2.000 (Surface Water Network - S104)	164.661	162.996		All		(None)	(None)
SW2.001 (Surface Water Network - S104)	164.100	162.182		All		(None)	(None)
SW2.002 (Surface Water Network - S104)	163.671	162.120		All		(None)	(None)
SW3.000 (Surface Water Network - S104)	164.661	162.996		All		(None)	(None)
SW4.000 (Surface Water Network - S104)	161.182	157.793		All		(None)	(None)
SW4.002 (Surface Water Network - S104)	160.556	156.449		All		(None)	(None)
SW6.000 (Surface Water Network - S104)	153.347	151.609		All		(None)	(None)
SW6.003 (Surface Water Network - S104)	154.757	150.939		All		(None)	(None)
SW6.004 (Surface Water Network - S104)	155.513	150.252		All		(None)	(None)
SW6.005 (Surface Water Network - S104)	156.245	149.948		All		(None)	(None)
SW6.001 (Surface Water Network - S104)	153.538	151.464		All		(None)	(None)
SW6.002 (Surface Water Network - S104)	153.707	151.377		All		(None)	(None)
SW1.014 (Surface Water Network - S104)	148.410	148.260		All		(None)	(None)
SW1.005 (Surface Water Network - S104)	160.556	158.949		All		(None)	(None)
SW4.001 (Surface Water Network - S104)	160.544	157.062		All		(None)	(None)
Pipe	157.828	155.724		All		(None)	(None)
Pipe (3)	157.296	152.308		All		(None)	(None)
Pipe (2)	154.984	149.375		All		(None)	(None)
SW5.000 (Surface Water Network - S104)	160.536	158.679		All		(None)	(None)
SW5.000 (Surface Water Network - S104) (1)	160.371	158.556		All		(None)	(None)

Pipe (4)	160.536	158.729		All		(None)	(None)
Pipe (1)	154.794	150.673		None		(None)	(None)
Pipe (6)	156.775	150.530		None		(None)	(None)
Pipe (7)	156.180	150.449		None		(None)	(None)
Pipe (8)	155.608	150.196		None		(None)	(None)
SW1.010 (Surface Water Network - S104)	155.353	149.701		All		(None)	(None)
SW1.010 (Surface Water Network - S104) (1)	153.800	149.692		All		(None)	(None)
Pipe (9)	155.353	150.152		Levels		(None)	(None)
SW1.013 (Surface Water Network - S104) (1)	152.433	148.983		All	5.0	(None)	(None)
SW1.013 (Surface Water Network - S104)	155.018	149.284		All	5.0	(None)	(None)
SW1.013 (Surface Water Network - S104) (2)	152.772	149.157		All	5.0	(None)	(None)

Project:	Date: 03/02/2022		
	Designed by: oliver.boyes	Checked by:	Approved By:
Report Details: Type: Inflow Summary Storm Phase: Phase	Company Address:		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Catchment Area	SW1 (Surface Water Network - S104)		Time of Concentration	0.010	100	0	100	0.010
Catchment Area (1)	SW1 (Surface Water Network - S104)		Time of Concentration	0.023	100	0	100	0.023
Catchment Area (2)	SW1 (Surface Water Network - S104)		Time of Concentration	0.011	100	0	100	0.011
Catchment Area (3)	SW3 (Surface Water Network - S104)		Time of Concentration	0.006	100	0	100	0.006
Catchment Area (4)	SW3 (Surface Water Network - S104)		Time of Concentration	0.013	100	0	100	0.013
Catchment Area (5)	SW3 (Surface Water Network - S104)		Time of Concentration	0.017	100	0	100	0.017
Catchment Area (6)	SW3 (Surface Water Network - S104)		Time of Concentration	0.008	100	0	100	0.008
Catchment Area (7)	SW3 (Surface Water Network - S104)		Time of Concentration	0.008	100	0	100	0.008
Catchment Area (8)	SW2 (Surface Water Network - S104)		Time of Concentration	0.021	100	0	100	0.021
Catchment Area (9)	SW2 (Surface Water Network - S104)		Time of Concentration	0.012	100	0	100	0.012
Catchment Area (10)	SW2 (Surface Water Network - S104)		Time of Concentration	0.022	100	0	100	0.022
Catchment Area (11)	SW3 (Surface Water Network - S104)		Time of Concentration	0.037	100	0	100	0.037
Catchment Area (12)	SW4 (Surface Water Network - S104)		Time of Concentration	0.022	100	0	100	0.022

Catchment Area (13)	SW6 (Surface Water Network - S104)		Time of Concentration	0.020	100	0	100	0.020
Catchment Area (14)	SW8 (Surface Water Network - S104)		Time of Concentration	0.016	100	0	100	0.016
Catchment Area (15)	SW9 (Surface Water Network - S104)		Time of Concentration	0.026	100	0	100	0.026
Catchment Area (16)	SW10 (Surface Water Network - S104)		Time of Concentration	0.045	100	0	100	0.045
Catchment Area (17)	SW15 (Surface Water Network - S104)		Time of Concentration	0.027	100	0	100	0.027
Catchment Area (18)	SW18 (Surface Water Network - S104)		Time of Concentration	0.026	100	0	100	0.026
Catchment Area (19)	SW15 (Surface Water Network - S104)		Time of Concentration	0.025	100	0	100	0.025
Catchment Area (20)	SW17 (Surface Water Network - S104)		Time of Concentration	0.014	100	0	100	0.014
Catchment Area (21)	SW16a		Time of Concentration	0.010	100	0	100	0.010
Catchment Area (22)	SW14 (Surface Water Network - S104)		Time of Concentration	0.020	100	0	100	0.020
Catchment Area (23)	SW12 (Surface Water Network - S104)		Time of Concentration	0.085	100	0	100	0.085
Catchment Area (24)	SW19 (Surface Water Network - S104)		Time of Concentration	0.023	100	0	100	0.023
Catchment Area (25)	SW20 (Surface Water Network - S104)		Time of Concentration	0.011	100	0	100	0.011
Catchment Area (26)	SW21 (Surface Water Network - S104)		Time of Concentration	0.014	100	0	100	0.014

Catchment Area (27)	SW27 (Surface Water Network - S104)		Time of Concentration	0.010	100	0	100	0.010
Catchment Area (28)	SW26 (Surface Water Network - S104)		Time of Concentration	0.047	100	0	100	0.047
Catchment Area (29)	SW24 (Surface Water Network - S104)		Time of Concentration	0.021	100	0	100	0.021
Catchment Area (30)	SW22 (Surface Water Network - S104)		Time of Concentration	0.036	100	0	100	0.036
Catchment Area (31)	SW8 (Surface Water Network - S104)		Time of Concentration	0.021	100	0	100	0.021
Catchment Area (32)	SW8 (Surface Water Network - S104)		Time of Concentration	0.011	100	0	100	0.011
Catchment Area (33)	SW6 (Surface Water Network - S104)		Time of Concentration	0.011	100	0	100	0.011
Catchment Area (34)	SW6 (Surface Water Network - S104)		Time of Concentration	0.011	100	0	100	0.011
Catchment Area (35)	SW16 (Surface Water Network - S104)		Time of Concentration	0.011	100	0	100	0.011
Catchment Area (36)	SW16 (Surface Water Network - S104)		Time of Concentration	0.010	100	0	100	0.010
Catchment Area (37)	SW6 (Surface Water Network - S104)		Time of Concentration	0.005	100	0	100	0.005
Catchment Area (38)	SW16 (Surface Water Network - S104)		Time of Concentration	0.011	100	0	100	0.011
Catchment Area (39)	SW9 (Surface Water Network - S104)		Time of Concentration	0.003	100	0	100	0.003
Catchment Area (40)	SW9 (Surface Water Network - S104)		Time of Concentration	0.012	100	0	100	0.012

Catchment Area (41)	SW10 (Surface Water Network - S104)		Time of Concentration	0.010	100	0	100	0.010
Catchment Area (42)	SW16 (Surface Water Network - S104)		Time of Concentration	0.018	100	0	100	0.018
Catchment Area (43)	SW16 (Surface Water Network - S104)		Time of Concentration	0.009	100	0	100	0.009
Catchment Area (44)	SW16 (Surface Water Network - S104)		Time of Concentration	0.015	100	0	100	0.015
Catchment Area (45)	SW17 (Surface Water Network - S104)		Time of Concentration	0.024	100	0	100	0.024
Catchment Area (46)	SW17 (Surface Water Network - S104)		Time of Concentration	0.016	100	0	100	0.016
Catchment Area (47)	SW18 (Surface Water Network - S104)		Time of Concentration	0.008	100	0	100	0.008
Catchment Area (48)	SW18 (Surface Water Network - S104)		Time of Concentration	0.003	100	0	100	0.003
Catchment Area (49)	SW18 (Surface Water Network - S104)		Time of Concentration	0.006	100	0	100	0.006
Catchment Area (50)	SW3 (Surface Water Network - S104)		Time of Concentration	0.010	100	0	100	0.010
Catchment Area (51)	SW10 (Surface Water Network - S104)		Time of Concentration	0.006	100	0	100	0.006
Catchment Area (52)	SW10 (Surface Water Network - S104)		Time of Concentration	0.010	100	0	100	0.010
Catchment Area (53)	SW14 (Surface Water Network - S104)		Time of Concentration	0.013	100	0	100	0.013
Catchment Area (54)	SW18 (Surface Water Network - S104)		Time of Concentration	0.002	100	0	100	0.002

Catchment Area (55)	SW14 (Surface Water Network - S104)		Time of Concentration	0.002	100	0	100	0.002
Catchment Area (56)	SW20 (Surface Water Network - S104)		Time of Concentration	0.016	100	0	100	0.016
Catchment Area (57)	SW26 (Surface Water Network - S104)		Time of Concentration	0.006	100	0	100	0.006
Catchment Area (58)	SW26 (Surface Water Network - S104)		Time of Concentration	0.003	100	0	100	0.003
Catchment Area (59)	SW26 (Surface Water Network - S104)		Time of Concentration	0.019	100	0	100	0.019
Catchment Area (60)	SW27 (Surface Water Network - S104)		Time of Concentration	0.006	100	0	100	0.006
Catchment Area (61)	SW23 (Surface Water Network - S104)		Time of Concentration	0.006	100	0	100	0.006
Catchment Area (62)	SW23 (Surface Water Network - S104)		Time of Concentration	0.008	100	0	100	0.008
Catchment Area (63)	SW27 (Surface Water Network - S104)		Time of Concentration	0.008	100	0	100	0.008
Catchment Area (64)	SW27 (Surface Water Network - S104)		Time of Concentration	0.002	100	0	100	0.002
Catchment Area (65)	SW27 (Surface Water Network - S104)		Time of Concentration	0.002	100	0	100	0.002
Catchment Area (66)	SW27 (Surface Water Network - S104)		Time of Concentration	0.002	100	0	100	0.002
Catchment Area (67)	SW19 (Surface Water Network - S104)		Time of Concentration	0.003	100	0	100	0.003
Catchment Area (68)	SW27 (Surface Water Network - S104)		Time of Concentration	0.002	100	0	100	0.002

Catchment Area (69)	SW27 (Surface Water Network - S104)		Time of Concentration	0.008	100	0	100	0.008
Catchment Area (70)	SW27 (Surface Water Network - S104)		Time of Concentration	0.002	100	0	100	0.002
Catchment Area (71)	SW12 (Surface Water Network - S104)		Time of Concentration	0.010	100	0	100	0.010
Catchment Area (72)	Manhole (1)		Time of Concentration	0.006	100	0	100	0.006
Catchment Area (73)	Manhole (1)		Time of Concentration	0.010	100	0	100	0.010
Catchment Area (74)	Manhole (1)		Time of Concentration	0.006	100	0	100	0.006
Catchment Area (75)	Manhole (1)		Time of Concentration	0.003	100	0	100	0.003
Catchment Area (76)	SW26 (Surface Water Network - S104)		Time of Concentration	0.015	100	0	100	0.015
Catchment Area (77)	SW26 (Surface Water Network - S104)		Time of Concentration	0.015	100	0	100	0.015
Catchment Area (78)	SW26 (Surface Water Network - S104)		Time of Concentration	0.015	100	0	100	0.015
Catchment Area (79)	SW24 (Surface Water Network - S104)		Time of Concentration	0.011	100	0	100	0.011
Catchment Area (80)	SW24 (Surface Water Network - S104)		Time of Concentration	0.006	100	0	100	0.006
Catchment Area (81)	SW27 (Surface Water Network - S104)		Time of Concentration	0.017	100	0	100	0.017
Catchment Area (82)	SW27 (Surface Water Network - S104)		Time of Concentration	0.010	100	0	100	0.010
Catchment Area (83)	SW27 (Surface Water Network - S104)		Time of Concentration	0.013	100	0	100	0.013
Catchment Area (84)	SW27 (Surface Water Network - S104)		Time of Concentration	0.010	100	0	100	0.010

Catchment Area (85)	SW20 (Surface Water Network - S104)		Time of Concentration	0.010	100	0	100	0.010
Catchment Area (86)	SW20 (Surface Water Network - S104)		Time of Concentration	0.002	100	0	100	0.002
Catchment Area (87)	SW19 (Surface Water Network - S104)		Time of Concentration	0.003	100	0	100	0.003
Catchment Area (88)	SW15 (Surface Water Network - S104)		Time of Concentration	0.004	100	0	100	0.004
Catchment Area (89)	SW20 (Surface Water Network - S104)		Time of Concentration	0.015	100	0	100	0.015
Catchment Area (90)	SW15 (Surface Water Network - S104)		Time of Concentration	0.003	100	0	100	0.003
Catchment Area (91)	SW14 (Surface Water Network - S104)		Time of Concentration	0.022	100	0	100	0.022
Catchment Area (92)	SW14 (Surface Water Network - S104)		Time of Concentration	0.010	100	0	100	0.010
Catchment Area (93)	SW14 (Surface Water Network - S104)		Time of Concentration	0.002	100	0	100	0.002
Catchment Area (94)	SW14 (Surface Water Network - S104)		Time of Concentration	0.003	100	0	100	0.003
Catchment Area (95)	SW14 (Surface Water Network - S104)		Time of Concentration	0.001	100	0	100	0.001
Catchment Area (96)	SW12 (Surface Water Network - S104)		Time of Concentration	0.011	100	0	100	0.011
Catchment Area (97)	SW14 (Surface Water Network - S104)		Time of Concentration	0.003	100	0	100	0.003
Catchment Area (98)	SW13 (Surface Water Network - S104)		Time of Concentration	0.012	100	0	100	0.012

Catchment Area (99)	SW13 (Surface Water Network - S104)		Time of Concentration	0.009	100	0	100	0.009
Catchment Area (100)	SW13 (Surface Water Network - S104)		Time of Concentration	0.006	100	0	100	0.006
Catchment Area (101)	SW13 (Surface Water Network - S104)		Time of Concentration	0.006	100	0	100	0.006
Catchment Area (102)	SW13 (Surface Water Network - S104)		Time of Concentration	0.006	100	0	100	0.006
Catchment Area (103)	SW13 (Surface Water Network - S104)		Time of Concentration	0.002	100	0	100	0.002
Catchment Area (104)	SW13 (Surface Water Network - S104)		Time of Concentration	0.004	100	0	100	0.004
Catchment Area (105)	SW13 (Surface Water Network - S104)		Time of Concentration	0.004	100	0	100	0.004
Catchment Area (106)	SW13 (Surface Water Network - S104)		Time of Concentration	0.002	100	0	100	0.002
Catchment Area (107)	SW10 (Surface Water Network - S104)		Time of Concentration	0.002	100	0	100	0.002
Catchment Area (108)	SW10 (Surface Water Network - S104)		Time of Concentration	0.002	100	0	100	0.002
Catchment Area (109)	SW10 (Surface Water Network - S104)		Time of Concentration	0.006	100	0	100	0.006
Catchment Area (110)	SW10 (Surface Water Network - S104)		Time of Concentration	0.011	100	0	100	0.011
Catchment Area (111)	SW1 (Surface Water Network - S104)		Time of Concentration	0.001	100	0	100	0.001
Catchment Area (112)	SW1 (Surface Water Network - S104)		Time of Concentration	0.004	100	0	100	0.004

Catchment Area (113)	SW1 (Surface Water Network - S104)		Time of Concentration	0.002	100	0	100	0.002
Catchment Area (114)	SW1 (Surface Water Network - S104)		Time of Concentration	0.004	100	0	100	0.004
Catchment Area (115)	SW9 (Surface Water Network - S104)		Time of Concentration	0.006	100	0	100	0.006
Catchment Area (116)	SW9 (Surface Water Network - S104)		Time of Concentration	0.003	100	0	100	0.003
Catchment Area (117)	SW9 (Surface Water Network - S104)		Time of Concentration	0.003	100	0	100	0.003
Catchment Area (118)	SW10 (Surface Water Network - S104)		Time of Concentration	0.002	100	0	100	0.002
Catchment Area (119)	SW10 (Surface Water Network - S104)		Time of Concentration	0.004	100	0	100	0.004
Catchment Area (120)	SW27 (Surface Water Network - S104)		Time of Concentration	0.001	100	0	100	0.001
Catchment Area (121)	SW27 (Surface Water Network - S104)		Time of Concentration	0.004	100	0	100	0.004
Catchment Area (122)	SW13 (Surface Water Network - S104)		Time of Concentration	0.001	100	0	100	0.001
Catchment Area (123)	SW14 (Surface Water Network - S104)		Time of Concentration	0.002	100	0	100	0.002
Catchment Area (124)	SW12 (Surface Water Network - S104)		Time of Concentration	0.003	100	0	100	0.003
Catchment Area (125)	SW16b		Time of Concentration	0.019	100	0	100	0.019
TOTAL		**0.0**		**1.412**				**1.412**

Project:	Date: 03/02/2022		
	Designed by: oliver.boyes	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address:		

Runoff Type	Dynamic
Output Interval (mins)	1
Time Step	Shortest
Urban Creep	Use Catchment Values
Junction Flood Risk Margin (mm)	50
Perform No Discharge Analysis	☐

Rainfall

09.21011 - Birkenshaw

Type: FSR

Region	England And Wales
M5-60 (mm)	19.0
Ratio R	0.352
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
100.0	30.000

Storm Durations

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

Project:	Date: 03/02/2022		
	Designed by: oliver.boyes	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address:		

09.21011 - Birkenshaw: 100 years: Increase Rainfall (%): +30: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
Outfall	09.21011 - Birkenshaw: 100 years: +30 %: 1440 mins: Winter		148.260	148.290	0.030	5.1			5.1	728.287	OK
SW1 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	168.177	166.827	166.912	0.085	29.3	0.096	0.000	29.1	13.514	OK
SW2 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	167.180	165.830	165.963	0.133	57.8	0.151	0.000	56.8	26.753	OK
SW8 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	165.082	163.161	163.387	0.226	25.7	0.256	0.000	25.4	11.839	Surcharged
SW3 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	165.466	164.041	164.192	0.151	109.2	0.171	0.000	109.4	50.917	OK
SW7 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	164.661	162.891	163.268	0.377	49.7	0.426	0.000	50.0	23.267	Surcharged
SW4 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	164.645	163.126	163.608	0.482	121.0	0.545	0.000	116.2	56.250	Surcharged
SW6 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	164.431	163.081	163.407	0.326	24.8	0.369	0.000	24.3	11.424	Surcharged
SW9 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	164.100	162.182	163.171	0.989	71.2	1.118	0.000	78.5	36.311	Surcharged
SW5 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	163.671	162.120	163.002	0.882	183.1	0.998	0.000	182.0	92.611	Surcharged
SW10 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	161.208	159.544	159.808	0.264	231.3	0.378	0.000	231.7	116.739	OK
SW12 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	160.298	158.170	159.132	0.962	57.6	1.088	0.000	54.9	26.522	Surcharged

Project:	Date: 03/02/2022		
	Designed by: oliver.boyes	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address:		

SW16 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	160.767	158.950	159.960	1.010	39.6	1.142	0.000	36.3	18.270	Surcharged
SW13 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	161.182	157.793	158.843	1.050	81.1	1.188	0.000	76.0	39.473	Surcharged
SW14 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	160.544	157.062	158.545	1.483	114.7	1.677	0.000	112.5	58.918	Surcharged
SW11 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	160.556	156.299	157.783	1.484	343.3	1.678	0.000	341.1	175.641	Surcharged
SW17 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	160.371	157.332	158.832	1.500	73.1	1.696	0.000	69.8	38.250	Surcharged
SW18 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	160.102	158.122	158.242	0.120	23.7	0.136	0.000	23.4	10.924	OK
SW15 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	159.753	156.212	157.254	1.042	392.4	1.491	0.000	390.0	200.648	Surcharged
SW19 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	158.380	156.025	156.358	0.333	404.8	0.476	0.000	402.0	207.884	OK
SW20 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	156.728	155.153	155.490	0.337	429.3	0.483	0.000	428.2	221.258	OK
SW24 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 1440 mins: Winter	153.538	151.464	152.246	0.782	2.5	0.884	0.000	2.5	83.223	Surcharged
SW25 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 1440 mins: Winter	153.707	151.302	152.246	0.944	2.5	1.067	0.000	2.5	83.153	Surcharged
SW23 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 1440 mins: Winter	153.347	151.559	152.246	0.687	1.4	0.777	0.000	1.4	47.383	Surcharged
SW21 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 1440 mins: Winter	156.245	149.723	152.246	2.523	33.4	4.457	0.000	33.3	1153.789	Surcharged
SW22 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	153.145	151.859	152.702	0.843	19.1	0.954	0.000	16.5	8.837	Surcharged

Project:	Date: 03/02/2022		
	Designed by: oliver.boyes	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address:		

SW27 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 1440 mins: Winter	155.513	150.177	152.246	2.069	8.2	2.340	0.000	8.1	285.111	Surcharged
SW26 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 1440 mins: Winter	154.757	150.864	152.246	1.382	5.7	1.563	0.000	5.5	192.960	Surcharged
SW29 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 1440 mins: Winter	154.984	149.325	152.245	2.920	5.1	5.160	0.000	5.1	728.628	Surcharged
SW31 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 1440 mins: Winter	152.433	148.983	149.015	0.032	5.1	0.036	0.000	5.1	728.287	OK
Manhole (1)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	157.828	152.661	153.732	1.071	81.8	1.211	0.000	80.8	44.444	Surcharged
SW16a	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	160.536	158.679	159.508	0.829	48.8	0.937	0.000	46.5	25.313	Surcharged
SW16b	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	160.388	159.088	159.608	0.520	10.0	0.588	0.000	9.5	4.636	Surcharged
SW33	09.21011 - Birkenshaw: 100 years: +30 %: 1440 mins: Winter	154.794	150.673	152.246	1.573	4.9	1.779	0.000	4.6	209.521	Surcharged
SW34	09.21011 - Birkenshaw: 100 years: +30 %: 1440 mins: Winter	156.775	150.530	152.246	1.716	4.6	1.941	0.000	4.5	211.422	Surcharged
SW35	09.21011 - Birkenshaw: 100 years: +30 %: 1440 mins: Winter	156.180	150.449	152.246	1.797	4.5	2.032	0.000	4.4	213.243	Surcharged
SW36	09.21011 - Birkenshaw: 100 years: +30 %: 1440 mins: Winter	155.608	150.196	152.246	2.050	4.4	2.318	0.000	4.3	214.671	Surcharged
SW37	09.21011 - Birkenshaw: 100 years: +30 %: 1440 mins: Winter	155.353	149.701	152.245	2.545	36.0	4.496	0.000	35.8	1319.965	Surcharged
SW30	09.21011 - Birkenshaw: 100 years: +30 %: 1440 mins: Winter	152.772	149.157	149.210	0.053	5.1	0.060	0.000	5.1	728.354	OK
SW29a	09.21011 - Birkenshaw: 100 years: +30 %: 1440 mins: Winter	155.018	149.284	149.336	0.052	5.1	0.058	0.000	5.1	728.478	OK

Project:	Date: 03/02/2022		
	Designed by: oliver.boyes	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address:		

09.21011 - Birkenshaw: 100 years: Increase Rainfall (%): +30: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Tank	09.21011 - Birkenshaw: 100 years: +30 %: 1440 mins: Winter	152.245	152.245	2.865	2.865	35.8	836.772	0.000	0.000	5.1	733.968	4.638	OK
Tank (1)	09.21011 - Birkenshaw: 100 years: +30 %: 1440 mins: Winter	152.247	152.247	1.444	1.444	8.0	133.369	0.000	0.000	4.9	170.680	15.450	OK

Project:	Date: 03/02/2022		
	Designed by: oliver.boyes	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address:		

09.21011 - Birkenshaw: 100 years: Increase Rainfall (%): +30: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
SW1.008 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW19 (Surface Water Network - S104)	SW20 (Surface Water Network - S104)	158.380	156.358	0.335	207.884	3.9	0.79	402.0	OK
SW1.009 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW20 (Surface Water Network - S104)	SW21 (Surface Water Network - S104)	156.728	155.490	0.273	221.258	5.0	0.6	428.2	OK
SW1.007 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW15 (Surface Water Network - S104)	SW19 (Surface Water Network - S104)	159.753	157.254	0.375	200.648	3.5	1.61	390.0	Surcharged
SW1.000 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW1 (Surface Water Network - S104)	SW2 (Surface Water Network - S104)	168.177	166.912	0.109	13.514	2.1	0.61	29.1	OK
SW1.001 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW2 (Surface Water Network - S104)	SW3 (Surface Water Network - S104)	167.180	165.963	0.124	26.753	3.7	0.94	56.8	OK
SW1.002 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW3 (Surface Water Network - S104)	SW4 (Surface Water Network - S104)	165.466	164.192	0.225	50.917	3.8	0.61	109.4	OK
SW1.003 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW4 (Surface Water Network - S104)	SW5 (Surface Water Network - S104)	164.645	163.608	0.225	56.250	3.2	0.65	116.2	Surcharged
SW1.004 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW5 (Surface Water Network - S104)	SW10 (Surface Water Network - S104)	163.671	163.002	0.225	92.611	4.6	1.05	182.0	Surcharged
SW1.006 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW11 (Surface Water Network - S104)	SW15 (Surface Water Network - S104)	160.556	157.783	0.375	175.641	3.1	1.9	341.1	Surcharged
SW5.002 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW18 (Surface Water Network - S104)	SW15 (Surface Water Network - S104)	160.102	158.242	0.114	10.924	1.2	0.47	23.4	OK
SW2.000 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW6 (Surface Water Network - S104)	SW7 (Surface Water Network - S104)	164.431	163.407	0.150	11.424	1.4	1.28	24.3	Surcharged

SW2.001 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW7 (Surface Water Network - S104)	SW9 (Surface Water Network - S104)	164.661	163.268	0.225	23.267	1.3	0.37	50.0	Surcharged
SW2.002 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW9 (Surface Water Network - S104)	SW5 (Surface Water Network - S104)	164.100	163.171	0.225	36.311	2.0	1.57	78.5	Surcharged
SW3.000 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW8 (Surface Water Network - S104)	SW7 (Surface Water Network - S104)	165.082	163.387	0.150	11.839	1.8	0.83	25.4	Surcharged
SW4.000 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW12 (Surface Water Network - S104)	SW13 (Surface Water Network - S104)	160.298	159.132	0.225	26.522	1.7	0.9	54.9	Surcharged
SW4.002 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW14 (Surface Water Network - S104)	SW11 (Surface Water Network - S104)	160.544	158.545	0.225	58.918	2.8	1.05	112.5	Surcharged
SW6.000 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW22 (Surface Water Network - S104)	SW23 (Surface Water Network - S104)	153.145	152.702	0.100	8.837	2.1	1.57	16.5	Surcharged
SW6.003 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW25 (Surface Water Network - S104)	SW26 (Surface Water Network - S104)	153.707	151.459	0.153	21.404	1.4	0.78	40.7	OK
SW6.004 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW26 (Surface Water Network - S104)	SW27 (Surface Water Network - S104)	154.757	150.991	0.273	50.094	2.9	0.34	100.4	OK
SW6.005 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW27 (Surface Water Network - S104)	SW21 (Surface Water Network - S104)	155.513	150.678	0.375	73.662	2.0	0.39	149.2	Surcharged
SW6.001 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW23 (Surface Water Network - S104)	SW24 (Surface Water Network - S104)	153.347	152.085	0.150	12.175	1.3	1.06	23.3	Surcharged
SW6.002 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW24 (Surface Water Network - S104)	SW25 (Surface Water Network - S104)	153.538	151.951	0.150	21.420	2.3	1.86	41.0	Surcharged
SW1.014 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 1440 mins: Winter	Pipe	SW31 (Surface Water Network - S104)	Outfall	152.433	149.015	0.031	728.287	1.9	0.09	5.1	OK
SW1.005 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW10 (Surface Water Network - S104)	SW11 (Surface Water Network - S104)	161.208	159.808	0.229	116.739	4.0	0.76	231.7	OK
SW4.001 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW13 (Surface Water Network - S104)	SW14 (Surface Water Network - S104)	161.182	158.843	0.225	39.473	2.1	0.58	76.0	Surcharged

Pipe	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW17 (Surface Water Network - S104)	Manhole (1)	160.371	158.832	0.150	38.250	3.9	1.35	69.8	Surcharged
Pipe (3)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	Manhole (1)	Tank (1)	157.828	153.732	0.150	44.444	4.6	1.56	80.8	Surcharged
Pipe (2)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	Tank	SW29 (Surface Water Network - S104)	153.800	150.419	0.600	8.256	0.3	0.11	14.1	Surcharged
SW5.000 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW16 (Surface Water Network - S104)	SW16a	160.767	159.960	0.150	18.270	2.1	1.29	36.3	Surcharged
SW5.000 (Surface Water Network - S104) (1)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Summer	Pipe	SW16a	SW17 (Surface Water Network - S104)	160.536	159.398	0.150	22.598	2.6	2.12	46.6	Surcharged
Pipe (4)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW16b	SW16a	160.388	159.608	0.100	4.636	1.3	0.56	9.5	Surcharged
Pipe (1)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	Tank (1)	SW33	157.296	151.157	0.150	23.861	1.1	1.11	19.7	Surcharged
Pipe (6)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW33	SW34	154.794	150.981	0.150	23.347	1.1	1.1	19.5	Surcharged
Pipe (7)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW34	SW35	156.775	150.804	0.150	22.869	1.1	1.08	19.2	Surcharged
Pipe (8)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW35	SW36	156.180	150.698	0.150	22.371	1.1	0.99	19.1	Surcharged
SW1.010 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW21 (Surface Water Network - S104)	SW37	156.245	150.603	0.600	295.309	2.1	1.78	583.5	Surcharged
SW1.010 (Surface Water Network - S104) (1)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Winter	Pipe	SW37	Tank	155.353	150.435	0.600	311.568	2.1	2.85	597.3	Surcharged
Pipe (9)	09.21011 - Birkenshaw: 100 years: +30 %: 15 mins: Summer	Pipe	SW36	SW37	155.608	150.459	0.150	22.169	1.1	1.11	19.6	Surcharged
SW1.013 (Surface Water Network - S104) (1)	09.21011 - Birkenshaw: 100 years: +30 %: 1440 mins: Winter	Pipe	SW30	SW31 (Surface Water Network - S104)	152.772	149.210	0.042	728.354	1.2	0.23	5.1	OK

Project:	Date: 03/02/2022		
	Designed by: oliver.boyes	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address:		

SW1.013 (Surface Water Network - S104)	09.21011 - Birkenshaw: 100 years: +30 %: 1440 mins: Winter	Pipe	SW29 (Surface Water Network - S104)	SW29a	154.984	152.245	0.054	728.569	0.9	0.23	5.1	Surcharged
SW1.013 (Surface Water Network - S104) (2)	09.21011 - Birkenshaw: 100 years: +30 %: 1440 mins: Winter	Pipe	SW29a	SW30	155.018	149.336	0.052	728.478	0.9	0.23	5.1	OK

Drainage Asset Maintenance Schedule

Surface Foul

Maintenance Activity	Drainage Component	Required Action	Typical Frequency
Visual Inspection	Gully Sump unit Catch pit / silt trap Attenuation structures Channel drain Outlet chamber Flow control chamber Pipework	Inspect for sediment and debris Inspect inlets and outlets for blockage (where applicable)	Monthly for first year and twice yearly thereafter, after severe storm Twice yearly
Monitoring	Attenuation structures	Check attenuation inspection points to ensure emptying is occurring (little to no water should be present after consecutive days of dry weather)	Twice yearly, once after heavy rainfall and once after consecutive dry weather
Litter and Debris Removal	Manhole All sump units (gullies, channel drains and catch pits) Access chambers and pre-treatment devices Flow control chamber Gutters & leaf guards	Remove all litter and debris	Twice yearly or after severe storm
Jet Wash	Pipework	High pressure jet-wash any pipe work which has silt accumulation. Care must be taken that any silts within the pipework are not unnecessarily flushed into the attenuation structures (use of bungs and jet-vac of chamber prior to removal of bungs)	Twice yearly, or as required

	Jet Wash (Continued)	Attenuation structures	High pressure jet-wash all perforated pipework and or access points. All water to be jet vac to remove any suspended silts within the water	Five yearly, or as required
	Sediment Management and Removal	ALL SUDS	Sediment accumulation should be monitored as part of the inspection regime, rate of sediment accumulation noted	Appropriate frequencies determined upon inspection
	Inspection	Pipework Manhole	Check if functioning correctly	Once site is fully operational: twice yearly for 1st year, annually after
		Pumping station/rising main	Impellers will need inspecting and cleaning as required – refer to manufacturer guidance	Refer to manufacturer guidance
		Grease trap	Monthly inspection with removal of grease as required	Monthly

Additional notes:

- Any defects (broken/misaligned pipes, root infestation, damage to soakaways, missing parts, etc.) that are identified during inspections/maintenance should be reported back to the property/site owner so that the remedial actions can be undertaken promptly to repair these defects.
- SuDS maintenance based on CIRIA 2015 Chapter 32 where further information can also be found.
- Refer to manufacturer guidance for maintenance schedules of all propriety treatment systems.