CLEARVIEW SURVEYS LIMITED
UNIT 301 OLD BARN FARM ROAD, WIMBORNE
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Section Inspection - 04/04/2022 - BRANCH 1X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
30	1	04/04/22	11:22	13621	No Rain Or Snow	No	BRANCH 1X

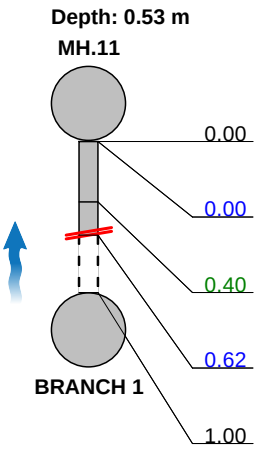
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	2	**Upstream Node:**	BRANCH 1
Road:	50-56 Sheen Road	**Inspected Length:**	0.62 m	**Upstream Pipe Depth:**	0.000 m
Location:	Property or buildings	**Total Length:**	1.00 m	**Downstream Node:**	MH.11
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	0.530 m

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: NO FURTHER WORKS REQUIRED

Scale: 1:50



Position [m]	Code	Observation	Grade
0.00	MH	Start node, manhole, reference: MH.11	
0.00	WL	Water level, 0% of the vertical dimension	
0.40	LR	Line deviates right: SHARP	
0.62	SA	Survey abandoned: DUE TO SHARP BEND	
1.00		End of pipe	


MH - 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 04/04/2022 - BRANCH 1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
30	2	BRANCH 1X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_30_043.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.11

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Section Inspection - 04/04/2022 - BRANCH 1X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
31	1	04/04/22	11:27	13621	No Rain Or Snow	No	BRANCH 1X

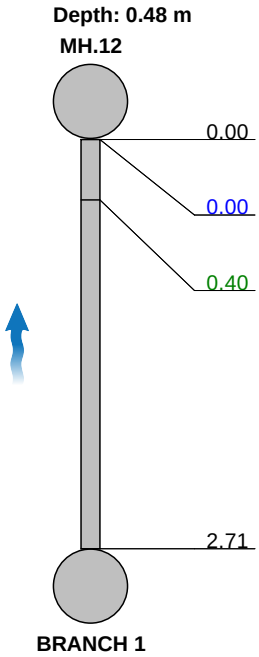
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	2	**Upstream Node:**	BRANCH 1
Road:	50-56 Sheen Road	**Inspected Length:**	2.71 m	**Upstream Pipe Depth:**	0.000 m
Location:	Property or buildings	**Total Length:**	2.71 m	**Downstream Node:**	MH.12
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	0.480 m

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: NO FURTHER WORKS REQUIRED

Scale: 1:50



Position [m]	Code	Observation	Grade
0.00	MH	Start node, manhole, reference: MH.12	
0.00	WL	Water level, 5% of the vertical dimension	
0.40	LR	Line deviates right: SLIGHT	
2.71	BRF	Finish node, major connection without manhole, reference: BRANCH 1: BASE OF STACK	


MH - 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 04/04/2022 - BRANCH 1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
31	2	BRANCH 1X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_31_044.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.12

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Section Inspection - 04/04/2022 - BRANCH 1X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
32	1	04/04/22	11:28	13621	No Rain Or Snow	No	BRANCH 1X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	2	**Upstream Node:**	BRANCH 1
Road:	50-56 Sheen Road	**Inspected Length:**	6.88 m	**Upstream Pipe Depth:**	0.000 m
Location:	Property or buildings	**Total Length:**	6.88 m	**Downstream Node:**	MH.13
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	0.470 m

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: NO FURTHER WORKS REQUIRED

Scale: 1:60

Position [m]	Code	Observation	Grade
		Depth: 0.47 m	
		MH.13	
0.00	MH	Start node, manhole, reference: MH.13	
0.00	WL	Water level, 0% of the vertical dimension	
4.46	LR	Line deviates right: SLIGHT	
6.88	BRF	Finish node, major connection without manhole, reference: BRANCH 1: BASE OF STACK	
		BRANCH 1	
		Depth: 0.00 m	


MH - 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 04/04/2022 - BRANCH 1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
32	2	BRANCH 1X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_32_045.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.13

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Section Inspection - 04/04/2022 - BRANCH 2X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
33	1	04/04/22	11:29	13621	No Rain Or Snow	No	BRANCH 2X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

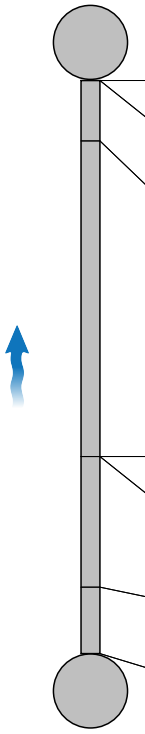
Town or Village:	Richmond	**Inspection Direction:**	2	**Upstream Node:**	BRANCH 2
Road:	50-56 Sheen Road	**Inspected Length:**	3.80 m	**Upstream Pipe Depth:**	0.000 m
Location:	Property or buildings	**Total Length:**	3.80 m	**Downstream Node:**	MH.13
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	0.470 m

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: PATCH REPAIR REQUIRED

Scale: 1:50

Depth: 0.47 m
MH.13



BRANCH 2

Depth: 0.00 m

Position [m]	Code	Observation	Grade
0.00	MH	Start node, manhole, reference: MH.13	
0.00	WL	Water level, 0% of the vertical dimension	
0.40	LL	Line deviates left: SLIGHT	
2.49	LL	Line deviates left: SLIGHT	
2.49	JDM	Joint displaced, medium	1 / 3
3.36	LL	Line deviates left: SHARP	
3.80	BRF	Finish node, major connection without manhole, reference: BRANCH 2: BASE OF STACK	

MH - 0.00 m

JDM - 2.49 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	1.0	0.4	1.0	1.0	1	2.0	0.8	2.0	3.0

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Section Pictures - 04/04/2022 - BRANCH 2X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
33	2	BRANCH 2X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_33_046.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.13

_50-56 SHEEN ROAD_RICHMOND_33_047.jpg, 00:00:10, 2.49 m
Joint displaced, medium

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Section Inspection - 05/04/2022 - MH.15X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
34	1	05/04/22	7:32	13621	No Rain Or Snow	No	MH.15X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	1	**Upstream Node:**	MH.15
Road:	50-56 Sheen Road	**Inspected Length:**	3.25 m	**Upstream Pipe Depth:**	0.580 m
Location:	Property or buildings	**Total Length:**	3.25 m	**Downstream Node:**	MH.16
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	0.610 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: JETTING AND RESURVEY REQUIRED

Scale: 1:50

Position [m]	Code	Observation	Grade
		Depth: 0.58 m	
		MH.15	
0.00	MH	Start node, manhole, reference: MH.15	
0.00	WL	Water level, 0% of the vertical dimension	
2.16	DES	Settled deposits, fine, 15% cross-sectional area loss	3
2.71	DES	Settled deposits, fine, 30% cross-sectional area loss	4
3.25	MHF	Finish node, manhole, reference: MH.16: CHAMBER SILTED	
		MH.16	
		Depth: 0.61 m	


MH - 0.00 m


MHF - 3.25 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	2	5.0	2.2	7.0	4.0

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Section Pictures - 05/04/2022 - MH.15X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
34	1	MH.15X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_34_048.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.15

_50-56 SHEEN ROAD_RICHMOND_34_049.jpg, 00:00:15, 3.25 m
Finish node, manhole, reference: MH.16, CHAMBER SILTED

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Section Inspection - 05/04/2022 - MH.16X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
35	1	05/04/22	7:33	13621	No Rain Or Snow	No	MH.16X

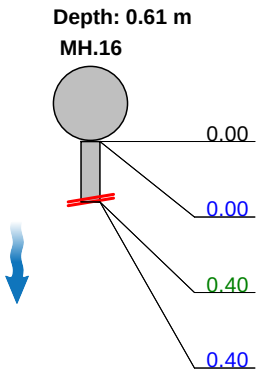
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	1	**Upstream Node:**	MH.16
Road:	50-56 Sheen Road	**Inspected Length:**	0.40 m	**Upstream Pipe Depth:**	0.610 m
Location:	Property or buildings	**Total Length:**	0.40 m	**Downstream Node:**	MH.17
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	0.980 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: JETTING AND RESURVEY REQUIRED

Scale: 1:50



Position [m]	Code	Observation	Grade
0.00	MH	Start node, manhole, reference: MH.16	
0.00	WL	Water level, 0% of the vertical dimension	
0.40	DES	Settled deposits, fine, 50% cross-sectional area loss	4
0.40	SA	Survey abandoned: DUE TO HEAVY SILTS	


MH - 0.00 m

SA - 0.40 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	1	8.0	20.0	8.0	5.0

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Section Pictures - 05/04/2022 - MH.16X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
35	1	MH.16X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_35_050.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.16

_50-56 SHEEN ROAD_RICHMOND_35_051.jpg, 00:00:00, 0.40 m
Survey abandoned, DUE TO HEAVY SILTS

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Section Inspection - 05/04/2022 - BRANCH 1X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
36	1	05/04/22	7:35	13621	No Rain Or Snow	No	BRANCH 1X

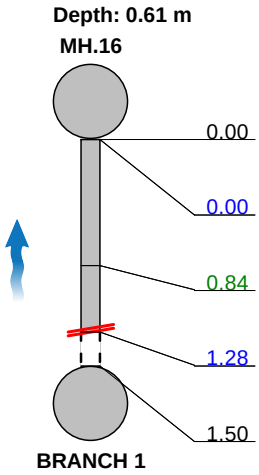
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	2	**Upstream Node:**	BRANCH 1
Road:	50-56 Sheen Road	**Inspected Length:**	1.28 m	**Upstream Pipe Depth:**	0.000 m
Location:	Property or buildings	**Total Length:**	1.50 m	**Downstream Node:**	MH.16
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	0.610 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: NO FURTHER WORKS REQUIRED

Scale: 1:50



Position [m]	Code	Observation	Grade
0.00	MH	Start node, manhole, reference: MH.16	
0.00	WL	Water level, 0% of the vertical dimension	
0.84	LR	Line deviates right: SHARP	
1.28	SA	Survey abandoned: DUE TO SHARP BEND	
1.50		End of pipe	


MH - 0.00 m

Depth: 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 05/04/2022 - BRANCH 1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
36	2	BRANCH 1X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_36_052.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.16

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Section Inspection - 05/04/2022 - BRANCH 1X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
37	1	05/04/22	7:41	13621	No Rain Or Snow	No	BRANCH 1X

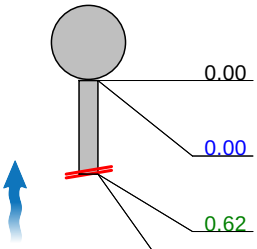
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	2	**Upstream Node:**	BRANCH 1
Road:	50-56 Sheen Road	**Inspected Length:**	0.62 m	**Upstream Pipe Depth:**	0.000 m
Location:	Property or buildings	**Total Length:**	0.62 m	**Downstream Node:**	MH.17
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	0.980 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: JETTING AND RESURVEY REQUIRED

Scale: 1:50 **Depth: 0.98 m**



Position [m]	Code	Observation	Grade
0.00	MH	Start node, manhole, reference: MH.17	
0.00	WL	Water level, 0% of the vertical dimension	
0.62	DES	Settled deposits, fine, 60% cross-sectional area loss	4
0.62	SA	Survey abandoned: DUE TO HEAVY SILTS	


MH - 0.00 m

SA - 0.62 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	1	8.0	12.9	8.0	5.0

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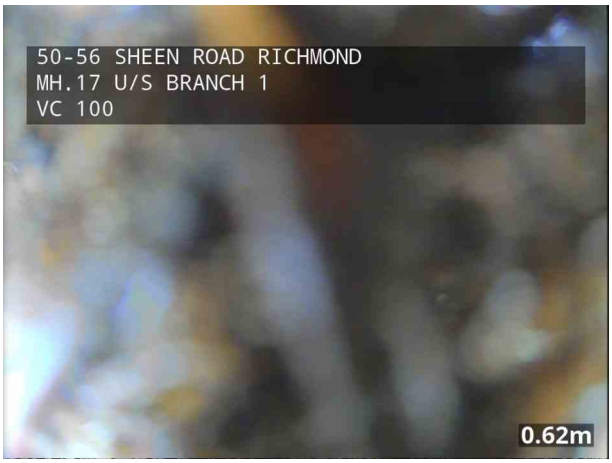
Section Pictures - 05/04/2022 - BRANCH 1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
37	2	BRANCH 1X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_37_053.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.17



_50-56 SHEEN ROAD_RICHMOND_37_054.jpg, 00:00:09, 0.62 m
Survey abandoned, DUE TO HEAVY SILTS

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Section Inspection - 05/04/2022 - MH.17X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
38	1	05/04/22	7:42	13621	No Rain Or Snow	No	MH.17X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	1	**Upstream Node:**	MH.17
Road:	50-56 Sheen Road	**Inspected Length:**	2.38 m	**Upstream Pipe Depth:**	0.980 m
Location:	Property or buildings	**Total Length:**	2.38 m	**Downstream Node:**	MH.18
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	0.000 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: JETTING AND RESURVEY REQUIRED

Scale: 1:50

Depth: 0.98 m

MH.17

MH.18

Depth: 0.00 m

Position [m]		Code	Observation	Grade
0.00		MH	Start node, manhole, reference: MH.17	
0.00		WL	Water level, 0% of the vertical dimension	
0.40	S01	DES	Settled deposits, fine, 10% cross-sectional area loss, start	
1.17		DES	Settled deposits, fine, 20% cross-sectional area loss	4
2.38	F01	DES	Settled deposits, fine, 10% cross-sectional area loss, finish	3
2.38		MHF	Finish node, manhole, reference: MH.18: U.T.R SEIZED	

MH - 0.00 m

MHF - 2.38 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	2	7.0	3.8	9.0	4.0

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Section Pictures - 05/04/2022 - MH.17X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
38	1	MH.17X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_38_055.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.17

_50-56 SHEEN ROAD_RICHMOND_38_056.jpg, 00:00:13, 2.38 m
Finish node, manhole, reference: MH.18, U.T.R SEIZED

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Section Inspection - 05/04/2022 - BRANCH 1X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
39	1	05/04/22	8:00	13621	No Rain Or Snow	No	BRANCH 1X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	2	**Upstream Node:**	BRANCH 1
Road:	50-56 Sheen Road	**Inspected Length:**	3.47 m	**Upstream Pipe Depth:**	0.000 m
Location:	Property or buildings	**Total Length:**	3.47 m	**Downstream Node:**	MH.8
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	1.590 m

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: NO FURTHER WORKS REQUIRED

Scale: 1:50

Position [m]	Code	Observation	Grade
		Depth: 1.59 m	
		MH.8	
0.00	MH	Start node, manhole, reference: MH.8	
0.00	WL	Water level, 0% of the vertical dimension	
3.47	BRF	Finish node, major connection without manhole, reference: BRANCH 1: BASE OF STACK	
		BRANCH 1	
		Depth: 0.00 m	


MH - 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 05/04/2022 - BRANCH 1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
39	2	BRANCH 1X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_39_057.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.8

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Section Inspection - 05/04/2022 - MAINRUNX

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
40	1	05/04/22	8:12	13621	No Rain Or Snow	No	MAINRUNX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	2	**Upstream Node:**	MAINRUN
Road:	50-56 Sheen Road	**Inspected Length:**	4.24 m	**Upstream Pipe Depth:**	0.000 m
Location:	Property or buildings	**Total Length:**	4.24 m	**Downstream Node:**	MH.9
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	1.650 m

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: NO FURTHER WORKS REQUIRED

Scale: 1:50

Position [m]	Code	Observation	Grade
		Depth: 1.65 m	
		MH.9	
0.00	MH	Start node, manhole, reference: MH.9	
0.00	WL	Water level, 0% of the vertical dimension	
0.73	DES	Settled deposits, fine, 10% cross-sectional area loss	3
0.73	LR	Line deviates right: SLIGHT	
4.24	BRF	Finish node, major connection without manhole, reference: MAINRUN: BASE OF STACK	
		MAINRUN	
		Depth: 0.00 m	


MH - 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	1	2.0	0.5	2.0	3.0

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Section Pictures - 05/04/2022 - MAINRUNX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
40	2	MAINRUNX	13621	13621

_50-56 SHEEN ROAD_RICHMOND_40_058.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.9

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Section Inspection - 05/04/2022 - BRANCH 1X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
41	1	05/04/22	8:13	13621	No Rain Or Snow	No	BRANCH 1X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	2	**Upstream Node:**	BRANCH 1
Road:	50-56 Sheen Road	**Inspected Length:**	2.37 m	**Upstream Pipe Depth:**	0.000 m
Location:	Property or buildings	**Total Length:**	2.37 m	**Downstream Node:**	MH.9
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	1.650 m

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: NO FURTHER WORKS REQUIRED

Scale: 1:50

Position [m]	Code	Observation	Grade
0.00	MH	Start node, manhole, reference: MH.9	
0.00	WL	Water level, 0% of the vertical dimension	
0.84	LR	Line deviates right: SLIGHT	
2.37	BRF	Finish node, major connection without manhole, reference: BRANCH 1: BASE OF STACK	


MH - 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 05/04/2022 - BRANCH 1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
41	2	BRANCH 1X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_41_059.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.9

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Section Inspection - 05/04/2022 - MH.9X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
42	1	05/04/22	8:19	13621	No Rain Or Snow	No	MH.9X

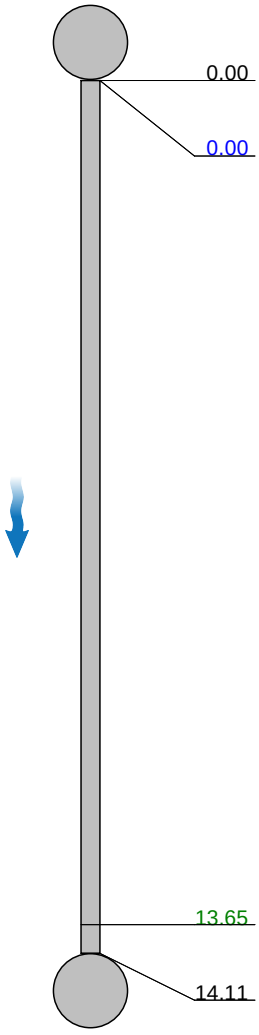
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	1	**Upstream Node:**	MH.9
Road:	50-56 Sheen Road	**Inspected Length:**	14.11 m	**Upstream Pipe Depth:**	1.650 m
Location:	Property or buildings	**Total Length:**	14.11 m	**Downstream Node:**	MH.20
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	1.340 m

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: NO FURTHER WORKS REQUIRED

Scale: 1:122



Position [m]	Code	Observation	Grade
0.00	MH	Start node, manhole, reference: MH.9	
0.00	WL	Water level, 5% of the vertical dimension	
13.65	LL	Line deviates left: SHARP	
14.11	MHF	Finish node, manhole, reference: MH.20	


MH - 0.00 m


MHF - 14.11 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 05/04/2022 - MH.9X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
42	1	MH.9X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_42_060.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.9

_50-56 SHEEN ROAD_RICHMOND_42_061.jpg, 00:00:40, 14.11 m
Finish node, manhole, reference: MH.20

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Section Inspection - 05/04/2022 - MH.18X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
43	1	05/04/22	8:24	13621	No Rain Or Snow	No	MH.18X

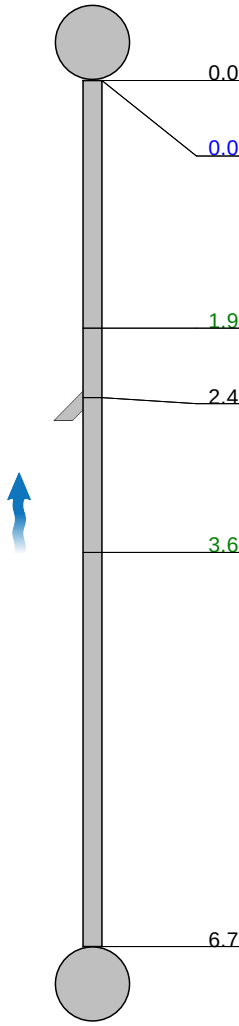
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	2	**Upstream Node:**	MH.18
Road:	50-56 Sheen Road	**Inspected Length:**	6.77 m	**Upstream Pipe Depth:**	0.000 m
Location:	Property or buildings	**Total Length:**	6.77 m	**Downstream Node:**	MH.19
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	1.320 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: JETTING AND RESURVEY REQUIRED

Scale: 1:59



Position [m]	Code	Observation	Grade
0.00	MH	Start node, manhole, reference: MH.19	
0.00	WL	Water level, 5% of the vertical dimension	
1.94	DES	Settled deposits, fine, 20% cross-sectional area loss	4
2.48	JN	Junction at 3 o'clock, 100mm dia	
3.69	DES	Settled deposits, fine, 20% cross-sectional area loss	4
6.77	MHF	Finish node, manhole, reference: MH.18: U.T.R SEIZED	


MH - 0.00 m


MHF - 6.77 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	2	5.0	1.5	10.0	4.0

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Section Pictures - 05/04/2022 - MH.18X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
43	2	MH.18X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_43_062.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.19

_50-56 SHEEN ROAD_RICHMOND_43_063.jpg, 00:00:31, 6.77 m
Finish node, manhole, reference: MH.18, U.T.R SEIZED

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Section Inspection - 05/04/2022 - MH.19X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
44	1	05/04/22	8:36	13621	No Rain Or Snow	No	MH.19X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	1	**Upstream Node:**	MH.19
Road:	50-56 Sheen Road	**Inspected Length:**	10.73 m	**Upstream Pipe Depth:**	1.320 m
Location:	Property or buildings	**Total Length:**	10.73 m	**Downstream Node:**	MH.21
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	1.190 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: JETTING AND RESURVEY REQUIRED

Scale: 1:93

Position [m]	Code	Observation	Grade
		Depth: 1.32 m	
		MH.19	
0.00	MH	Start node, manhole, reference: MH.19	
0.00	WL	Water level, 5% of the vertical dimension	
1.72	JN	Junction at 3 o'clock, 100mm dia	
4.46	JN	Junction at 10 o'clock, 100mm dia	
8.97	WL	Water level, 10% of the vertical dimension	
8.97	DES	Settled deposits, fine, 10% cross-sectional area loss	3
10.73	MHF	Finish node, manhole, reference: MH.21	
		MH.21	
		Depth: 1.19 m	


MH - 0.00 m


MHF - 10.73 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	1	2.0	0.2	2.0	3.0

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Section Pictures - 05/04/2022 - MH.19X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
44	1	MH.19X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_44_064.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.19

_50-56 SHEEN ROAD_RICHMOND_44_065.jpg, 00:00:45, 10.73 m
Finish node, manhole, reference: MH.21

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Section Inspection - 05/04/2022 - BRANCH 1X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
45	1	05/04/22	8:54	13621	No Rain Or Snow	No	BRANCH 1X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

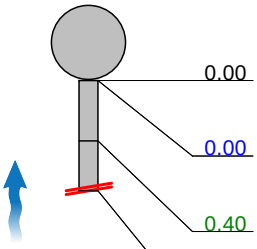
Town or Village:	Richmond	**Inspection Direction:**	2	**Upstream Node:**	BRANCH 1
Road:	50-56 Sheen Road	**Inspected Length:**	0.73 m	**Upstream Pipe Depth:**	0.000 m
Location:	Property or buildings	**Total Length:**	0.73 m	**Downstream Node:**	MH.21
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	1.190 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: NO FURTHER WORKS REQUIRED

Scale: 1:50 **Position [m]** **Code** **Observation** **Grade**

Depth: 1.19 m
MH.21



Position [m]	Code	Observation
0.00	MH	Start node, manhole, reference: MH.21
0.00	WL	Water level, 0% of the vertical dimension
0.40	LR	Line deviates right: SHARP
0.73	SA	Survey abandoned: DUE TO SHARP BEND

MH - 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 05/04/2022 - BRANCH 1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
45	2	BRANCH 1X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_45_066.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.21

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Section Inspection - 05/04/2022 - MH.23X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
46	1	05/04/22	8:55	13621	No Rain Or Snow	No	MH.23X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	2	**Upstream Node:**	MH.23
Road:	50-56 Sheen Road	**Inspected Length:**	11.83 m	**Upstream Pipe Depth:**	0.620 m
Location:	Property or buildings	**Total Length:**	11.83 m	**Downstream Node:**	MH.21
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	1.190 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: NO FURTHER WORKS REQUIRED

Scale: 1:102

Position [m]	Code	Observation	Grade
Depth: 1.19 m			
MH.21			
0.00	MH	Start node, manhole, reference: MH.21	
0.00	WL	Water level, 5% of the vertical dimension	
10.95	LL	Line deviates left: SLIGHT	
11.50	LL	Line deviates left: SLIGHT	
11.83	MHF	Finish node, manhole, reference: MH.23	
MH.23			
Depth: 0.62 m			


MH - 0.00 m


MHF - 11.83 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 05/04/2022 - MH.23X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
46	2	MH.23X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_46_067.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.21

_50-56 SHEEN ROAD_RICHMOND_46_068.jpg, 00:00:53, 11.83 m
Finish node, manhole, reference: MH.23

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Section Inspection - 05/04/2022 - MH.21X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
47	1	05/04/22	8:57	13621	No Rain Or Snow	No	MH.21X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	1	**Upstream Node:**	MH.21
Road:	50-56 Sheen Road	**Inspected Length:**	3.25 m	**Upstream Pipe Depth:**	1.190 m
Location:	Property or buildings	**Total Length:**	3.25 m	**Downstream Node:**	MH.22
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	0.000 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: NO FURTHER WORKS REQUIRED

Scale: 1:50

Position [m]	Code	Observation	Grade
		Depth: 1.19 m	
		MH.21	
0.00	MH	Start node, manhole, reference: MH.21	
0.00	WL	Water level, 5% of the vertical dimension	
0.73	JN	Junction at 3 o'clock, 100mm dia	
3.25	MHF	Finish node, manhole, reference: MH.22: ASSUMED SOAKAWAY BURIED NO COVER	
		MH.22	
		Depth: 0.00 m	


MH - 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 05/04/2022 - MH.21X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
47	1	MH.21X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_47_069.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.21

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Section Inspection - 05/04/2022 - MH.20X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
48	1	05/04/22	9:05	13621	No Rain Or Snow	No	MH.20X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	1	**Upstream Node:**	MH.20
Road:	50-56 Sheen Road	**Inspected Length:**	7.43 m	**Upstream Pipe Depth:**	1.340 m
Location:	Property or buildings	**Total Length:**	7.43 m	**Downstream Node:**	MH.24
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	1.410 m

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: NO FURTHER WORKS REQUIRED

Scale: 1:65

Position [m]	Code	Observation	Grade
		Depth: 1.34 m	
		MH.20	
0.00	MH	Start node, manhole, reference: MH.20	
0.00	WL	Water level, 5% of the vertical dimension	
0.40	LL	Line deviates left: SHARP	
6.11	LR	Line deviates right: SLIGHT	
7.43	MHF	Finish node, manhole, reference: MH.24	
		MH.24	
		Depth: 1.41 m	


MH - 0.00 m


MHF - 7.43 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 05/04/2022 - MH.20X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
48	1	MH.20X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_48_070.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.20

_50-56 SHEEN ROAD_RICHMOND_48_071.jpg, 00:00:40, 7.43 m
Finish node, manhole, reference: MH.24

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Section Inspection - 05/04/2022 - BRANCH 1X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
49	1	05/04/22	9:16	13621	No Rain Or Snow	No	BRANCH 1X

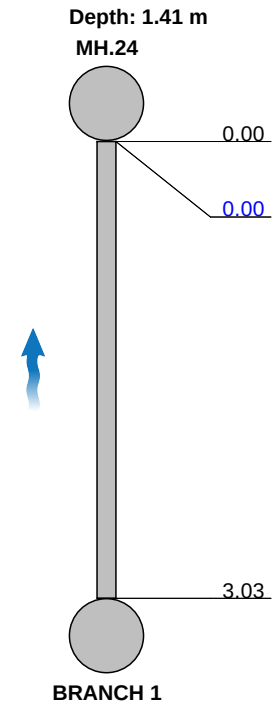
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	2	**Upstream Node:**	BRANCH 1
Road:	50-56 Sheen Road	**Inspected Length:**	3.03 m	**Upstream Pipe Depth:**	0.000 m
Location:	Property or buildings	**Total Length:**	3.03 m	**Downstream Node:**	MH.24
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	1.410 m

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: NO FURTHER WORKS REQUIRED

Scale: 1:50



Position [m]	Code	Observation	Grade
0.00	MH	Start node, manhole, reference: MH.24	
0.00	WL	Water level, 0% of the vertical dimension	
3.03	BRF	Finish node, major connection without manhole, reference: BRANCH 1: BASE OF STACK	


MH - 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 05/04/2022 - BRANCH 1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
49	2	BRANCH 1X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_49_072.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.24

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Section Inspection - 05/04/2022 - BRANCH 2X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
50	1	05/04/22	9:17	13621	No Rain Or Snow	No	BRANCH 2X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

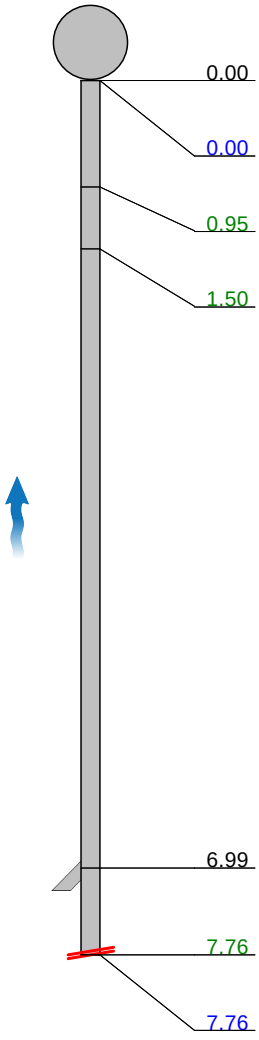
Town or Village:	Richmond	**Inspection Direction:**	2	**Upstream Node:**	BRANCH 2
Road:	50-56 Sheen Road	**Inspected Length:**	7.76 m	**Upstream Pipe Depth:**	0.000 m
Location:	Property or buildings	**Total Length:**	7.76 m	**Downstream Node:**	MH.24
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	1.410 m

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: NO FURTHER WORKS REQUIRED

Scale: 1:67 **Depth: 1.41 m**

MH.24



Position [m]	Code	Observation	Grade
0.00	MH	Start node, manhole, reference: MH.24	
0.00	WL	Water level, 0% of the vertical dimension	
0.95	LL	Line deviates left: SLIGHT	
1.50	LR	Line deviates right: SHARP	
6.99	JN	Junction at 2 o'clock, 100mm dia	
7.76	LR	Line deviates right: SHARP	
7.76	SA	Survey abandoned: DUE TO SHARP BEND	

MH - 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 05/04/2022 - BRANCH 2X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
50	2	BRANCH 2X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_50_073.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.24

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Section Inspection - 05/04/2022 - MH.24X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
51	1	05/04/22	9:20	13621	No Rain Or Snow	No	MH.24X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	1	**Upstream Node:**	MH.24
Road:	50-56 Sheen Road	**Inspected Length:**	23.50 m	**Upstream Pipe Depth:**	1.410 m
Location:	Property or buildings	**Total Length:**	23.50 m	**Downstream Node:**	MH.25
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	1.960 m

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: NO FURTHER WORKS REQUIRED

Scale: 1:203

Position [m]	Code	Observation	Grade
		Depth: 1.41 m	
		MH.24	
0.00	MH	Start node, manhole, reference: MH.24	
0.00	WL	Water level, 5% of the vertical dimension	
6.66	LR	Line deviates right: SHARP	
10.95	WL	Water level, 10% of the vertical dimension	
23.15	LL	Line deviates left: SLIGHT	
23.50	MHF	Finish node, manhole, reference: MH.25: MAIN SEWER U.T.R	
		MH.25	
		Depth: 1.96 m	


MH - 0.00 m


MHF - 23.50 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 05/04/2022 - MH.24X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
51	1	MH.24X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_51_074.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.24

_50-56 SHEEN ROAD_RICHMOND_51_075.jpg, 00:01:42, 23.50 m
Finish node, manhole, reference: MH.25, MAIN SEWER U.T.R

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Section Inspection - 05/04/2022 - BRANCH 1X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
52	1	05/04/22	9:35	13621	No Rain Or Snow	No	BRANCH 1X

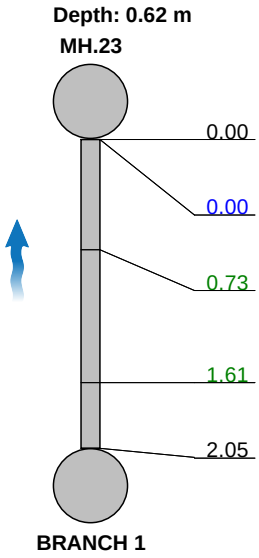
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	2	**Upstream Node:**	BRANCH 1
Road:	50-56 Sheen Road	**Inspected Length:**	2.05 m	**Upstream Pipe Depth:**	0.000 m
Location:	Property or buildings	**Total Length:**	2.05 m	**Downstream Node:**	MH.23
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	0.620 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: NO FURTHER WORKS REQUIRED

Scale: 1:50



Position [m]	Code	Observation	Grade
0.00	MH	Start node, manhole, reference: MH.23	
0.00	WL	Water level, 0% of the vertical dimension	
0.73	LL	Line deviates left: SLIGHT	
1.61	LL	Line deviates left: SLIGHT	
2.05	BRF	Finish node, major connection without manhole, reference: BRANCH 1: BASE OF ACO	


MH - 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 05/04/2022 - BRANCH 1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
52	2	BRANCH 1X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_52_076.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.23

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Section Inspection - 05/04/2022 - BRANCH 2X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
53	1	05/04/22	9:36	13621	No Rain Or Snow	No	BRANCH 2X

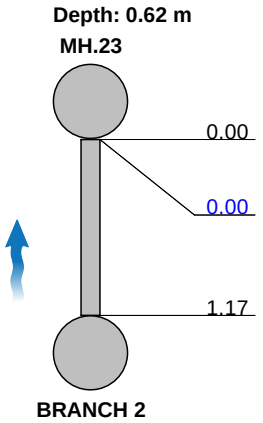
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	2	**Upstream Node:**	BRANCH 2
Road:	50-56 Sheen Road	**Inspected Length:**	1.17 m	**Upstream Pipe Depth:**	0.000 m
Location:	Property or buildings	**Total Length:**	1.17 m	**Downstream Node:**	MH.23
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	0.620 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: NO FURTHER WORKS REQUIRED

Scale: 1:50



Position [m]	Code	Observation	Grade
0.00	MH	Start node, manhole, reference: MH.23	
0.00	WL	Water level, 0% of the vertical dimension	
1.17	GYF	Finish node, gully, reference: BRANCH 2: BASE OF RWP	


MH - 0.00 m

Depth: 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 05/04/2022 - BRANCH 2X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
53	2	BRANCH 2X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_53_077.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.23

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Section Inspection - 05/04/2022 - MH.26X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
54	1	05/04/22	9:37	13621	No Rain Or Snow	No	MH.26X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	2	**Upstream Node:**	MH.26
Road:	50-56 Sheen Road	**Inspected Length:**	8.53 m	**Upstream Pipe Depth:**	0.590 m
Location:	Property or buildings	**Total Length:**	8.53 m	**Downstream Node:**	MH.23
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	0.620 m

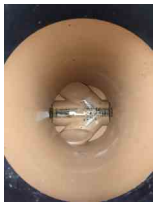
Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: NO FURTHER WORKS REQUIRED

Scale: 1:74

Position [m]	Code	Observation	Grade
		Depth: 0.62 m	
		MH.23	
0.00	MH	Start node, manhole, reference: MH.23	
0.00	WL	Water level, 5% of the vertical dimension	
0.40	LL	Line deviates left: SLIGHT	
7.98	JN	Junction at 10 o'clock, 100mm dia	
8.53	MHF	Finish node, manhole, reference: MH.26	
		MH.26	
		Depth: 0.59 m	


MH - 0.00 m


MHF - 8.53 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 05/04/2022 - MH.26X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
54	2	MH.26X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_54_078.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.23

_50-56 SHEEN ROAD_RICHMOND_54_079.jpg, 00:00:38, 8.53 m
Finish node, manhole, reference: MH.26

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Section Inspection - 05/04/2022 - MH.27X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
55	1	05/04/22	9:39	13621	No Rain Or Snow	No	MH.27X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

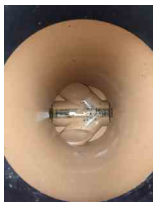
Town or Village:	Richmond	**Inspection Direction:**	2	**Upstream Node:**	MH.27
Road:	50-56 Sheen Road	**Inspected Length:**	13.09 m	**Upstream Pipe Depth:**	0.620 m
Location:	Property or buildings	**Total Length:**	13.09 m	**Downstream Node:**	MH.26
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	0.590 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: JETTING AND RESURVEY REQUIRED

Scale: 1:113

Position [m]	Code	Observation	Grade
		Depth: 0.59 m	
		MH.26	
0.00	MH	Start node, manhole, reference: MH.26	
0.00	WL	Water level, 5% of the vertical dimension	
10.11	JN	Junction at 10 o'clock, 100mm dia	
11.37	DES	Settled deposits, fine, 10% cross-sectional area loss	3
11.37	WL	Water level, 10% of the vertical dimension	
13.09	MHF	Finish node, manhole, reference: MH.27: SILT IN CHAMBER	
		MH.27	
		Depth: 0.62 m	


MH - 0.00 m


MHF - 13.09 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	1	2.0	0.2	2.0	3.0

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Tel. 01202 828 281
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Section Pictures - 05/04/2022 - MH.27X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
55	2	MH.27X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_55_080.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.26

_50-56 SHEEN ROAD_RICHMOND_55_081.jpg, 00:00:55, 13.09 m
Finish node, manhole, reference: MH.27, SILT IN CHAMBER

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Section Inspection - 05/04/2022 - RODDING EYX

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
56	1	05/04/22	10:08	13621	No Rain Or Snow	No	RODDING EYX

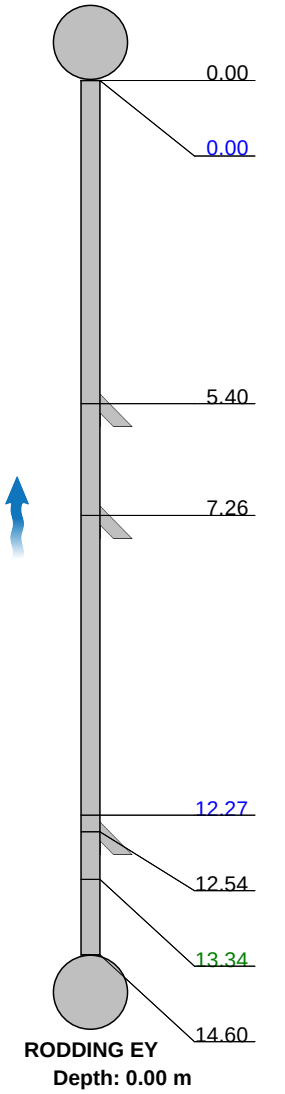
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	2	**Upstream Node:**	RODDING EY
Road:	50-56 Sheen Road	**Inspected Length:**	14.60 m	**Upstream Pipe Depth:**	0.000 m
Location:	Property or buildings	**Total Length:**	14.60 m	**Downstream Node:**	MH.27
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	0.620 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: NO FURTHER WORKS REQUIRED

Scale: 1:126



Position [m]	Code	Observation	Grade
0.00	MH	Start node, manhole, reference: MH.27	
0.00	WL	Water level, 5% of the vertical dimension	
5.40	JN	Junction at 10 o'clock, 100mm dia	
7.26	JNC	Junction, closed at 9 o'clock, 100mm dia	
12.27	REM	General remark: NO CHAMBER HERE ASSUMED COVERED OVER AND USED AS A JUNCTION	
12.54	JN	Junction at 10 o'clock, 100mm dia	
13.34	LU	Line deviates up: SHARP	
14.60	REF	Finish node, rodding eye, reference: RODDING EY	


MH - 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 05/04/2022 - RODDING EYX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
56	2	RODDING EYX	13621	13621

_50-56 SHEEN ROAD_RICHMOND_56_082.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.27

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Section Inspection - 05/04/2022 - BRANCH 1X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
57	1	05/04/22	10:12	13621	No Rain Or Snow	No	BRANCH 1X

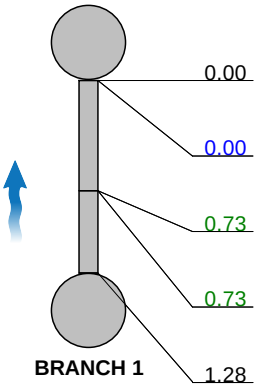
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JM10	P30 CVS	Flexirpobe	0.40 m	Private Sewer	Not Specified

Town or Village:	Richmond	**Inspection Direction:**	2	**Upstream Node:**	BRANCH 1
Road:	50-56 Sheen Road	**Inspected Length:**	1.28 m	**Upstream Pipe Depth:**	0.000 m
Location:	Property or buildings	**Total Length:**	1.28 m	**Downstream Node:**	MH.27
Surface Type:	Concrete Footway	**Joint Length:**	0.90 m	**Downstream Pipe Depth:**	0.620 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	1960	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations: JETTING AND RESURVEY REQUIRED

Scale: 1:50



Position [m]	Code	Observation	Grade
0.00	MH	Start node, manhole, reference: MH.27	
0.00	WL	Water level, 5% of the vertical dimension	
0.73	LL	Line deviates left: SLIGHT	
0.73	DES	Settled deposits, fine, 5% cross-sectional area loss	3
1.28	BRF	Finish node, major connection without manhole, reference: BRANCH 1: BASE OF ACO	


MH - 0.00 m

Depth: 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	1	2.0	1.6	2.0	3.0

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Tel. 01202 828 281
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Section Pictures - 05/04/2022 - BRANCH 1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
57	2	BRANCH 1X	13621	13621

_50-56 SHEEN ROAD_RICHMOND_57_083.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: MH.27

CLEARVIEW SURVEYS LTD
Old Barn Farm Road
Three Legged Cross, BH21 6SP
Tel: 01202 828281, Fax: 01202 824777

RECOMMENDATIONS

IF YOU REQUIRE A QUOTATION FOR THE REMEDIAL REPAIRS RECOMMENDED IN THIS REPORT INCLUDING DRAIN LINING, PATCH REPAIRS AND EXCAVATIONS PLEASE CALL 01202 828281

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13621 Recommendations						
Section	Upstream Node	Downstream Node	Dia/Height [mm]	Upstream Pipe Depth [m]	Downstream Pipe Depth [m]	Recommendations
1	BRANCH 1	MH.1	100	0	0.46	PATCH REPAIR REQUIRED
2	BRANCH 2	MH.1	100	0	0.46	NO FURTHER WORKS REQUIRED
3	BRANCH 3	MH.1	100	0	0.46	JETTING AND RESURVEY REQUIRED
4	BRANCH 4	MH.1	100	0	0.46	NO FURTHER WORKS REQUIRED
5	MH.1	MH.2	100	0.46	0.99	NO FURTHER WORKS REQUIRED
6	MAINRUN	MH.3	100	0	0.52	NO FURTHER WORKS REQUIRED
7	BRANCH 1	MH.3	100	0	0.52	NO FURTHER WORKS REQUIRED
8	BRANCH 2	MH.3	100	0	0.52	NO FURTHER WORKS REQUIRED
9	BRANCH 3	MH.3	100	0	0.52	NO FURTHER WORKS REQUIRED
10	MH.3	MH.4	100	0.52	0.92	NO FURTHER WORKS REQUIRED
11	MH.4	MH.5	100	0.92	1.28	REMEDIAL WORKS REQUIRED
12	BRANCH 1	MH.4	100	0	0.92	NO FURTHER WORKS REQUIRED
13	BRANCH 2	MH.4	100	0	0.92	NO FURTHER WORKS REQUIRED
14	BRANCH 3	MH.4	100	0	0.92	NO FURTHER WORKS REQUIRED
15	BRANCH 1	MH.5	100	0	1.28	NO FURTHER WORKS REQUIRED
16	BRANCH 2	MH.5	100	0	1.28	JETTING AND RESURVEY REQUIRED
17	MH.5	MH.7	150	1.28	1.42	JETTING AND RESURVEY REQUIRED
18	MH.2	MH.7	150	0.99	1.42	NO FURTHER WORKS REQUIRED
19	BRANCH 1	MH.7	150	0	1.42	JETTING AND RESURVEY REQUIRED
20	BRANCH 2	MH.7	150	0	1.42	NO FURTHER WORKS REQUIRED
21	MH.7	MH.8	150	1.42	0	NO FURTHER WORKS REQUIRED
22	MH.8	MH.9	150	0	0	JETTING AND RESURVEY REQUIRED
23	MH.10	MH.2	150	0.64	0.99	NO FURTHER WORKS REQUIRED
24	MH.11	MH.10	100	0.53	0.64	JETTING AND RESURVEY REQUIRED
25	BRANCH 1	MH.10	100	0	0.64	PATCH REPAIR REQUIRED
26	BRANCH 2	MH.10	100	0	0.64	NO FURTHER WORKS REQUIRED
27	MH.12	MH.11	100	0.48	0.53	NO FURTHER WORKS REQUIRED
28	MH.13	MH.12	100	0.47	0.48	NO FURTHER WORKS REQUIRED
29	MAINRUN	MH.13	100	0	0.47	NO FURTHER WORKS REQUIRED
30	BRANCH 1	MH.11	100	0	0.53	NO FURTHER WORKS REQUIRED
31	BRANCH 1	MH.12	100	0	0.48	NO FURTHER WORKS REQUIRED
32	BRANCH 1	MH.13	100	0	0.47	NO FURTHER WORKS REQUIRED

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13621 Recommendations						
Section	Upstream Node	Downstream Node	Dia/Height [mm]	Upstream Pipe Depth [m]	Downstream Pipe Depth [m]	Recommendations
33	BRANCH 2	MH.13	100	0	0.47	PATCH REPAIR REQUIRED
34	MH.15	MH.16	100	0.58	0.61	JETTING AND RESURVEY REQUIRED
35	MH.16	MH.17	100	0.61	0.98	JETTING AND RESURVEY REQUIRED
36	BRANCH 1	MH.16	100	0	0.61	NO FURTHER WORKS REQUIRED
37	BRANCH 1	MH.17	100	0	0.98	JETTING AND RESURVEY REQUIRED
38	MH.17	MH.18	100	0.98	0	JETTING AND RESURVEY REQUIRED
39	BRANCH 1	MH.8	100	0	1.59	NO FURTHER WORKS REQUIRED
40	MAINRUN	MH.9	100	0	1.65	NO FURTHER WORKS REQUIRED
41	BRANCH 1	MH.9	100	0	1.65	NO FURTHER WORKS REQUIRED
42	MH.9	MH.20	150	1.65	1.34	NO FURTHER WORKS REQUIRED
43	MH.18	MH.19	100	0	1.32	JETTING AND RESURVEY REQUIRED
44	MH.19	MH.21	100	1.32	1.19	JETTING AND RESURVEY REQUIRED
45	BRANCH 1	MH.21	100	0	1.19	NO FURTHER WORKS REQUIRED
46	MH.23	MH.21	100	0.62	1.19	NO FURTHER WORKS REQUIRED
47	MH.21	MH.22	100	1.19	0	NO FURTHER WORKS REQUIRED
48	MH.20	MH.24	150	1.34	1.41	NO FURTHER WORKS REQUIRED
49	BRANCH 1	MH.24	100	0	1.41	NO FURTHER WORKS REQUIRED
50	BRANCH 2	MH.24	100	0	1.41	NO FURTHER WORKS REQUIRED
51	MH.24	MH.25	150	1.41	1.96	NO FURTHER WORKS REQUIRED
52	BRANCH 1	MH.23	100	0	0.62	NO FURTHER WORKS REQUIRED
53	BRANCH 2	MH.23	100	0	0.62	NO FURTHER WORKS REQUIRED
54	MH.26	MH.23	100	0.59	0.62	NO FURTHER WORKS REQUIRED
55	MH.27	MH.26	100	0.62	0.59	JETTING AND RESURVEY REQUIRED
56	RODDING EY	MH.27	100	0	0.62	NO FURTHER WORKS REQUIRED
57	BRANCH 1	MH.27	100	0	0.62	JETTING AND RESURVEY REQUIRED

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DRAINAGE LAYOUT DRAWINGS

Rev	Date	Notes	By

Additional Notes:

1. The correct identification of the utility types can not be 100% guaranteed, therefore these should be independently verified prior to use in any design or building works.
2. All pipe diameters and levels are assumed to be correct, but due to non entry of the inspection chambers, these should be verified before any works commence.
3. All utility depths are in metres.
4. All pipe/duct sizes are in millimetres.
5. Information provided should not be altered. It should not be used for any purpose other than for which it was intended and should not be issued to other parties without prior agreement from ClearView Surveys.
6. All dimensions should be checked on site before any fabrication,construction or excavation.
7. CCTV Drainage Pipe positions are indicative only and are in an approximate position.
8. Base Topo Supplied By Client. Accuracy of this cannot be guaranteed as it was not undertaken by ClearView Surveys.
9. Utility Survey has been fitted to OS

Key:

STREET FURNITURE

BB	Belisha Beacon
BL	Basement Light
Bin	Litter Bin
BO	Bollard
BS	Bus Stop
CPO	Concrete Post
EC	Electric Cupboard
EFP	Electric Feeder Pillar
EP	Electric Pole
FB	Flower Bed
FHM	Fire Hydrant Marker
FL	Flood Light
FP	Flag Pole
FPO	Fence Post
JB	Junction Box
GB	Grit Box
GMK	Gas Marker Post
GPO	Gate Post
IBO	Illuminated Bollard
LH	Lamp Hole
LP	Lamp Post
LPO	Lockable Post
MK	Marker
MPO	Metal Post
NP	Name Plate
PB	Post Box
PM	Parking Meter
RPO	Reflector Post
RS	Road Sign
SI	Sign
STN	Survey Station
Tap	Attached to Wall/Building etc
TCB	Telephone Call Box
TL	Traffic Light
TLCB	Traffic Light Control Box
TP	Telegraph Pole
TPO	Timber Post

PIPES & CABLES

CIG	Cable In Ground
DBC	Directly Buried Cable
DP	Down Pipe
eot	End Of Trace
FWP	Foul Water Pipe
GP	Gas Pipe
ONV	Outlet Not Visible
PIG	Pipe In Ground
RWP	Rain Water Pipe
SP	Stand Pipe
SVP	Soil Vent Pipe
UTS	Unable To Survey
UTT	Unable To Trace
VP	Vent Pipe
WP	Waste Pipe

LEVELS & DEPTHS

A	Approximate
BD	Back Drop Depth
BDL	Back Drop Level
CD	Chamber Depth
CL	Cover Level
DPC	Damp Proof Course
EL	Eaves Level
FFL	Finished Floor Level
FRL	Flat Roof Level
IBDL	Internal Back Drop
ID	Invert Depth
IL	Invert Level
OD	Outlet Depth
OL	Outlet Level
PWL	Parapet Wall Level
RL	Ridge Level
SD	Sump Depth
SFD	Soffit Depth
SFL	Soffit Level
SiltL	Silt Level
SL	Sump Level
SSL	Structural Slab Level
TFL	Top Of Fence Level
THL	Threshold Level
TWL	Top Of Wall Level
WL	Water Level

FENCES & WALLS

BW	Block Wall
BRP	Brick Pier
BRTW	Brick Retaining Wall
BRW	Brick Wall
BWF	Barbed Wire Fence
CBF	Close Board Fence
CIF	Corrugated Iron Fence
CLF	Chain Link Fence
CPF	Chestnut Paling Fence
CRW	Concrete Retaining Wall
CW	Concrete Wall
CWF	Chicken Wire Fence
DIL	Dilapidated
HR	Hand Rail
IWF	Interwoven Fence
LF	Lattice Fence
MF	Miscellaneous Fence
MRF	Metal Railing Fence
OBF	Open Board Fence
PCF	Post & Chain Fence
PNF	Panel Fence
PRF	Post & Rail Fence
PWF	Post & Wire Fence
RTW	Retaining Wall
STW	Stone Wall
SRTW	Stone Retaining Wall
WMF	Wire Mesh Fence

INSPECTION CHAMBERS

AC	Access Cover
BH	Borehole
CDC	Concrete Drainage Channel
EIC	Electric Inspection Cover
ER	Earth Rod
FWIC	Foul Water Inspection Cover
FWPS	Foul Water Pumping Station
FH	Fire Hydrant
GIC	Gas Inspection Cover
GM	Gas Meter
GV	Gas Valve
G	Gully
IC	Inspection Cover
KI	Kerb Inlet
LHP	London Hydraulic Power
MDC	Metal Drainage Channel
MW	Monitoring Well
NFI	No Further Information
RE	Rodding Eye
SDIC	Service Duct Inspection Cover
SV	Stop Valve
SWCP	Surface Water Catch Pit
SWIC	Surface Water Inspection Cover
SWSA	Surface Water Soakaway
TCIC	Traffic Control Inspection Cover
TIC	Telecom Inspection Cover
UIC	Unidentified Inspection Cover
UTR	Unable To Raise
WIC	Water Inspection Cover
WM	Water Meter
WWO	Water Wash Out
WSV	Water Stop Valve

SURFACES

BPav	Brick Paving
Conc	Concrete
CPav	Crazy Paving
CPS	Concrete Paving Slabs
FB	Flower / Shrub Border
KFC	Kidney Flint Cobbles
T	Tiles
Tmac	Tarmac
TPav	Tactile Paving
TS	Trench Scar

MEASUREMENTS

d	Depth (m)
Ø	Diameter (mm)
Ext.Ø	External Diameter (mm)
H	Object Height (m)

Linetype Key:

UTILITY KEY

FW	Foul Drainage
FW	Foul Drainage (Assumed)
SW	Storm Drainage
SW	Storm Drainage (Assumed)
CW	Combined Drainage
C	Combine Drainage (Assumed)

THIS AREA IS ALLOCATED TO SHOW SHEET LOCATION OF THE WHOLE SITE IF BROKEN DOWN INTO MULTIPLE SHEETS

CLIENT

Elliottwood Engineering

SITE

50-56 Sheen Road
Richmond
TW9 1UG

DRAWING TITLE

CCTV Drainage Survey

PROJECT NUMBER	DRAWING NUMBER	DATE
13621	13621_F	April 2022
SURVEYED BY	DRAWN BY	CHECKED BY
JM	JM	AG
SCALE	SHEET SIZE	SHEET
1:100	A1	1 OF 1

UNIT 301, OLD BARN FARM ROAD
WOOLSBRIDGE INDUSTRIAL PARK
THREE LEGGED CROSS, WIMBORNE, BH21 6SP
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F 01202 824777
E info@clearviewsurveys.co.uk
W www.clearviewsurveys.co.uk

D Existing Drainage Calculations

Modified Ration Method for Brownfield Runoff

Project Number: 2210561
Project Name: Richmond Inn Hotel
Date: 09/03/2022

Area (Ha) 0.14

Storm Return Period	Existing Discharge (L/S)
1yr	12.0
30yr	30.3
100yr	38.7
100yr+40%	54.1

Q= 2.78 * Cv * Cr * I * A

Q = flow rate (l/s)
Cv = Volumetric Runoff Coefficient
Cr = Routing Coefficient
I - Rainfall intensity
A = Area (Ha)

Under summer rainfall conditions Cv ranges from 0.6 - 0.9, for fully impermeable areas value of 0.75 should be used.

The routing coeffcieint varies between 1 and 2 and accounts for the effect of rainfall characterisitcs and catchment shape on the peak runoff magnitude.
The SuDS manual recoomends a fixed value for Cr of 1.3 for design.

Rainfall intensity is calculated following Walling Procedure Volume 4 and is as follows:

1.0 Determination of M5-60 min and r

60 minute, 5 year storm (M5-60) has a rainfall depth — M5-60 20.000
Ratio r 0.4

2.0 Determination of M5-D

M5-D = Z1 (M5-60min)
Z1 is taken from A3.a or A.3b for values between 0.12 and 0.45 and for durations between 5 minutes and 48 hours read to 0.01.

Assuming 1yr 15min, 30yr 15 min, 100yr 15min

Z1 0.64
M5-15 12.8 mm

3.0 Determination of MT-D

MT-D is obtained from the relationship:
MT-D = Z2(M5-D)

Taken from Table A1 for 1yr return period 15min storm	Taken from Table A1 for 30yr return period 15min storm	Taken from Table A1 for 100yr return period 15min storm
Z2 = 0.62	Z2= 1.56	Z2= 1.99
M1-15= 7.9	M30-15= 20.0	M100-15= 25.5

4 **Determination of point rainfall intensities**

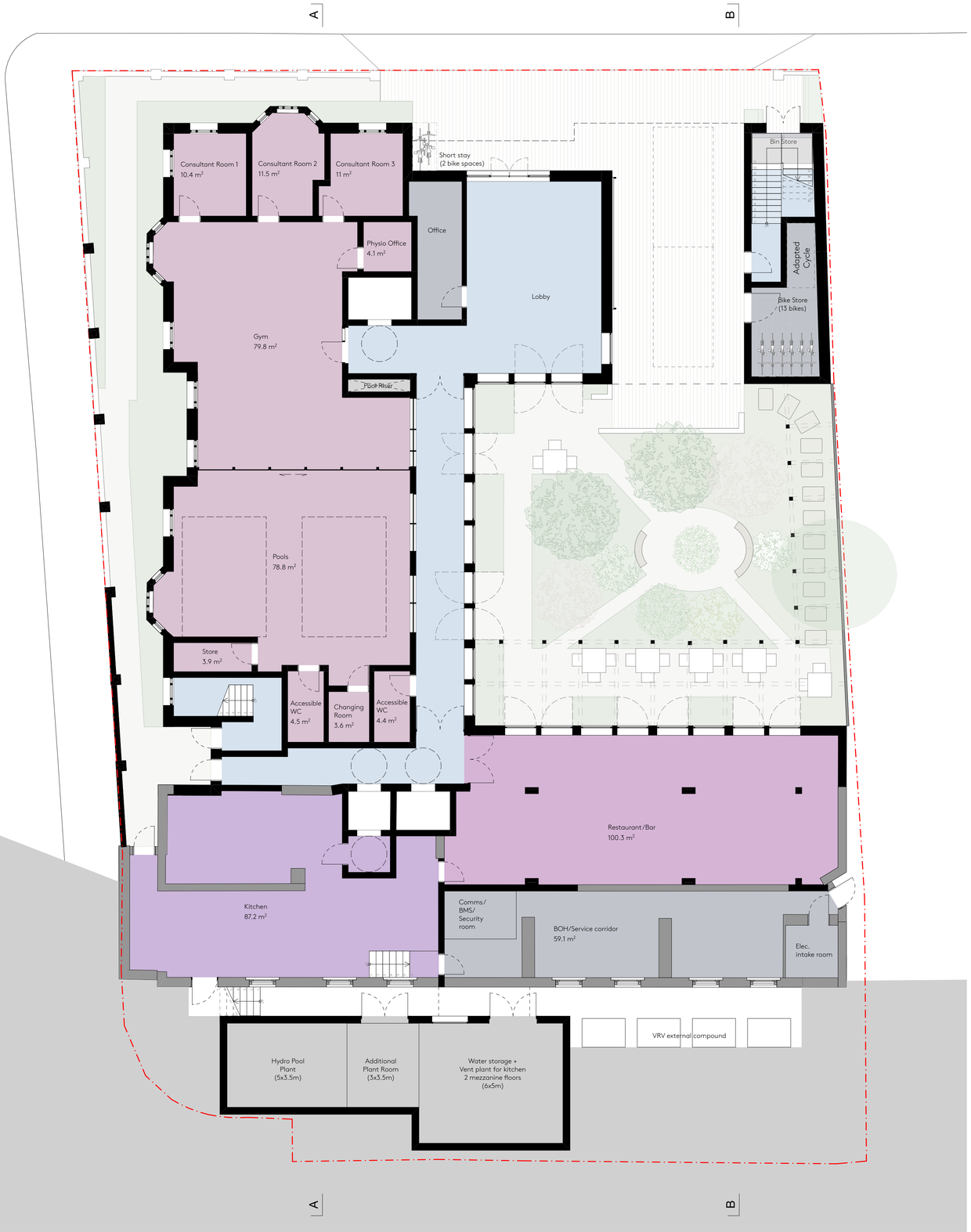
i= 31.744 mm/hr	i= 79.872 mm/hr	i= 101.888 mm/hr

5 Application of areal reduction factor

From chart A4 where area is greater than 1km2
ARF= 1

Average 1yr intensity	Average 30yr intensity	Average 100yr intensity	Average 100yr+40% intensity
31.7	79.9	101.9	142.6

E Proposed Development Plans



Ackroyd Lowrie
23 Vyner Street
London E2 9DG
0203 770 9780
www.ackroydlowrie.com

Issue

No.	Date	Comment
P1	06/05/22	PLANNING APPLICATION

Notes

DO NOT SCALE FROM THIS DRAWING.

DO NOT USE ANY AREAS INDICATED FOR EITHER VALUATION, PURCHASE SALE OR ANY OTHER FORM OF LEGALLY BINDING CONTRACT.

Key

- Site boundary
- Existing structure
- Proposed structure
- Circulation
- Rooms

N

0 1 5m

1:100

Project	**888 - Richmond Rehab Centre**
Dwg Title	**Proposed Lower Ground Floor Plan**
Client	**Bridges Fund Management Ltd.**
Dwg No.	**888-100**

Date	Drawn	Checked	Scale	Current Stage	Issue
APRIL 2022	YC	OL	1:100	PLANNING	P1

Ackroyd Lowrie
23 Vyner Street
London E2 9DG
0203 770 9780
www.ackroydlowrie.com

Issue

No.	Date	Comment
P1	06/05/22	PLANNING APPLICATION

Notes

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Key

- Site boundary
- Existing structure
- Proposed structure
- Circulation
- Rooms

N

0 1 5m

1:100

Project	888 - Richmond Rehab Centre
Dwg Title	Proposed Ground Floor Plan
Client	Bridges Fund Management Ltd.
Dwg No.	888-101

Date	Drawn	Checked	Scale	Current Stage	Issue
APRIL 2022	YC	OL	1:100	PLANNING	P1

Ackroyd Lowrie

23 Vyner Street
London E2 9DG
0203 770 9780
www.ackroydlowrie.com

Issue

No.	Date	Comment
P1	06/05/22	PLANNING APPLICATION

Notes

DO NOT SCALE FROM THIS DRAWING.

DO NOT USE ANY AREAS INDICATED FOR EITHER VALUATION, PURCHASE SALE OR ANY OTHER FORM OF LEGALLY BINDING CONTRACT.

Key

- Site boundary
- Existing structure
- Proposed structure
- Circulation
- Rooms

N

0 1 5m

1:100

Project	**888 - Richmond Rehab Centre**
Client	**Bridges Fund Management Ltd.**
Dwg Title	**Proposed First Floor Plan**
Dwg No.	**888-102**

Date	Drawn	Checked	Scale	Current Stage	Issue
APRIL 2022	**YC**	**OL**	**1:100**	**PLANNING**	**P1**

Ackroyd Lowrie

23 Vyner Street
London E2 9DG
0203 770 9780
www.ackroydlowrie.com

Issue

No.	Date	Comment
P1	06/05/22	PLANNING APPLICATION

Notes

DO NOT SCALE FROM THIS DRAWING.

DO NOT USE ANY AREAS INDICATED FOR EITHER VALUATION, PURCHASE SALE OR ANY OTHER FORM OF LEGALLY BINDING CONTRACT.

Key

- Site boundary
- Existing structure
- Proposed structure
- Circulation
- Rooms

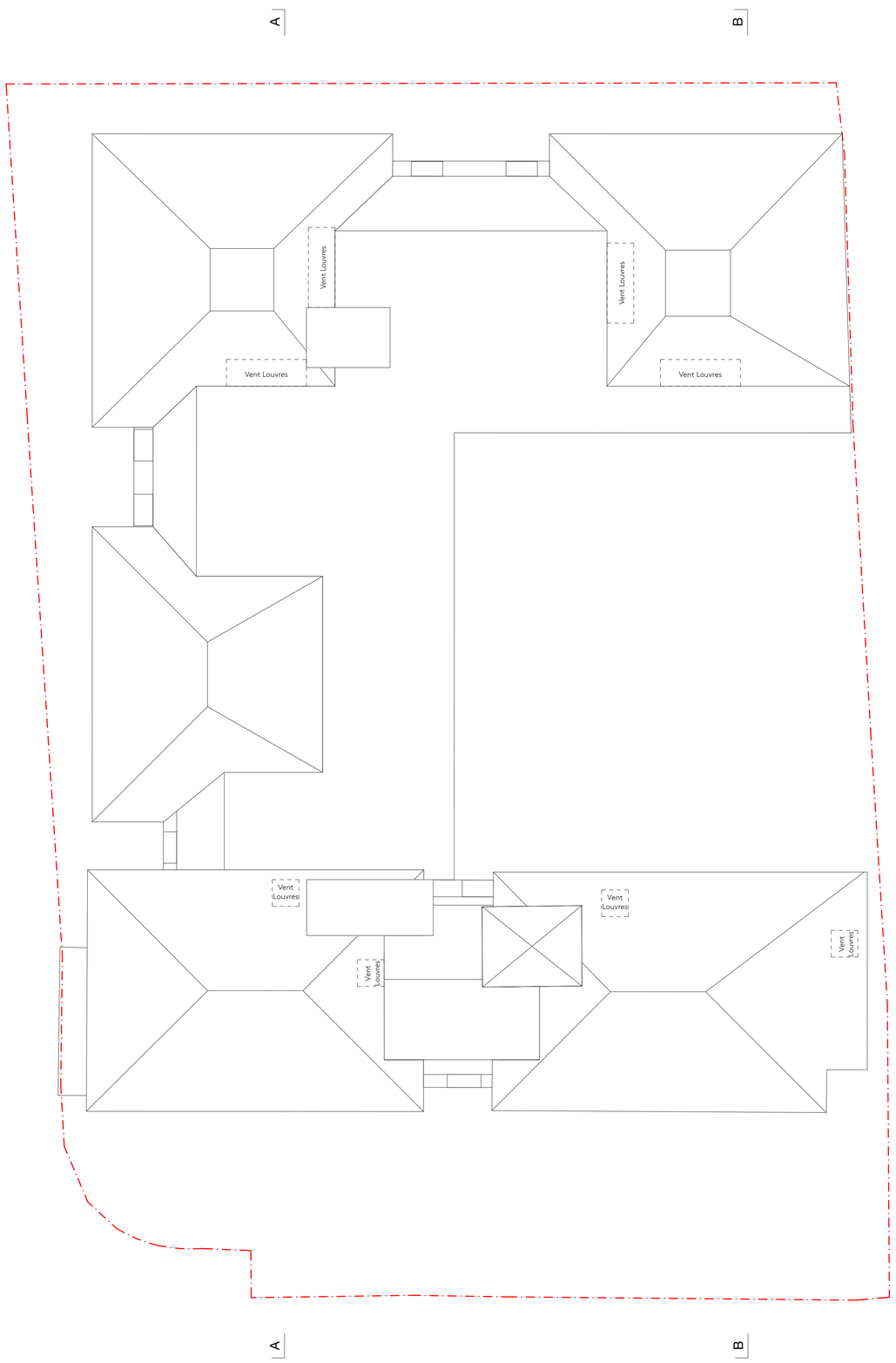
N

0 1 5m

1:100

Project	**888 - Richmond Rehab Centre**
Dwg Title	**Proposed Second Floor Plan**
Client	**Bridges Fund Management Ltd.**
Dwg No.	**888-103**

Date	Drawn	Checked	Scale	Current Stage	Issue
APRIL 2022	YC	OL	1:100	PLANNING	P1



Ackroyd Lowrie
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Issue

No.	Date	Comment
P1	06/05/22	PLANNING APPLICATION

Notes

DO NOT SCALE FROM THIS DRAWING.

DO NOT USE ANY AREAS INDICATED FOR EITHER VALUATION, PURCHASE SALE OR ANY OTHER FORM OF LEGALLY BINDING CONTRACT.

Key

Site boundary

N

0 1 5m

1:100

Project			Dwg Title		
888 - Richmond Rehab Centre			**Proposed Roof Plan**		
Client			Dwg No.		
Bridges Fund Management Ltd.			**888-103**		
Date	Drawn	Checked	Scale	Current Stage	Issue
APRIL 2022	YC	OL	1:100	PLANNING	**P1**

F ABG Blue Roof Calculations

BLUE ROOF SYSTEM AND OUTFLOW SUMMARY

PRIVATE & CONFIDENTIAL - NOT FOR DISTRIBUTION

Project Name:	Richmond Hotel, 50-56 Sheen Rd, Richmond, TW9 1UG - Main Roof		
Prepared for:	Elliott Wood, London		
Date:	29/04/2022		
ABG Project ID:	24558	Calculator version:	1.30
Prepared by:	Andrew Keer, andrew@abgltd.com, 07525-808700		
Notes/description:	Green roof, with potential for free-standing/ballasted PV panels to be installed, on top of the 'blue roof' system (recommended); and maintenance access only - TBC. Warm roof/inverted roof, construction, with zero falls - TBC.		

Blue Roof Estimate

Input Parameters - Rainfall Information (Flood Studies Report 1975)			
Return period:	100	years	*As supplied by Client*
Allowance for Climate Change:	40	%	*As supplied by Client*
Location selected for FSR data:	London (SW)		

Input Parameters - Roof Information			
Total catchment area:	330	m^2	*As supplied by Client*
Attenuation area:	218	m^2	*As supplied by Client*
Maximum allowable runoff:	0.8	l/s	*As supplied by Client*

Output - Rainfall Calculation

Duration	Time to Empty	Restricted Outflow (l/s)
15 mins	8 hours and 0 minutes	0.5
30 mins	9 hours and 30 minutes	0.6
1 hour	10 hours and 40 minutes	0.7
2 hours	11 hours and 30 minutes	0.7
4 hours	11 hours and 40 minutes	0.7
6 hours	11 hours and 20 minutes	0.7
10 hours	10 hours and 10 minutes	0.7
24 hours	5 hours and 20 minutes	0.4
48 hours	0 hours and 10 minutes	0.1

Total attenuation required: 20.9 m^3
Half empty time: 3 hours and 40 minutes.

Output - Recommended Blue Roof System		
System Name:	ABG blueroof VF HD 129mm	
Description:	The blue roof depth of 129mm, includes for a 25mm deep, reservoir board. No. of control positions TBC by design team, and also with the structural engineer's deflection analysis. Additional 'tell-tale' parapet overflow outlets, may also be added by the architect.	
Total attenuation capacity:	24.8	m^3
Number of Blue Roof outlets:	2	

Notes:

1. This document contains an estimate which has been prepared by ABG Ltd and is illustrative only and not a detailed design.
2. Further details on the theories used in this estimate are available upon request from ABG. The values given for the performance of the system relate to testing, modelling and analysis of our systems obtained from laboratories and testing institutes. In line with our policy of continuous improvement the right is reserved to make changes to our systems without notice at any time.
3. The estimate given in this report is based on the stated parameters as per the brief. If these parameters are not correct or have changed, ABG should be contacted to provide a revised estimate.
4. This estimate is specific to the characteristics of ABG products/systems and is not applicable to other competitor products. The substitution of the whole or any component of this design for a material supplied from another source renders this estimate invalid.
5. Final determination of the suitability of any information is the sole responsibility of the user. ABG will be pleased to discuss the use of this or any other product but responsibility for selection of a material and its application in any specific project remains with the user.

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G MicroDrainage Calculations and Summary

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	20.000	Add Flow / Climate Change (%)	0
Ratio R	0.413	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	3.505	0.000	0.0	0.016	4.00	0.0	0.600	o	100	Pipe/Conduit	
S1.001	1.614	0.150	10.8	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	
S2.000	1.541	0.000	0.0	0.019	4.00	0.0	0.600	o	100	Pipe/Conduit	
S2.001	1.465	0.050	29.3	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	
S3.000	0.591	0.000	0.0	0.033	4.00	0.0	0.600	o	100	Pipe/Conduit	
S3.001	0.507	0.000	0.0	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	
S3.002	6.605	0.100	66.1	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	
S2.002	11.440	0.150	76.3	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	
S2.003	9.581	0.100	95.8	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S4.000	1.441	0.000	0.0	0.018	4.00	0.0	0.600	o	100	Pipe/Conduit	
S4.001	1.588	0.016	100.0	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	4.84	7.900	0.016	0.0	0.0	0.0	0.07	0.5«	2.2
S1.001	50.00	4.85	7.900	0.016	0.0	0.0	0.0	2.37	18.6	2.2
S2.000	50.00	4.37	8.200	0.019	0.0	0.0	0.0	0.07	0.5«	2.6
S2.001	50.00	4.39	8.200	0.019	0.0	0.0	0.0	1.43	11.2	2.6
S3.000	50.00	4.14	20.350	0.033	0.0	0.0	0.0	0.07	0.5«	4.5
S3.001	50.00	4.26	20.350	0.033	0.0	0.0	0.0	0.07	0.5«	4.5
S3.002	50.00	4.38	8.250	0.033	0.0	0.0	0.0	0.95	7.5	4.5
S2.002	50.00	4.60	8.150	0.052	0.0	0.0	0.0	0.88	6.9«	7.0
S2.003	50.00	4.76	8.000	0.052	0.0	0.0	0.0	1.03	18.1	7.0
S4.000	50.00	4.35	8.300	0.018	0.0	0.0	0.0	0.07	0.5«	2.4
S4.001	50.00	4.38	8.300	0.018	0.0	0.0	0.0	0.77	6.0	2.4

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S2.004	15.059	0.150	100.4	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.002	8.752	0.050	175.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S2.004	50.00	5.01	7.900	0.070	0.0	0.0	0.0	1.00	17.7	9.5
S1.002	50.00	5.16	7.740	0.086	0.0	0.0	0.0	0.99	39.2	11.6

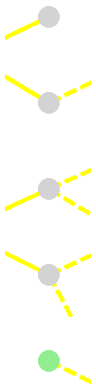
Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
STANK 1	9.000	1.100	Open Manhole	450	S1.000	7.900	100				
SFC1	9.000	1.100	Open Manhole	450	S1.001	7.900	100	S1.000	7.900	100	
SPP1	8.850	0.650	Open Manhole	450	S2.000	8.200	100				
SPP FC1	8.850	0.650	Open Manhole	450	S2.001	8.200	100	S2.000	8.200	100	
SBR1	20.850	0.500	Open Manhole	300	S3.000	20.350	100				
SBR FC1	20.850	0.500	Open Manhole	300	S3.001	20.350	100	S3.000	20.350	100	
SDP1	20.850	12.600	Open Manhole	100	S3.002	8.250	100	S3.001	20.350	100	12100
S5	8.850	0.700	Open Manhole	450	S2.002	8.150	100	S2.001	8.150	100	
								S3.002	8.150	100	
S6	8.850	0.850	Open Manhole	450	S2.003	8.000	150	S2.002	8.000	100	
SPP2	9.000	0.700	Open Manhole	1200	S4.000	8.300	100				
SPP FC2	9.000	0.700	Open Manhole	1200	S4.001	8.300	100	S4.000	8.300	100	
S7	8.850	0.950	Open Manhole	450	S2.004	7.900	150	S2.003	7.900	150	
								S4.001	8.284	100	334
S3	9.000	1.260	Open Manhole	450	S1.002	7.740	225	S1.001	7.750	100	
								S2.004	7.750	150	
S	9.410	1.720	Open Manhole	0		OUTFALL		S1.002	7.690	225	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
STANK 1	518315.218	175026.506	518315.218	175026.506	Required	
SFC1	518313.573	175029.601	518313.573	175029.601	Required	
SPP1	518342.519	175029.139	518342.519	175029.139	Required	
SPP FC1	518341.230	175029.984	518341.230	175029.984	Required	
SBR1	518333.381	175027.007	518333.381	175027.007	Required	
SBR FC1	518333.888	175027.311	518333.888	175027.311	Required	
SDP1	518334.294	175027.615	518334.294	175027.615	Required	
S5	518340.051	175030.853	518340.051	175030.853	Required	
S6	518335.236	175041.231	518335.236	175041.231	Required	

Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SPP2	518329.139	175037.163	518329.139	175037.163	Required	
SPP FC2	518327.840	175036.540	518327.840	175036.540	Required	
S7	518326.475	175037.354	518326.475	175037.354	Required	
S3	518312.811	175031.025	518312.811	175031.025	Required	
S	518304.977	175034.927			No Entry	



PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	100	STANK 1	9.000	7.900	1.000	Open Manhole	450
S1.001	o	100	SFC1	9.000	7.900	1.000	Open Manhole	450
S2.000	o	100	SPP1	8.850	8.200	0.550	Open Manhole	450
S2.001	o	100	SPP FC1	8.850	8.200	0.550	Open Manhole	450
S3.000	o	100	SBR1	20.850	20.350	0.400	Open Manhole	300
S3.001	o	100	SBR FC1	20.850	20.350	0.400	Open Manhole	300
S3.002	o	100	SDP1	20.850	8.250	12.500	Open Manhole	100
S2.002	o	100	S5	8.850	8.150	0.600	Open Manhole	450
S2.003	o	150	S6	8.850	8.000	0.700	Open Manhole	450
S4.000	o	100	SPP2	9.000	8.300	0.600	Open Manhole	1200
S4.001	o	100	SPP FC2	9.000	8.300	0.600	Open Manhole	1200
S2.004	o	150	S7	8.850	7.900	0.800	Open Manhole	450
S1.002	o	225	S3	9.000	7.740	1.035	Open Manhole	450

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	3.505	0.0	SFC1	9.000	7.900	1.000	Open Manhole	450
S1.001	1.614	10.8	S3	9.000	7.750	1.150	Open Manhole	450
S2.000	1.541	0.0	SPP FC1	8.850	8.200	0.550	Open Manhole	450
S2.001	1.465	29.3	S5	8.850	8.150	0.600	Open Manhole	450
S3.000	0.591	0.0	SBR FC1	20.850	20.350	0.400	Open Manhole	300
S3.001	0.507	0.0	SDP1	20.850	20.350	0.400	Open Manhole	100
S3.002	6.605	66.1	S5	8.850	8.150	0.600	Open Manhole	450
S2.002	11.440	76.3	S6	8.850	8.000	0.750	Open Manhole	450
S2.003	9.581	95.8	S7	8.850	7.900	0.800	Open Manhole	450
S4.000	1.441	0.0	SPP FC2	9.000	8.300	0.600	Open Manhole	1200
S4.001	1.588	100.0	S7	8.850	8.284	0.466	Open Manhole	450
S2.004	15.059	100.4	S3	9.000	7.750	1.100	Open Manhole	450
S1.002	8.752	175.0	S	9.410	7.690	1.495	Open Manhole	0

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.016	0.016	0.016
1.001	-	-	100	0.000	0.000	0.000
2.000	-	-	100	0.019	0.019	0.019
2.001	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.033	0.033	0.033
3.001	-	-	100	0.000	0.000	0.000
3.002	-	-	100	0.000	0.000	0.000
2.002	-	-	100	0.000	0.000	0.000
2.003	-	-	100	0.000	0.000	0.000
4.000	-	-	100	0.018	0.018	0.018
4.001	-	-	100	0.000	0.000	0.000
2.004	-	-	100	0.000	0.000	0.000
1.002	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.086	0.086	0.086

Network Classifications for Storm

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
S1.000	STANK 1	100	1.000	1.000	Unclassified	450	0	1.000	Unclassified
S1.001	SFC1	100	1.000	1.150	Unclassified	450	0	1.000	Unclassified
S2.000	SPP1	100	0.550	0.550	Unclassified	450	0	0.550	Unclassified
S2.001	SPP FC1	100	0.550	0.600	Unclassified	450	0	0.550	Unclassified
S3.000	SBR1	100	0.400	0.400	Unclassified	300	0	0.400	Unclassified
S3.001	SBR FC1	100	0.400	0.400	Unclassified	300	0	0.400	Unclassified
S3.002	SDP1	100	0.600	12.500	Unclassified	100	0	12.500	Unclassified
S2.002	S5	100	0.600	0.750	Unclassified	450	0	0.600	Unclassified
S2.003	S6	150	0.700	0.800	Unclassified	450	0	0.700	Unclassified
S4.000	SPP2	100	0.600	0.600	Unclassified	1200	0	0.600	Unclassified
S4.001	SPP FC2	100	0.466	0.600	Unclassified	1200	0	0.600	Unclassified
S2.004	S7	150	0.800	1.100	Unclassified	450	0	0.800	Unclassified
S1.002	S3	225	1.035	1.495	Unclassified	450	0	1.035	Unclassified

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.002	S	9.410	7.690	0.000	0	0

Simulation Criteria for Storm

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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 4 Number of Storage Structures 4 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Storm Duration (mins)	30
Ratio R	0.413		

Online Controls for Storm

Orifice Manhole: SFC1, DS/PN: S1.001, Volume (m³): 0.2

Diameter (m) 0.039 Discharge Coefficient 0.600 Invert Level (m) 7.900

Orifice Manhole: SPP FC1, DS/PN: S2.001, Volume (m³): 0.1

Diameter (m) 0.029 Discharge Coefficient 0.600 Invert Level (m) 8.200

Orifice Manhole: SBR FC1, DS/PN: S3.001, Volume (m³): 0.0

Diameter (m) 0.035 Discharge Coefficient 0.600 Invert Level (m) 20.350

Orifice Manhole: SPP FC2, DS/PN: S4.001, Volume (m³): 0.8

Diameter (m) 0.034 Discharge Coefficient 0.600 Invert Level (m) 8.300

Storage Structures for Storm

Cellular Storage Manhole: STANK 1, DS/PN: S1.000

Invert Level (m)	7.900	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Side (m/hr)	0.00000		

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	12.0	12.0	0.400	12.0	17.5	0.401	0.0	17.5

Porous Car Park Manhole: SPP1, DS/PN: S2.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	9.7
Membrane Percolation (mm/hr)	1000	Length (m)	10.0
Max Percolation (l/s)	26.9	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	8.200	Membrane Depth (mm)	0

Cellular Storage Manhole: SBR1, DS/PN: S3.000

Invert Level (m)	20.350	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Side (m/hr)	0.00000		

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	217.0	217.0	0.129	217.0	224.6	0.130	0.0	224.6

Porous Car Park Manhole: SPP2, DS/PN: S4.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	6.2
Membrane Percolation (mm/hr)	1000	Length (m)	10.0
Max Percolation (l/s)	17.2	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	8.300	Membrane Depth (mm)	0

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

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 4 Number of Storage Structures 4 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	20.000
Region	England and Wales	Ratio R	0.413
Cv (Summer)	0.750		
Cv (Winter)	0.840		

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	STANK 1	30 Winter	1	+0%	30/15 Summer				7.970	-0.030
S1.001	SFC1	30 Winter	1	+0%	30/15 Summer				7.973	-0.027
S2.000	SPP1	120 Winter	1	+0%	30/30 Winter				8.243	-0.057
S2.001	SPP FC1	120 Winter	1	+0%	30/30 Winter				8.247	-0.053
S3.000	SBR1	960 Winter	1	+0%					20.373	-0.077
S3.001	SBR FC1	960 Winter	1	+0%	100/60 Winter				20.376	-0.074
S3.002	SDP1	960 Winter	1	+0%					8.261	-0.089
S2.002	S5	240 Winter	1	+0%					8.166	-0.084
S2.003	S6	240 Winter	1	+0%					8.016	-0.134
S4.000	SPP2	60 Winter	1	+0%	30/15 Winter				8.351	-0.049
S4.001	SPP FC2	60 Winter	1	+0%	30/15 Winter				8.350	-0.050
S2.004	S7	120 Winter	1	+0%					7.921	-0.129
S1.002	S3	60 Winter	1	+0%					7.770	-0.195

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	STANK 1	0.000	0.19		21	0.7	OK	
S1.001	SFC1	0.000	0.06			0.7	OK	
S2.000	SPP1	0.000	0.08		82	0.3	OK	
S2.001	SPP FC1	0.000	0.05			0.3	OK	
S3.000	SBR1	0.000	0.04		705	0.2	OK	
S3.001	SBR FC1	0.000	0.04			0.1	OK	
S3.002	SDP1	0.000	0.02			0.1	OK	
S2.002	S5	0.000	0.06			0.4	OK	
S2.003	S6	0.000	0.03			0.4	OK	
S4.000	SPP2	0.000	0.11		45	0.4	OK	
S4.001	SPP FC2	0.000	0.11			0.4	OK	

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

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S2.004	S7	0.000	0.05			0.8	OK	
S1.002	S3	0.000	0.04			1.4	OK	

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

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 4 Number of Storage Structures 4 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	20.000
Region	England and Wales	Ratio R	0.413
Cv (Summer)	0.750		
Cv (Winter)	0.840		

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	STANK 1	30 Winter	30	+0%	30/15 Summer				8.081	0.081
S1.001	SFC1	30 Winter	30	+0%	30/15 Summer				8.088	0.088
S2.000	SPP1	120 Winter	30	+0%	30/30 Winter				8.318	0.018
S2.001	SPP FC1	120 Winter	30	+0%	30/30 Winter				8.344	0.044
S3.000	SBR1	360 Winter	30	+0%					20.396	-0.054
S3.001	SBR FC1	480 Winter	30	+0%	100/60 Winter				20.408	-0.042
S3.002	SDP1	480 Winter	30	+0%					8.267	-0.083
S2.002	S5	120 Winter	30	+0%					8.175	-0.075
S2.003	S6	120 Winter	30	+0%					8.023	-0.127
S4.000	SPP2	60 Winter	30	+0%	30/15 Winter				8.437	0.037
S4.001	SPP FC2	60 Winter	30	+0%	30/15 Winter				8.436	0.036
S2.004	S7	120 Winter	30	+0%					7.932	-0.118
S1.002	S3	60 Winter	30	+0%					7.786	-0.179

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	STANK 1	0.000	0.35		24	1.3	SURCHARGED	
S1.001	SFC1	0.000	0.12			1.3	SURCHARGED	
S2.000	SPP1	0.000	0.18		82	0.7	SURCHARGED	
S2.001	SPP FC1	0.000	0.09			0.6	SURCHARGED	
S3.000	SBR1	0.000	0.10		384	0.4	OK	
S3.001	SBR FC1	0.000	0.11			0.4	OK	
S3.002	SDP1	0.000	0.06			0.4	OK	
S2.002	S5	0.000	0.14			0.9	OK	
S2.003	S6	0.000	0.06			0.9	OK	
S4.000	SPP2	0.000	0.22		48	0.9	SURCHARGED	
S4.001	SPP FC2	0.000	0.21			0.8	SURCHARGED	

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

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S2.004	S7	0.000	0.11			1.7	OK	
S1.002	S3	0.000	0.09			2.9	OK	

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

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 4 Number of Storage Structures 4 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 20.000	Cv (Summer) 0.750
Region England and Wales		Ratio R 0.413	Cv (Winter) 0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	STANK 1	60 Winter	100	+40%	30/15 Summer				8.256	0.256
S1.001	SFC1	30 Winter	100	+40%	30/15 Summer				8.263	0.263
S2.000	SPP1	120 Winter	100	+40%	30/30 Winter				8.439	0.139
S2.001	SPP FC1	120 Winter	100	+40%	30/30 Winter				8.465	0.165
S3.000	SBR1	240 Winter	100	+40%					20.433	-0.017
S3.001	SBR FC1	360 Winter	100	+40%	100/60 Winter				20.496	0.046
S3.002	SDP1	240 Winter	100	+40%					8.272	-0.078
S2.002	S5	120 Winter	100	+40%					8.182	-0.068
S2.003	S6	120 Winter	100	+40%					8.031	-0.119
S4.000	SPP2	60 Winter	100	+40%	30/15 Winter				8.574	0.174
S4.001	SPP FC2	60 Winter	100	+40%	30/15 Winter				8.572	0.172
S2.004	S7	120 Winter	100	+40%					7.940	-0.110
S1.002	S3	60 Winter	100	+40%					7.796	-0.169

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	STANK 1	0.000	0.51		34	1.9	SURCHARGED	
S1.001	SFC1	0.000	0.17			1.8	SURCHARGED	
S2.000	SPP1	0.000	0.25		105	1.0	SURCHARGED	
S2.001	SPP FC1	0.000	0.13			0.8	SURCHARGED	
S3.000	SBR1	0.000	0.19		285	0.8	OK	
S3.001	SBR FC1	0.000	0.17			0.7	SURCHARGED	
S3.002	SDP1	0.000	0.10			0.7	OK	
S2.002	S5	0.000	0.23			1.5	OK	
S2.003	S6	0.000	0.09			1.5	OK	
S4.000	SPP2	0.000	0.33		59	1.3	SURCHARGED	
S4.001	SPP FC2	0.000	0.31			1.2	SURCHARGED	

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

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S2.004	S7	0.000	0.16			2.7	OK	
S1.002	S3	0.000	0.14			4.4	OK	

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 8 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	6.498	1.498	0.0	4.6	4.6	3.3	O K
30 min Summer	6.497	1.497	0.0	4.6	4.6	3.3	O K
60 min Summer	6.163	1.163	0.0	4.6	4.6	2.5	O K
120 min Summer	5.494	0.494	0.0	4.6	4.6	1.1	O K
180 min Summer	5.137	0.137	0.0	4.6	4.6	0.3	O K
240 min Summer	5.087	0.087	0.0	4.0	4.0	0.2	O K
360 min Summer	5.064	0.064	0.0	2.9	2.9	0.1	O K
480 min Summer	5.051	0.051	0.0	2.3	2.3	0.1	O K
600 min Summer	5.043	0.043	0.0	2.0	2.0	0.1	O K
720 min Summer	5.037	0.037	0.0	1.7	1.7	0.1	O K
960 min Summer	5.029	0.029	0.0	1.3	1.3	0.1	O K
1440 min Summer	5.021	0.021	0.0	1.0	1.0	0.0	O K
2160 min Summer	5.015	0.015	0.0	0.7	0.7	0.0	O K
2880 min Summer	5.012	0.012	0.0	0.6	0.6	0.0	O K
4320 min Summer	5.009	0.009	0.0	0.4	0.4	0.0	O K
5760 min Summer	5.007	0.007	0.0	0.3	0.3	0.0	O K
7200 min Summer	5.006	0.006	0.0	0.3	0.3	0.0	O K
8640 min Summer	5.005	0.005	0.0	0.2	0.2	0.0	O K
10080 min Summer	5.005	0.005	0.0	0.2	0.2	0.0	O K
15 min Winter	6.767	1.767	0.0	4.6	4.6	3.9	O K
30 min Winter	6.688	1.688	0.0	4.6	4.6	3.7	O K
60 min Winter	6.106	1.106	0.0	4.6	4.6	2.4	O K
120 min Winter	5.171	0.171	0.0	4.6	4.6	0.4	O K
180 min Winter	5.080	0.080	0.0	3.7	3.7	0.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	139.942	0.0	6.6	13
30 min Summer	91.303	0.0	8.6	22
60 min Summer	56.713	0.0	10.6	38
120 min Summer	34.038	0.0	12.8	68
180 min Summer	24.922	0.0	14.0	94
240 min Summer	19.863	0.0	14.9	122
360 min Summer	14.376	0.0	16.2	184
480 min Summer	11.430	0.0	17.1	242
600 min Summer	9.562	0.0	17.9	300
720 min Summer	8.260	0.0	18.6	360
960 min Summer	6.553	0.0	19.7	488
1440 min Summer	4.721	0.0	21.2	720
2160 min Summer	3.397	0.0	22.9	1076
2880 min Summer	2.686	0.0	24.2	1420
4320 min Summer	1.927	0.0	26.0	2140
5760 min Summer	1.522	0.0	27.4	2936
7200 min Summer	1.266	0.0	28.4	3544
8640 min Summer	1.089	0.0	29.4	4496
10080 min Summer	0.959	0.0	29.9	4896
15 min Winter	139.942	0.0	7.3	14
30 min Winter	91.303	0.0	9.6	23
60 min Winter	56.713	0.0	11.9	40
120 min Winter	34.038	0.0	14.3	68
180 min Winter	24.922	0.0	15.7	94

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
240 min Winter	5.064	0.064	0.0	2.9	2.9	0.1	O K
360 min Winter	5.046	0.046	0.0	2.1	2.1	0.1	O K
480 min Winter	5.037	0.037	0.0	1.7	1.7	0.1	O K
600 min Winter	5.031	0.031	0.0	1.4	1.4	0.1	O K
720 min Winter	5.027	0.027	0.0	1.2	1.2	0.1	O K
960 min Winter	5.021	0.021	0.0	1.0	1.0	0.0	O K
1440 min Winter	5.015	0.015	0.0	0.7	0.7	0.0	O K
2160 min Winter	5.011	0.011	0.0	0.5	0.5	0.0	O K
2880 min Winter	5.009	0.009	0.0	0.4	0.4	0.0	O K
4320 min Winter	5.007	0.007	0.0	0.3	0.3	0.0	O K
5760 min Winter	5.005	0.005	0.0	0.2	0.2	0.0	O K
7200 min Winter	5.005	0.005	0.0	0.2	0.2	0.0	O K
8640 min Winter	5.004	0.004	0.0	0.2	0.2	0.0	O K
10080 min Winter	5.004	0.004	0.0	0.2	0.2	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
240 min Winter	19.863	0.0	16.7	124
360 min Winter	14.376	0.0	18.1	184
480 min Winter	11.430	0.0	19.2	240
600 min Winter	9.562	0.0	20.1	306
720 min Winter	8.260	0.0	20.8	374
960 min Winter	6.553	0.0	22.0	490
1440 min Winter	4.721	0.0	23.8	724
2160 min Winter	3.397	0.0	25.7	1076
2880 min Winter	2.686	0.0	27.1	1452
4320 min Winter	1.927	0.0	29.1	2212
5760 min Winter	1.522	0.0	30.7	2936
7200 min Winter	1.266	0.0	31.9	3672
8640 min Winter	1.089	0.0	32.9	4544
10080 min Winter	0.959	0.0	33.6	4960

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.415	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.025

Time (mins) From:	To:	Area (ha)
0	4	0.025

Model Details

Storage is Online Cover Level (m) 10.000

Cellular Storage Structure

Invert Level (m) 5.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	2.3	2.3	1.800	2.3	12.0	1.801	0.0	14.3

Pump Outflow Control

Invert Level (m) 5.000

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.6000	0.700	4.6000	1.300	4.6000	1.900	4.6000	2.500	4.6000
0.200	4.6000	0.800	4.6000	1.400	4.6000	2.000	4.6000	2.600	4.6000
0.300	4.6000	0.900	4.6000	1.500	4.6000	2.100	4.6000	2.700	4.6000
0.400	4.6000	1.000	4.6000	1.600	4.6000	2.200	4.6000	2.800	4.6000
0.500	4.6000	1.100	4.6000	1.700	4.6000	2.300	4.6000	2.900	4.6000
0.600	4.6000	1.200	4.6000	1.800	4.6000	2.400	4.6000	3.000	4.6000

LONDON BOROUGH OF RICHMOND UPON THAMES

GREATER**LONDON**AUTHORITY

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1. Project & Site Details

Project / Site Name (including sub-catchment / stage / phase where appropriate)	Richmond Inn
Address & post code	50 - 56 Sheen Road, Richmond, TW9 1UG
OS Grid ref. (Easting, Northing)	E 518335
	N 175018
LPA reference (if applicable)	
Brief description of proposed work	Partial demolition of existing building and new construction for physio led rehabilitation centre
Total site Area	1400 m^2
Total existing impervious area	1320 m^2
Total proposed impervious area	1100 m^2
Is the site in a surface water flood risk catchment (ref. local Surface Water Management Plan)?	No
Existing drainage connection type and location	Gravity connection to public sewer in Church St
Designer Name	Harry Hunter
Designer Position	Senior Civil Engineer
Designer Company	Elliott Wood

2. Proposed Discharge Arrangements

2a. Infiltration Feasibility

Superficial geology classification	None	
Bedrock geology classification	London Clay	
Site infiltration rate	0	m/s
Depth to groundwater level	N/A	m below ground level
Is infiltration feasible?		

2b. Drainage Hierarchy

	Feasible (Y/N)	*Proposed (Y/N)*
1 store rainwater for later use	N	N
2 use infiltration techniques, such as porous surfaces in non-clay areas	N	N
3 attenuate rainwater in ponds or open water features for gradual release	N	N
4 attenuate rainwater by storing in tanks or sealed water features for gradual release	Y	Y
5 discharge rainwater direct to a watercourse	N	N
6 discharge rainwater to a surface water sewer/drain	Y	Y
7 discharge rainwater to the combined sewer.	N	N

2c. Proposed Discharge Details

Proposed discharge location	To Thames Water Sewer 3009
Has the owner/regulator of the discharge location been consulted?	Yes

LONDON BOROUGH OF RICHMOND UPON THAMES

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3. Drainage Strategy

3a. Discharge Rates & Required Storage

	Greenfield (GF) runoff rate (l/s)	*Existing discharge rate (l/s)*	*Required storage for GF rate (m^3)*	*Proposed discharge rate (l/s)*
Qbar	0.21			
1 in 1	0.18	12	244	6
1 in 30	0.49	30.3	328	705
1 in 100	0.69	38.7	332	8.2
1 in 100 + CC				9
Climate change allowance used		40%		
3b. Principal Method of Flow Control		Orifice Plate		

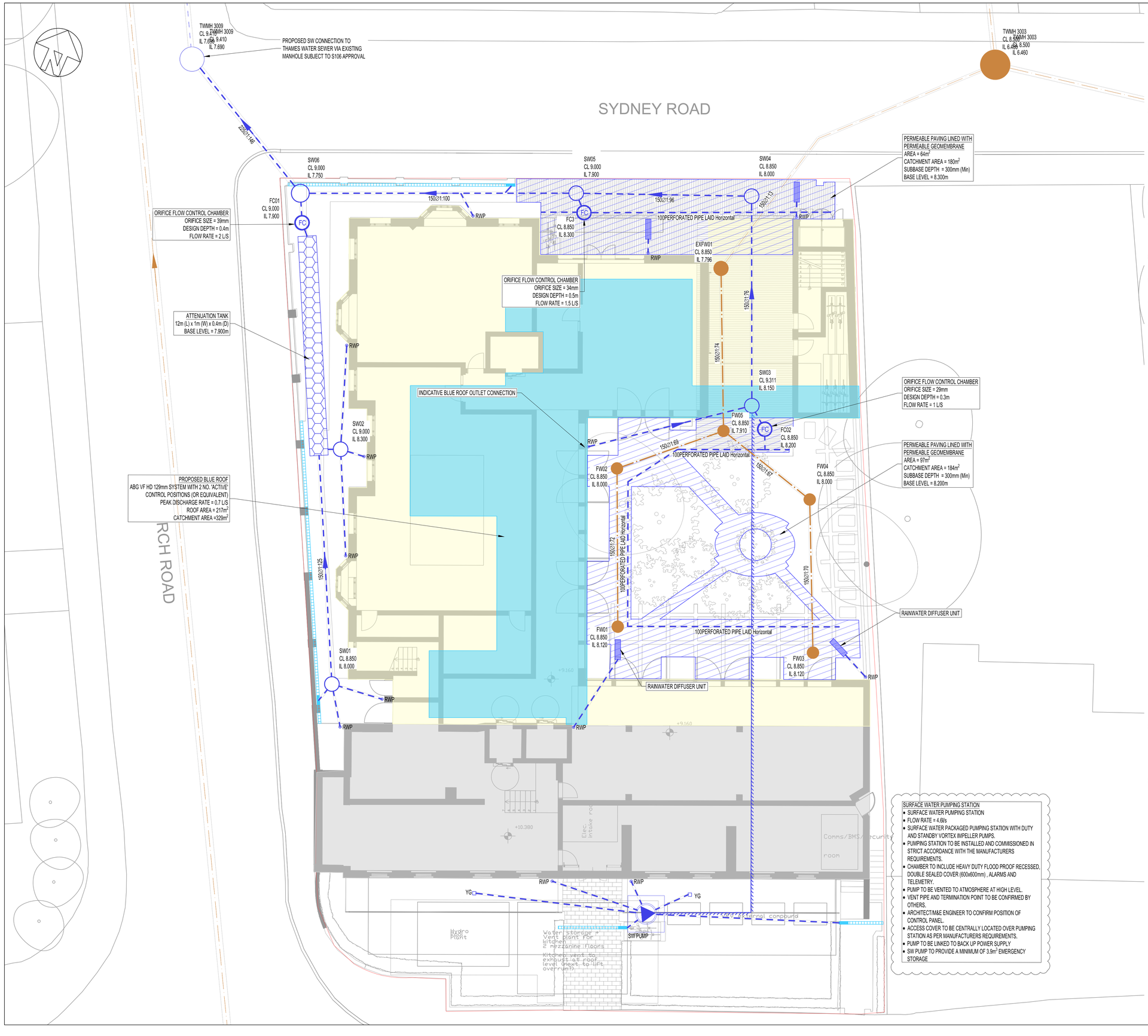
3c. Proposed SuDS Measures

	Catchment area (m^2)	*Plan area (m^2)*	*Storage vol. (m^3)*
Rainwater harvesting	0		0
Infiltration systems	0		0
Green roofs	0	0	0
Blue roofs	329	217	21
Filter strips	0	0	0
Filter drains	0	0	0
Bioretention / tree pits	0	0	0
Pervious pavements	360	160	9
Swales	0	0	0
Basins/ponds	0	0	0
Attenuation tanks	200		16
Total	**889**	**377**	**46**

4. Supporting Information

4a. Discharge & Drainage Strategy	*Page/section of drainage report*
Infiltration feasibility (2a) – geotechnical factual and interpretive reports, including infiltration results	Chapter 4, 7
Drainage hierarchy (2b)	Chapter 7
Proposed discharge details (2c) – utility plans, correspondence / approval from owner/regulator of discharge location	Chapter 7, App H
Discharge rates & storage (3a) – detailed hydrologic and hydraulic calculations	Chapter 7
Proposed SuDS measures & specifications (3b)	Chapter 7
4b. Other Supporting Details	*Page/section of drainage report*
Detailed Development Layout	App E
Detailed drainage design drawings, including exceedance flow routes	App I
Detailed landscaping plans	App E
Maintenance strategy	Chapter 8
Demonstration of how the proposed SuDS measures improve:	
a) water quality of the runoff?	Chapter 7
b) biodiversity?	Chapter 7
c) amenity?	Chapter 7

Proposed Drainage Strategy



SURFACE WATER PUMPING STATION
- SURFACE WATER PUMPING STATION
- FLOW RATE = 4.8l/s
- SURFACE WATER PACKAGED PUMPING STATION WITH DUTY AND STANDBY VORTEX IMPELLER PUMPS.
- PUMPING STATION TO BE INSTALLED AND COMMISSIONED IN STRICT ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS.
- CHAMBER TO INCLUDE HEAVY DUTY FLOOD PROOF RECESSED, DOUBLE SEALED COVER (600x600mm) , ALARMS AND TELEMETRY.
- PUMP TO BE VENTED TO ATMOSPHERE AT HIGH LEVEL.
- VENT PIPE AND TERMINATION POINT TO BE CONFIRMED BY OTHERS.
- ARCHITECT/M&E ENGINEER TO CONFIRM POSITION OF CONTROL PANEL.
- ACCESS COVER TO BE CENTRALLY LOCATED OVER PUMPING STATION AS PER MANUFACTURERS REQUIREMENTS.
- PUMP TO BE LINKED TO BACK UP POWER SUPPLY
- SW PUMP TO PROVIDE A MINIMUM OF 3.9m³ EMERGENCY STORAGE

BELOW GROUND DRAINAGE NOTES

1. THE LOCATION AND LEVEL OF EXISTING DRAINAGE CONNECTIONS AND EXISTING SERVICES IS TO BE CHECKED PRIOR TO COMMENCEMENT OF DRAINAGE WORKS. ANY VARIANCE TO THE DETAILS ON THIS DRAWING AND THE SCHEDULE IS TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
2. THE DESIGN IS BASED ON THE INFORMATION AVAILABLE ON THE DATE OF ISSUE FROM OTHER PARTIES (EG. ARCHITECT AND M & E ENGINEER), IT IS SUBJECT TO CHANGE RESULTING FROM UPDATES TO THE AVAILABLE INFORMATION FROM OTHERS.
3. THE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE NBS SPECIFICATIONS, ASSOCIATED MANHOLE SCHEDULE AND STANDARD DRAINAGE DETAIL DRAWINGS WHERE APPLICABLE.
4. THE POSITIONS OF FOUL AND SURFACE WATER DRAINAGE POINTS ARE INDICATIVE ONLY, REFER TO THE ARCHITECTS DRAWINGS FOR SETTING OUT DETAILS.
5. PRIVATE FOUL AND SURFACE WATER DRAINAGE IS TO BE CONSTRUCTED IN ACCORDANCE WITH BUILDING REGULATIONS PART H, BS EN752 AND BS EN12056.
6. DRAINS AT BASEMENT LEVEL ARE TO BE CONSTRUCTED USING CAST IRON (ENSIGN OR EQUIVALENT) AND FLEXIBLY JOINTED TO BS 437.
7. DRAINS AT GROUND LEVEL ARE TO BE CONSTRUCTED USING VITRIFIED CLAY PIPES TO BS EN 295-1 SUPER STRENGTH SPECIFICATION (HEPWORTH SUPERSLEVE) OR SIMILAR APPROVED.
8. ALL SOIL CONNECTIONS UNDER BUILDINGS TO BE 100mm DIA LAID AT A MINIMUM GRADIENT OF 1/40 UNLESS NOTED OTHERWISE.
9. ALL SURFACE WATER CONNECTIONS TO BE 150mm DIAMETER AND TO BE LAID AT A MINIMUM GRADIENT OF 1/80 UNLESS NOTED OTHERWISE .
10. ALL SOIL CONNECTIONS AND RAINWATER PIPES SHOULD BE RODDABLE FROM GROUND LEVEL.
11. RAINWATER DOWN PIPES ARE TO CONNECT TO A DRAIN VIA A REST BEND. WHERE DRAINAGE IS COMBINED A 'P' TRAP MUST ALSO BE PROVIDED.
12. IN CASES OF IN SITU CONCRETE FLOOR SLABS, DRAINS ARE TO BE CAST INTEGRAL WITH THE SLAB WHERE PIPE COVER TO THE CROWN IS LESS THAN 300mm. - NOTE SPECIAL PROVISIONS APPLY TO BASEMENT FLOOR SLABS - SEE DETAILED DRAINAGE AND STRUCTURAL DRAWINGS. CONCRETE ENCASEMENT TO BE REINFORCED AS PER DRAINAGE DETAIL.
13. IN CASES OF SUSPENDED FLOORS WHERE A VOID OF 300mm OR MORE EXISTS BELOW FLOOR DRAINS ARE TO BE SUSPENDED USING A PROPRIETARY HANGER SYSTEM OR CAST INTEGRAL WITH THE FLOOR.
14. WHERE DRAINS PASS THROUGH FOUNDATIONS OR OTHER RIGID STRUCTURES A LINTEL OR SLEEVE IS TO BE USED AND PROVISION FOR FLEXIBILITY IS TO BE MADE USING ROCKER PIPES.
15. BACKFILLING OF DRAIN TRENCHES ADJACENT TO BUILDING OR OTHER STRUCTURES IS TO BE IN ACCORDANCE WITH DIAGRAM 8 OF THE BUILDING REGULATIONS.
16. ANY PIPE OR GULLY OR OTHER FITTING OR DUCT PENETRATING THE BASEMENT SLAB OR WALL IS TO BE WATERPROOFED USING HYDROPHILIC STRIPS OR PUDDLE FLANGES TO ENSURE A WATER TIGHT JOINT. CONCRETE SURROUND TO DRAINAGE PIPES AND FITTINGS MAY BE REQUIRED IN CERTAIN CASES - REFER TO DETAILED DRAINAGE DRAWINGS AND RELEVANT STRUCTURAL DETAILS.
17. EXISTING FOUNDATIONS AND RETAINING WALLS MUST NOT BE UNDERMINED BY NEW DRAINAGE RUNS UNLESS AGREED IN WRITING WITH THE STRUCTURAL ENGINEER. CONTRACTOR TO SUBMIT METHOD STATEMENTS AND TEMPORARY WORKS PROPOSALS TO THE STRUCTURAL ENGINEER FOR COMMENT PRIOR TO COMMENCEMENT OF WORKS.
18. ALL DRAINAGE EXCAVATIONS SHOULD BE RISK ASSESSED BY THE CONTRACTOR TO ENSURE TRENCH SAFETY / STABILISATION MEASURES ARE CONSIDERED DURING THE CONSTRUCTION PERIOD. ANY EXCAVATIONS LEFT EXPOSED SHOULD BE INSPECTED BY A COMPETENT PERSON ON A DAILY BASIS. GROUND CONDITIONS SHOULD BE MONITORED AND TOOL BOX TALKS SHOULD INCLUDE SITE INVESTIGATION INFORMATION TO AID THE CONTRACTORS ONGOING RISK ASSESSMENT AND METHOD OF EXCAVATION. ALL EXCAVATIONS SHOULD BE ASSESSED BY A COMPETENT PERSON FOR CONFINED SPACES REQUIREMENTS.
19. THE CONTRACTOR IS TO CONSIDER PHASING OF THE DRAINAGE INSTALLATION AND ARE TO PROVIDE TEMPORARY DRAINAGE MEASURES THEY DETERMINE ARE REQUIRED.
20. SuDS ARE TO BE INSTALLED IN ACCORDANCE WITH THE RECOMMENDATIONS MADE WITHIN THE CIRIA SUDS MANUAL C753 (WITH PARTICULAR ATTENTION DRAWN TO CHAPTER 31) AND CIRIA GUIDANCE ON THE CONSTRUCTION OF SuDS C768. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONSIDER CONSTRUCTION PROGRAMME OF SuDS.
21. DETAILED DESIGN OF GEOCELLULAR ATTENUATION CRATES IS A CDP ITEM AND SHOULD BE BASED ON LEVEL, LAYOUT AND VOLUME DETAILS SHOWN. DETAILED DESIGN INFORMATION SHOULD BE PROVIDED TO THE CIVIL ENGINEER TO PASS COMMENT.

This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.

Do not scale from this drawing.

LEGEND
- FOUL WATER MANHOLE
- SURFACE WATER MANHOLE
- EXISTING FOUL WATER
- PROPOSED FOUL WATER
- EXISTING SURFACE WATER
- PROPOSED SURFACE WATER
- PROPOSED SURFACE WATER PACKAGED PUMPING STATION
- PROPOSED SURFACE WATER RISING MAIN
- PROPOSED LINEAR CHANNEL WITH HEELGUARD GRATING
- YG TRAPPED YARD GULLY
- RWP RAIN WATER PIPE
- GEOCELLULAR SURFACE WATER ATTENUATION (TO CONTRACTOR DESIGN)
- PROPOSED BLUE ROOF
- PROPOSED PERMEABLE PAVING LINED WITH PERMEABLE GEOTEXTILE
- FC FLOW CONTROL CHAMBER
- EXISTING BUILDING
- PROPOSED BUILDING

NOT FOR CONSTRUCTION

rev	sc	date	by	chk	description
P3	S2	06.07.22	HHu	PDa	Planning Issue
P2	S2	05.05.22	HHu	KTr	Planning Issue
P1	S2	14.04.22	HHu	KTr	Draft Issue for Planning

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Project
Richmond Inn,
50-56 Sheen Road,
Richmond, TW9 1UG

Drawing title
Proposed Below Ground Drainage

Scale (s)	Date	Drawn
1:100@ A1; 1:200@ A3	April 2022	HHu

Drawing status: Preliminary — Status S2 — Revision P3

Project no. 2210561 - Originator EWP - Zone ZZ - Level 00 - Type DR - Role C - drg no. 1000

J Thames Water Pre-App Response

Mr Harry Hunter

Elliott Wood
55 Whitfield Street
London

W1T 4AH

Wastewater pre-planning
Our ref DS6094443

04 May 2022

Pre-planning enquiry: Confirmation of sufficient capacity (Foul Water)

Site Address: Richmond Inn, 50-56 Sheen Road, London, TW9 1UG

Dear Harry,

Thank you for providing information on your development.

Proposed site: *Hotel redevelopment into a 57 room rehabilitation centre. Proposed foul water connection by gravity into existing foul water sewer on site which then connects into a foul water sewer in Church Road*

We have completed the assessment of the foul water flows and surface water run-off based on the information submitted in your application with the purpose of assessing sewerage capacity within the existing Thames Water sewer network.

Foul Water

If your proposals progress in line with the details you've provided, we're pleased to confirm that there will be sufficient sewerage capacity in the adjacent foul water network to serve your development.

This confirmation is valid for 12 months or for the life of any planning approval that this information is used to support, to a maximum of three years.

You'll need to keep us informed of any changes to your design – for example, an increase in the number or density of homes. Such changes could mean there is no longer sufficient capacity.

What happens next?

Please make sure you submit your connection application, giving us at least 21 days' notice of the date you wish to make your new connection/s.

If you've any further questions, please contact me on 020 3577 XXXX.

Yours sincerely

Natalya Collins
Developer Services – Adoptions Engineer
Mobile: 07747 641 932
Clearwater Court, Vastern Road, Reading, RG1 8DB
Find us online at developers.thameswater.co.uk
Get advice on making your sewer connection correctly at connectright.org.uk

Harry Hunter

From: DEVELOPER.SERVICES@THAMESWATER.CO.U <DEVELOPER.SERVICES@THAMESWATER.CO.UK>
Sent: 28 June 2022 12:41
To: Harry Hunter
Subject: RE: RE: DS6094443 2210561 - 50-56 Sheen Road, Richmond, TW9 1UG Capacity Enquiry

Follow Up Flag: Follow up
Flag Status: Completed

Hi Harry,

We have received a response from the asset planner, they state that the proposal could be acceptable if the site follows The London plan's minimum 50% flow reduction guidance which is 6l/s. At the moment you have provided 46% betterment for 1in1 year.

Kind Regards

Natalya

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