

10th May 2023

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Vine Street, Gorton – Planning Ref 128864/OO/2020

5014278

Ridge have prepared this technical note to provide a information in relation to Planning Conditions 19 and 20, for Planning Reference 128864/OO/2020.

A response to the points raised in the email of 28th April 2023 and subsequent meeting on 3rd May 2023 are included within this TN.

19. No development shall take place until culvert investigation has been undertaken in accordance with the proposal received via email from Paul Graveney (Sent: 05 February 2021 17:10; Subject: RE: call summary - 128864/OO/2020) including attachment 'Vine Street - Culvert Trial Trench.pdf'. This should include verification photos for evidence of investigation as-proposed. If the culvert is proven present, the precise route, condition, capacity and connectivity of the culvert should be determined across the whole site. Results of the investigation shall be submitted to and approved in writing by the Local Planning Authority.

Reason- To reduce the risk of flooding, and to reduce the associated flood risk and danger of collapse of culverts pursuant to policy EN14 of the Manchester Core Strategy (2012).

20. No development shall take place until surface water drainage works have been implemented in accordance with Non-Statutory Technical Standards for Sustainable Drainage Systems (March 2015) or any subsequent replacements national standards and details that have been submitted to and approved in writing by the Local Planning Authority. The development shall be implemented in accordance with the approved details.

Reason - To promote sustainable development, secure proper drainage and to manage the risk of flooding and pollution, pursuant national policies within the NPPF and NPPG and policies EN08 and EN14 of the Manchester Core Strategy (2012).

Ref	Ridge Information	
19	<p>Please see Appendix A for the results of the agreed investigation into the location of the proposed culvert. Appendix A includes extracts from the E3P investigation Trial Trench agreed with the LLFA.</p> <p>The trial trench was undertaken between the 20th and 25th October 2021.</p> <p>No culvert or remnants were located.</p>	
20	<p>As part of Planning condition 3, Approved documents – The drainage design is to be undertaken in accordance with the Flood Risk Assessment and Drainage Strategy Revision 2 – December 2020 (FRA).</p> <p>As Part of the FRA the drainage hierarchy was investigated and discharge to the surface water sewer in Vine Street was accepted as the most sustainable solution. UU agreed a discharge rate of 8 l/s.</p> <p>The proposed drainage design has been developed and drainage drawings (Appendix B) and Calculations (Appendix C have been provided).</p>	

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DRAWING LIST

14-944-001	Site Location Plan
14-944-002	Proposed Development Plan
14-944-003	Historical Features Plan
14-944-004	Site Features Plan
14-944-005	Exploratory Hole Location Plan
14-944-006	Depth of Made Ground Plan
14-944-010	Conceptual Site Model



2.2. GENERAL OVERVIEW

A ground investigation has been designed based on the findings of the desk study, with exploratory holes advanced to target specific potential contaminant sources identified within the previous site investigations and Phase I report made available to E3P. The investigation has also been used to collect geotechnical information to assist in the design and construction of the proposed development.

Trial pitting and window sampling was completed on 31st of August 2021. Cable percussive boreholes were completed between the 20th to 25th October 2021. The works are summarised in Table 2.1 below.

2.3. SCOPE OF INVESTIGATION

TABLE 2.1 SUMMARY OF FIELDWORK

POTENTIAL SOURCE / RATIONALE	LOCATION HOLE	TYPE	MAXIMUM DEPTH (m bgl)	MONITORING WELLS RESPONSE ZONE (m bgl)
Investigate and sample Made Ground including the Presence / Nature of Obstructions. Collection of geotechnical data.	WS101	Window Sample Probehole	0.81	N/A
	WS101A		0.78	
	WS102		0.58	
	WS102A		3.30	1.00–3.00
	WS103		0.20	N/A
	WS103A		0.48	
	WS104		3.30	1.00–2.50
	WS105		1.22	N/A
	WS105A		0.68	
	WS106		0.31	
	WS106A		0.77	
Investigate and sample Made Ground including the Presence / Nature of Obstructions.	TP101	Mechanically excavated trial pit	2.9	1.00 – 2.00
	TP102		0.7	
	TP103		2.7	
	TP104		1.8	N/A
	TP105		2.3	
	TP106		1.9	
	TP107		2.1	
	TP108		1.2	
Prove depth of Made Ground and investigate underlying natural ground conditions. Collection of geotechnical data.	CP101	Cable Percussive Boreholes	15.45	N/A
	CP102		15.45	
	CP103		15.45	
	CP104		15.45	
Investigate Suspected Culvert	TT101	Trial Trench	6.50	N/A



5.7. CULVERT TRENCH

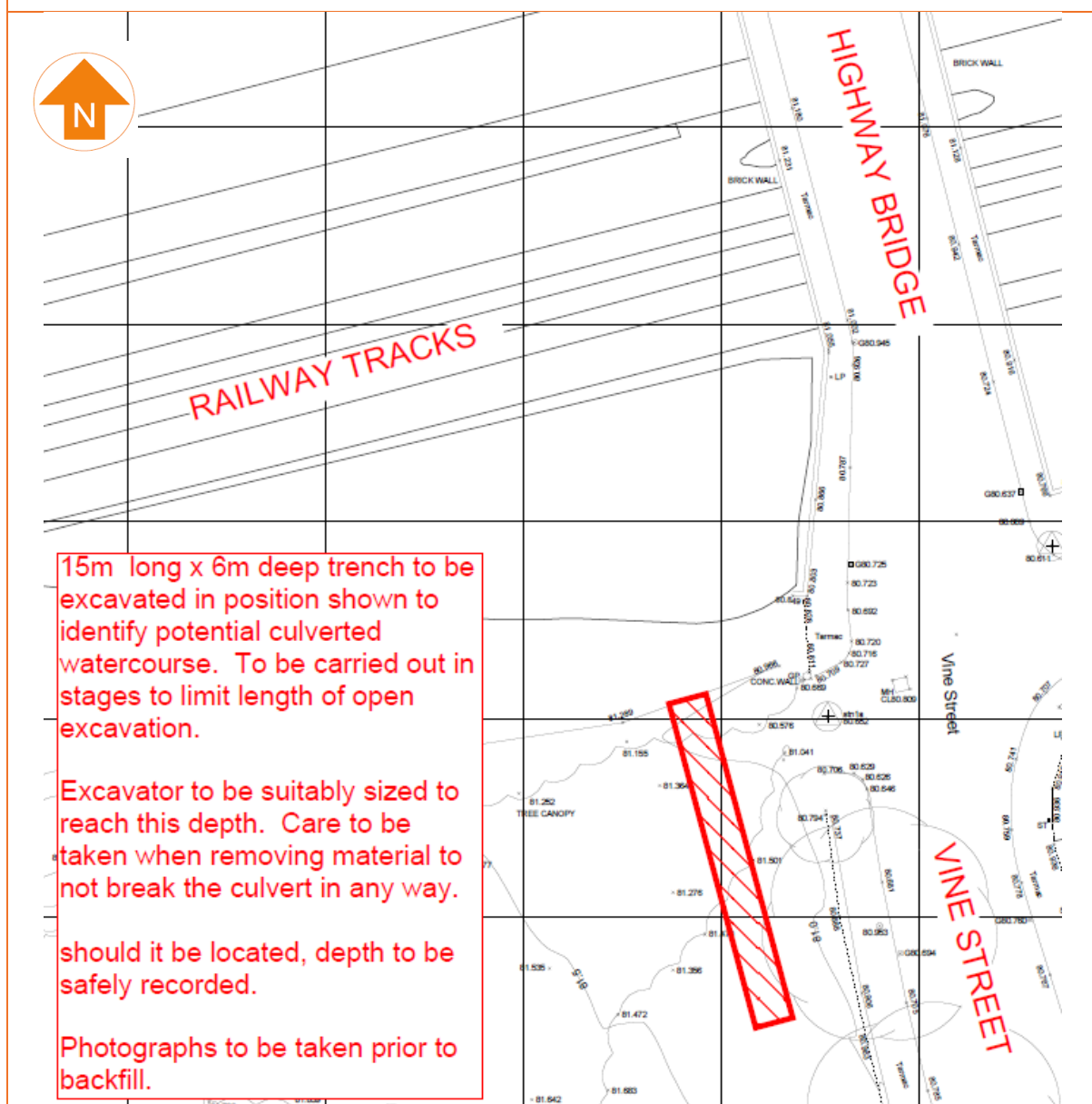
E3P were informed a history culvert may underlie the eastern portion of the site at a depth of 6.00m bgl.

To locate the trench, a 15m long and 6.50m deep slit trench was excavated in a north to south orientation as per the location plan provided by the client (presented in Figure 5.1 below)

No evidence of the culvert was encountered within the trench and photographs of the excavation are presented in Appendix IV.

However, during the enabling works, it is recommended that a watching brief is completed in this area to confirm the presence or absence of the feature.

FIGURE 5.1 CULVERT TRENCH LOCATION PLAN





ONLY MANHOLES AND SERVICES VISIBLE AT TIME OF SURVEY SHOWN

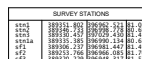
DRAINAGE INFORMATION MUST BE CHECKED AND VERIFIED WITH LOCAL AUTHORITY RECORDS PRIOR TO WORK COMMENCING

Levels defining edge of carriageway are observed at channel (bottom of kerb). Unless otherwise stated.

TREE SPREADS ARE SYMBOLIC ONLY AND ARE REPRESENTATIVE OF THE AVERAGE SPREAD.

THE DRAIN INF. LAYER DENOTES THE TREE'S EXTREMITY

REV	DESCRIPTION	DRAWN	CHKD.	DATE
A	TOPOGRAPHICAL SURVEY UPDATED AS REQUESTED	SS	PSH	26.02.2019



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King Street,
Wigan
WN1 1BT
Tel: 01942 263333
Fax: 01942 495230
Mobile: 07719 426958
Email: info@jlp.co.uk

SCALE	SHEET SIZE	No. of SHEETS	DATE	REVISION
1:500	A0	1	29.05.18	A

ORIGINAL NUMBER

S18-442

--	--

Boro Const and Ward Bdy

PLATE 3 VIEW OF WASTE STOCKPILES IN THE WESTERN SECTOR



PLATE 4 EXCAVATION FOR CULVERT TRENCH (EASTERN SECTOR)



PLATE 5

EXCAVATION FOR CULVERT TRENCH (EASTERN SECTOR)



PLATE 6

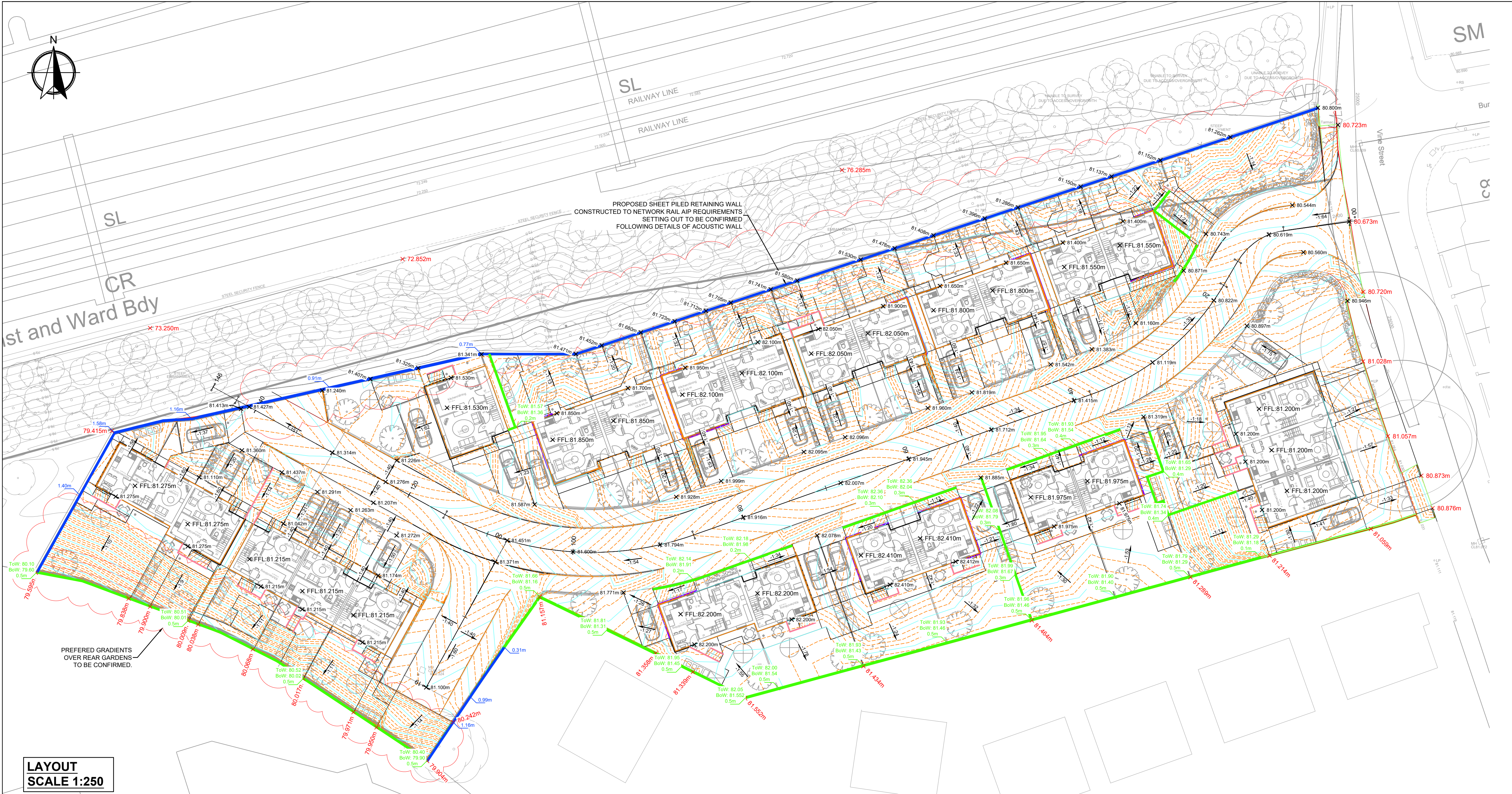
EXAMPLE OF SHALLOW GRANULAR MADE GROUND (TP106)



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APPENDIX B –



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DRAWING NOTES:

- CONTOURS, MAJOR (0.1m INCREMENTS)
- CONTOURS, MINOR (0.025m INCREMENTS)
- SLOPE GRADIENT (FALL)
- SLOPE GRADIENT (RISE)
- EXISTING SPOT LEVEL
- PROPOSED SPOT LEVEL
- PROPOSED RETAINING HEIGHT (FoE)
- TOP RETAINING LEVEL (FoE)
- BOTTOM RETAINING LEVEL (FoE)
- PROPOSED RETAINING HEIGHT (RW)
- PROPOSED FLAG ON EDGE / DWARF WALL
- PROPOSED RETAINING WALL
- PROPOSED FACED SHEET PILED RETAINING WITH 1.2M UPSTAND
- PROPOSED SITE BOUNDARY
- PROPOSED TIE IN TO EXISTING LEVELS
- PROPOSED STEP IN LEVELS
- TREE PROTECTION AREA

FOR THE CUT AND FILL ANALYSIS THE FOLLOWING HAS BEEN ASSUMED:

- SITE STRIP OF - 100mm (COLOURED AREA ONLY)
- CUT MATERIAL IS SUITABLE TO BE GRADED AND REUSED AS FILL

ASSUMED FORMATION DEPTHS

PROPOSED LANDSCAPING	- 600mm
PROPOSED DRIVEWAY PARKING	- 380mm
PROPOSED BUILDING FOOTPRINT	- 610mm
PROPOSED PRIVATE FOOTWAY	- 230mm
PROPOSED ROAD	- 730mm
PROPOSED PUBLIC FOOTPATH	- 295mm
PILING MAT (3m OFFSET)	- 600mm

ASSUMED ARISING

TBC

P05	PROPOSED LEVELS UPDATED TO SUIT LATEST ARCHITECTS LAYOUT	03.05.23	LWP	PB
P04	ROAD LEVELS AND WESTERN PLOTS AMENDED TO SUIT DRAINAGE REQUIREMENTS	24.04.23	LWP	PB
P03	MINOR AMENDMENTS TO WEST RETAINING WALL POSITION	19.04.23	LWP	PB
P02	REVISED TO SUIT UPDATED ARCHITECTS SITE LAYOUT	14.04.23	LWP	PB
P01	ISSUED FOR COMMENT	28.10.20	AS	PG
REV	DESCRIPTION	DATE	BY	CHKD

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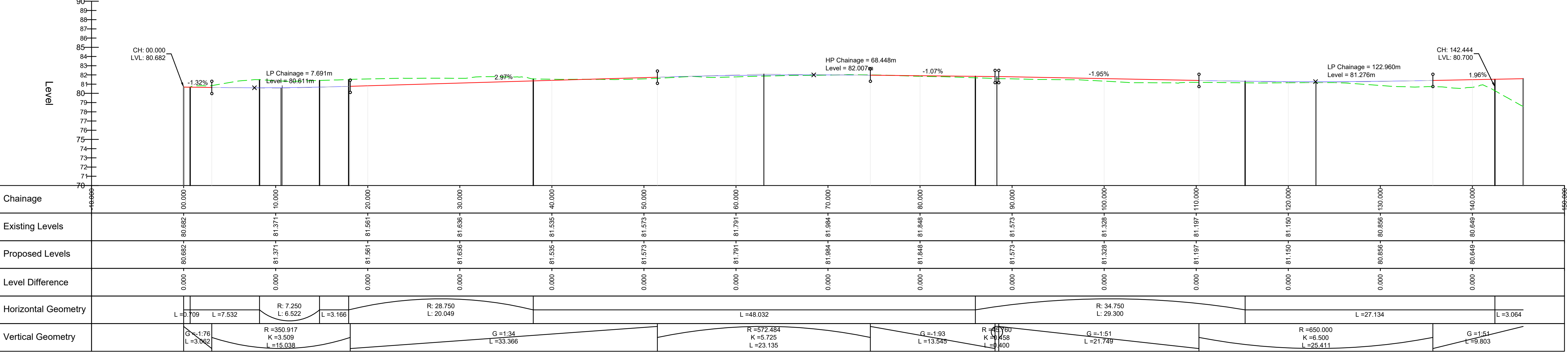
IN ASSOCIATION WITH:

PROJECT:
VINE STREET GORTON

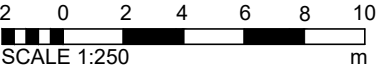
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PROPOSED FINISHED LEVELS

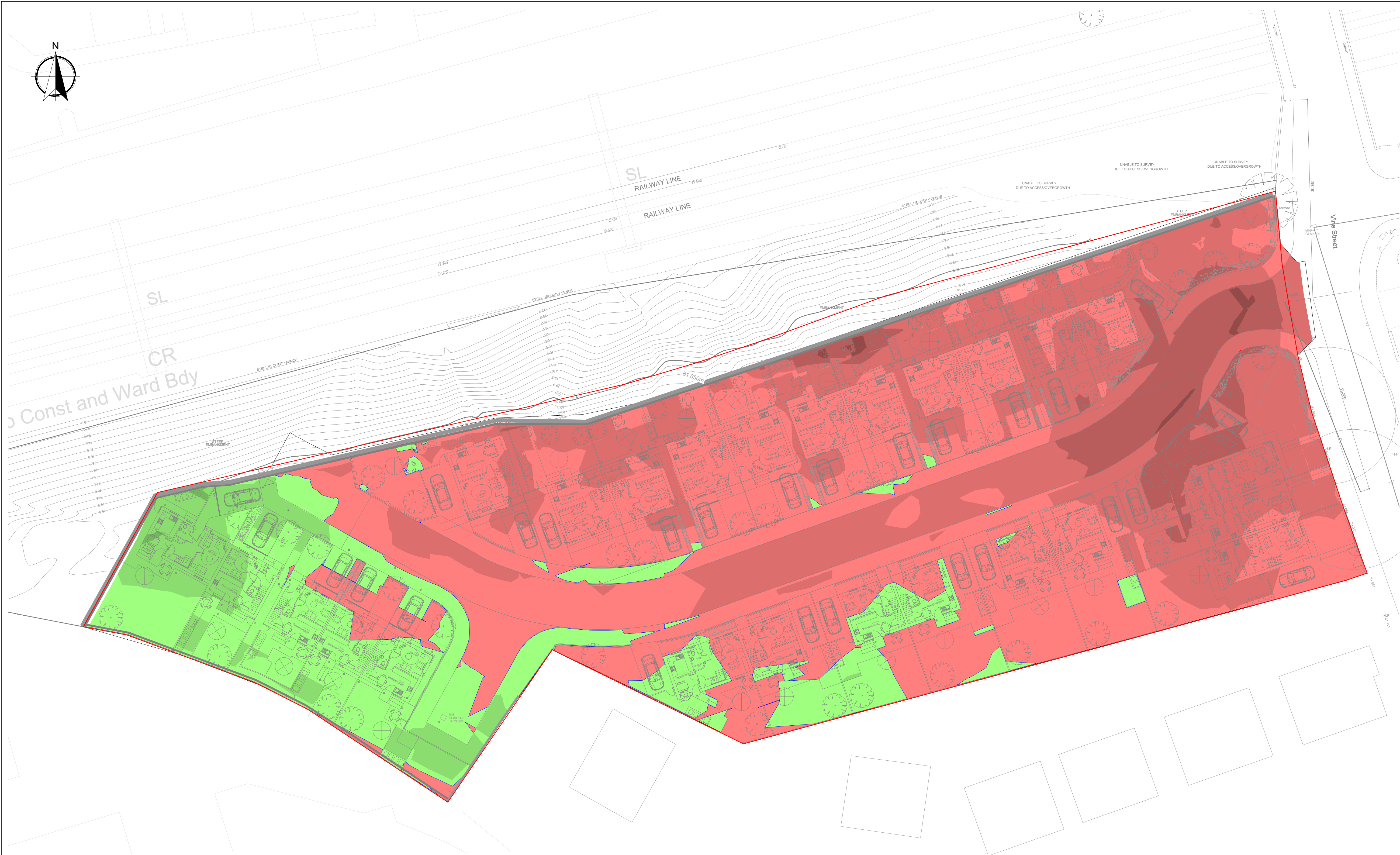
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AS	PG	PB	STATUS ISSUEPRELIMINARY				
STATUS: PRELIMINARY							
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VSG	RDG	XX	XX	DR	C	0001	P05

LAYOUT
SCALE 1:250



ROAD LONGSECTION
SCALE 1:250





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DRAWING NOTES:

KEY

SITE BOUNDARY	
0.0m - 0.5m CUT	0.0m - 0.5m FILL
0.5m - 1.0m CUT	0.5m - 1.0m FILL
1.0m - 1.5m CUT	1.0m - 1.5m FILL
1.5m - 2.0m CUT	1.5m - 2.0m FILL

FOR THE CUT AND FILL ANALYSIS THE FOLLOWING HAS BEEN ASSUMED.

- SITE STRIP OF - 100mm (COLOURED AREA ONLY)
- CUT MATERIAL IS SUITABLE TO BE GRADED AND REUSED AS FILL

ASSUMED FORMATION DEPTHS

PROPOSED LANDSCAPING	- 600mm
PROPOSED DRIVEWAY PARKING	- 380mm
PROPOSED BUILDING FOOTPRINT	- 610mm
PROPOSED PRIVATE FOOTWAY	- 230mm
PROPOSED ROAD	- 730mm
PROPOSED PUBLIC FOOTPATH	- 295mm
PILING MAT (3m OFFSET)	- 600mm

ASSUMED ARISING

TBC

FOR THE CUT AND FILL ANALYSIS SUMMARY

EXISTING SITE STRIP VOLUME = 595m³ [CUT]

EXISTING STRIP LEVEL TO FORMATION LEVEL VOLUME:

- = 2240m³ [CUT]
- = 381m³ [FILL]
- = NET = 1859 [CUT]

P04	AMENDED TO SUIT REVISED SITE LAYOUT AND UPDATED PROPOSED LEVELS	04.05.23	LWP	PB
P03	REVISED TO SUIT UPDATED PROPOSED LEVELS, ROAD AND WESTERN PLOT RAISED TO SUIT DRAINAGE	21.04.23	LWP	PB
P02	REVISED TO SUIT UPDATED ARCHITECTS SITE LAYOUT	14.04.23	LWP	PB
P01	ISSUED FOR COMMENT	28.10.20	AS	PG
REV	DESCRIPTION	DATE	BY	CHKD



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PROJECT:

VINE STREET
GORTON

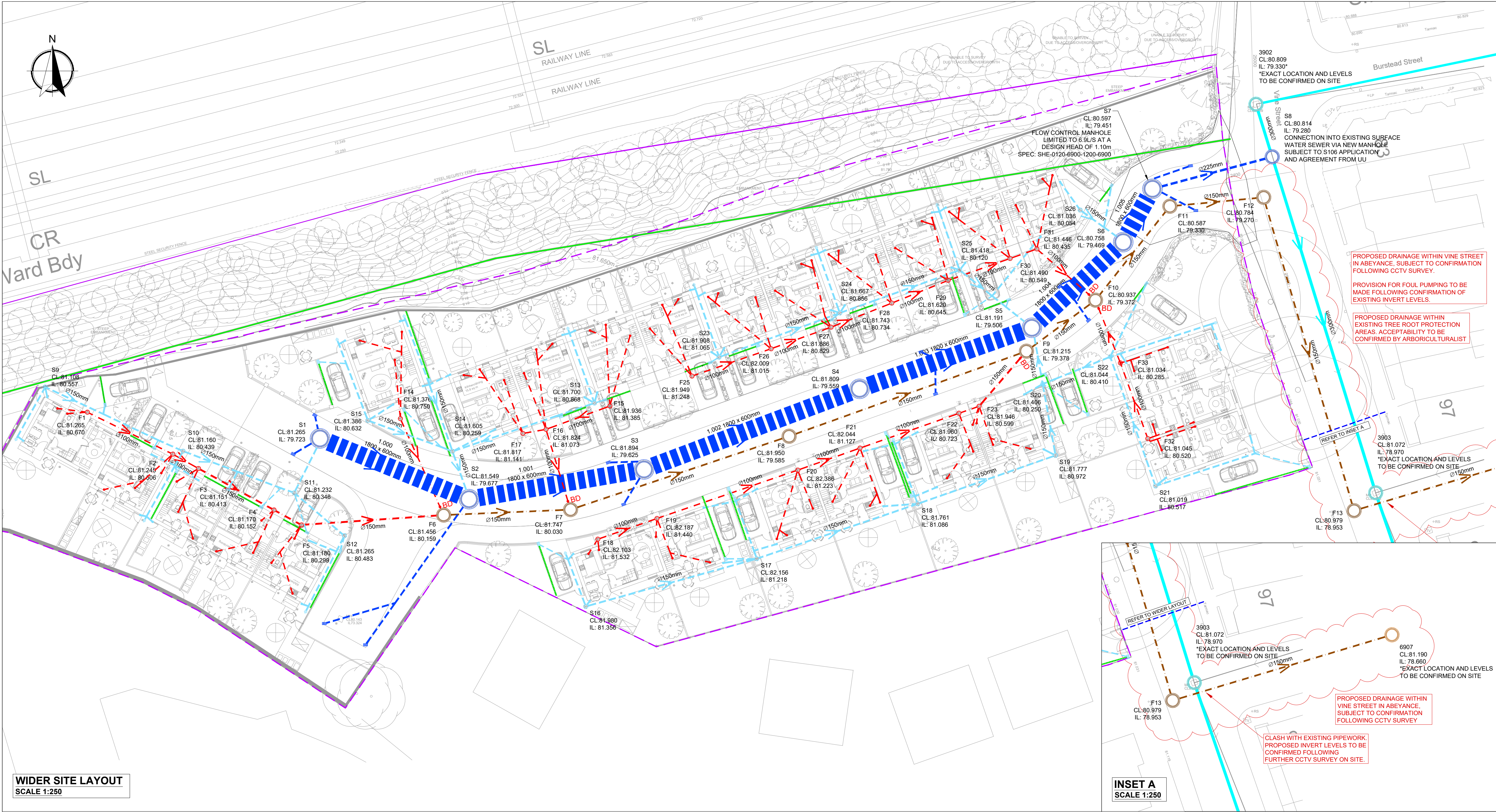
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EARTHWORKS CUT & FILL
ISOPACHYTES

ENG/TECH:	CSE:	ICSE:	SCALE: 1:250 @ A1				
AS	PG	PB	STATUS ISSUE PRELIMINARY				
STATUS: PRELIMINARY							
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SUITABILITY: SO - Initial Status or WIP							
PROJECT:	ORG:	ZONE:	LEVEL:	TYPE:	ROLE:	NUMBER:	REV:
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CONTRACTOR TO NOTE THAT THERE WILL BE SOME MATERIAL REQUIRED TO BE TAKEN OFF SITE. BASED ON CURRENT INFORMATION AND ASSUMPTIONS NOTED ON THIS DRAWING WE BELIEVE THE VOLUME WILL BE APPROXIMATELY 2454m³ OF TOPSOIL FROM SITE STRIP. HOWEVER THIS FIGURE IS AN ESTIMATE ONLY AND MAY VARY DEPENDING ON SUITABILITY OF MATERIAL. NO BULKING OR COMPACTION FACTORS APPLIED.

2 0 2 4 6 8 10
SCALE 1:250
m



WIDER SITE LAYOUT
SCALE 1:250

INSET A
SCALE 1:250

LEGEND

- 10m SAFETY ZONE FROM BOUNDARY
- EXISTING PUBLIC SURFACE WATER SEWER
- EXISTING PUBLIC SURFACE WATER MANHOLE
- PROPOSED ADOPTABLE SURFACE WATER DRAINAGE
- PROPOSED ADOPTABLE SURFACE WATER MANHOLE
- PROPOSED ADOPTABLE SURFACE WATER GULLY
- PROPOSED PRIVATE SURFACE WATER DRAINAGE
- PROPOSED PRIVATE SURFACE WATER PPIC
- PROPOSED RAIN WATER PIPE
- PROPOSED RODDING EYE
- PROPOSED CHANNEL DRAIN & SUMP
- EXISTING PUBLIC FOUL SEWER
- EXISTING PUBLIC FOUL MANHOLE
- PROPOSED ADOPTABLE FOUL DRAINAGE
- PROPOSED ADOPTABLE FOUL MANHOLE
- PROPOSED PRIVATE FOUL DRAINAGE
- PROPOSED PRIVATE FOUL PPIC
- PROPOSED SVP POSITION
- PROPOSED FOUL BACK DROP

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DRAWING NOTES:

PROPOSED DRAINAGE WITHIN VINE STREET IN ABEYANCE. SUBJECT TO CONFIRMATION FOLLOWING CCTV SURVEY.

PROVISION FOR FOUL PUMPING TO BE MADE FOLLOWING CONFIRMATION OF EXISTING INVERT LEVELS.

PROPOSED DRAINAGE WITHIN EXISTING TREE ROOT PROTECTION AREAS. ACCEPTABILITY TO BE CONFIRMED BY ARBORICULTURALIST

P03	REVISED TO SUIT UPDATED SITE LAYOUT AND PROPOSED FINISHED LEVELS	09.05.23	LWP	PB
P02	REVISED TO SUIT UPDATED SITE LAYOUT AND PROPOSED FINISHED LEVELS	21.04.23	LWP	PB
P01	ISSUED FOR COMMENT	10.12.20	EDG	PG
REV	DESCRIPTION	DATE	BY	CHKD



CLIENT:
KIRKLAND DEVELOPMENT LTD

IN ASSOCIATION WITH:

PROJECT:
VINE STREET
GORTON

TITLE:
PROPOSED DRAINAGE GA

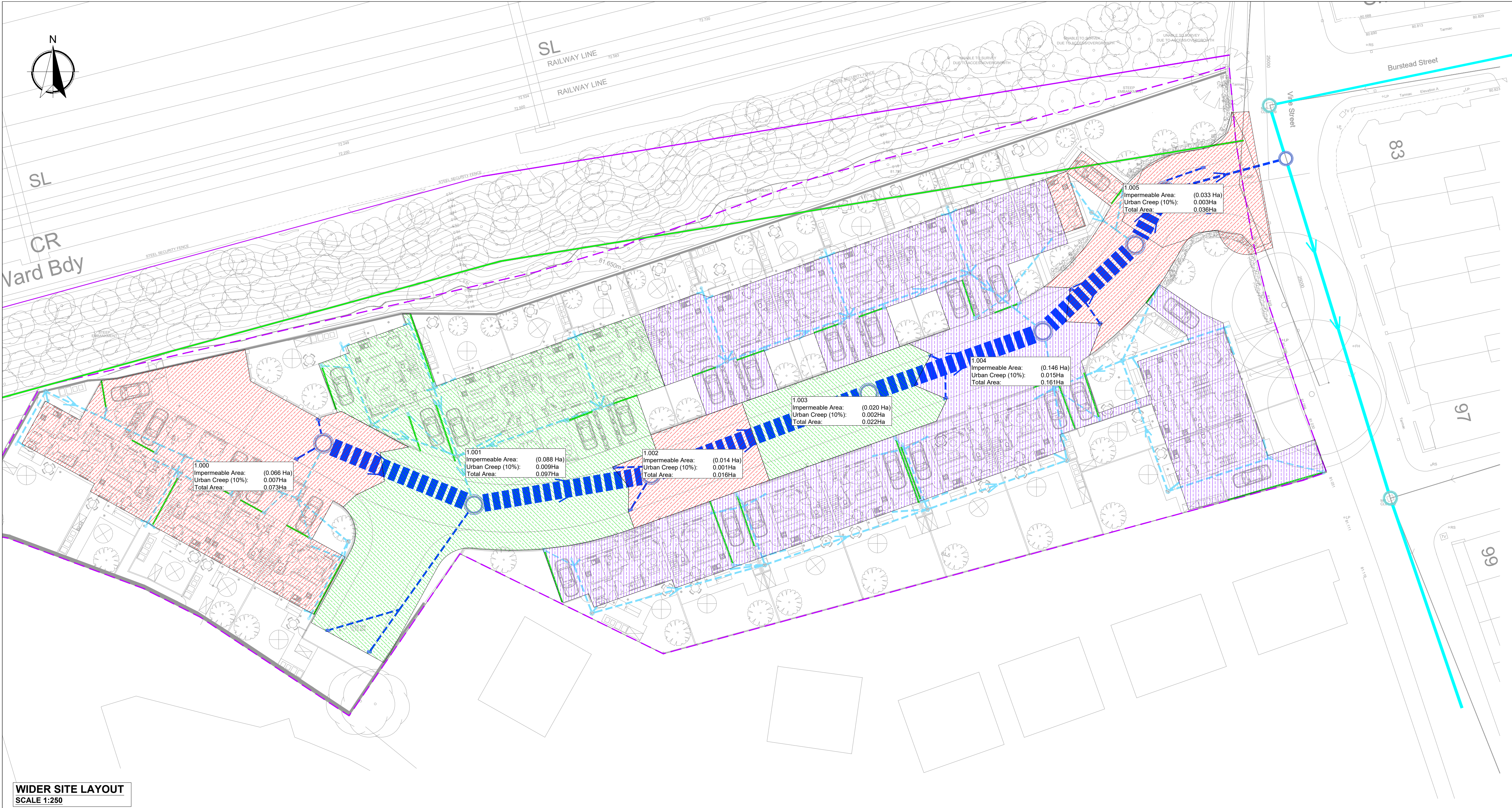
ENG/TECH:	CSE:	ICSE:	SCALE:	1:250	@	A1
AS	PG	PB	STATUS ISSUE	PRELIMINARY		

STATUS:
PRELIMINARY

UNLESS ISSUED FOR CONSTRUCTION - WORKS AT CLIENT/CONTRACTORS RISK

SUITABILITY:	SO - Initial Status or WIP					
PROJECT:	ORG:	ZONE:	LEVEL:	TYPE:	ROLE:	NUMBER:
VSG	RDG	XX	XX	DR	C	0101
						P03





WIDER SITE LAYOUT
SCALE 1:250



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DRAWING NOTES:

P01	ISSUED FOR COMMENT	10.05.22	LWP	PB
REV	DESCRIPTION	DATE	BY	CHKD
ORIGINATOR:				



CLIENT:
KIRKLAND DEVELOPMENT LTD

IN ASSOCIATION WITH:

PROJECT:
VINE STREET
GORTON

TITLE:
PROPOSED CATCHMENT PLAN

ENG/TECH:	CSE:	ICSE:	SCALE:	1:250	@	A1
AS	PG	PB	STATUS ISSUEPRELIMINARY			

STATUS:
PRELIMINARY

UNLESS ISSUED FOR CONSTRUCTION - WORKS AT CLIENT/CONTRACTORS RISK

SUITABILITY: S0 - Initial Status or WIP

PROJECT:	ORG:	ZONE:	LEVEL:	TYPE:	ROLE:	NUMBER:	REV:
VSG	RDG	XX	XX	DR	C	0104	P01

BSEN 13242, COARSE AGGREGATE (CLAUSE 4.3.2)		
CATEGORY FOR GENERAL GRADING REQUIREMENTS		
CATEGORY FOR TOLERANCES AT MID-SIZE SIEVES		
CATEGORY OF MAXIMUM VALUES OF FINES CONTENTS		
NOMINAL PIPE DIAMETER (mm)	AGGREGATE SIZE	
	GRADED SIZE	SINGLE
NOT EXCEEDING 140	-	4/10
EXCEEDING 140 BUT NOT EXCEEDING 400	2/14 or 4/20	4/10, 6/10 or 10/20
EXCEEDING 400	2/14, 4/20 or 4/40	4/10, 6/14, 10/20 or 20/40

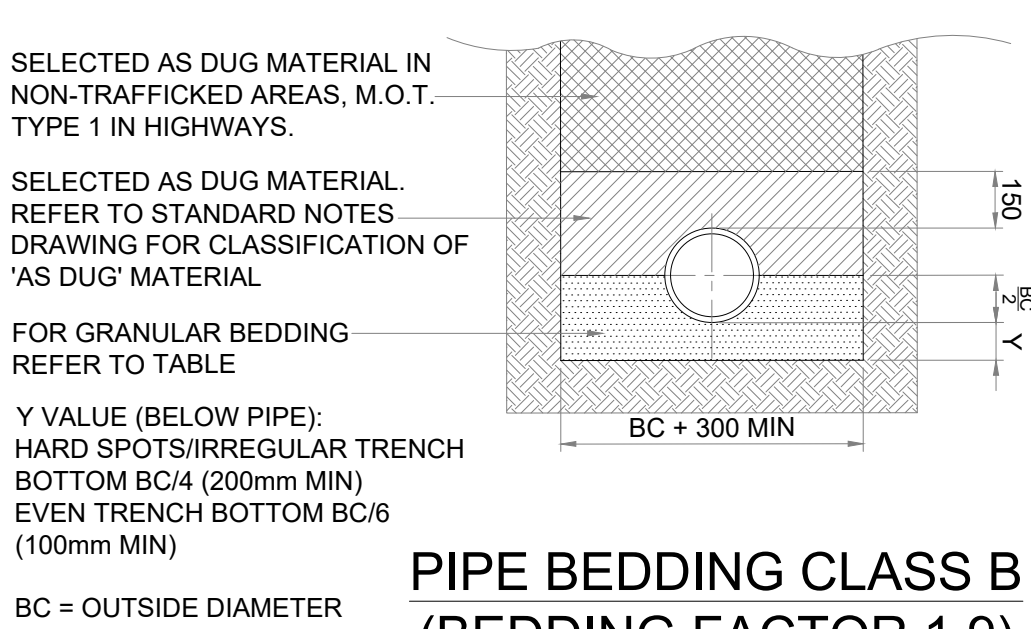
TABLE 5/3 BSEN 13242 COURSE AGGREGATE TO CLAUSE 4.3.2 FOR PIPE BEDDING, HAUNCHING AND SURROUNDING MATERIAL

BS EN 1610:1997 ANNEX B TABLE B.15 COARSE AGGREGATE - PIPE BEDDING								
SIEVE SIZE (mm)	% BY MASS PASSING BS SIEVES FOR NOMINAL SIZES				SINGLE SIZED AGGREGATE (mm)			
	GRADED AGGREGATE (mm)							
-----	40 to 5	20 to 5	14 to 5	40	20	14	10	
50.0	100	-----	-----	100	-----	-----	-----	-----
37.5	90-100	100	-----	85-100	100	-----	-----	-----
20.0	35-70	90-100	100	0-25	85-100	100	-----	-----
14.0	-----	-----	90-100	-----	-----	85-100	100	-----
10.0	10-40	30-60	50-85	0-5	0-25	0-50	85-100	-----
5.0	0-5	0-10	0-10	-----	0-5	0-10	0-25	-----
2.36	-----	-----	-----	-----	-----	-----	0-5	-----

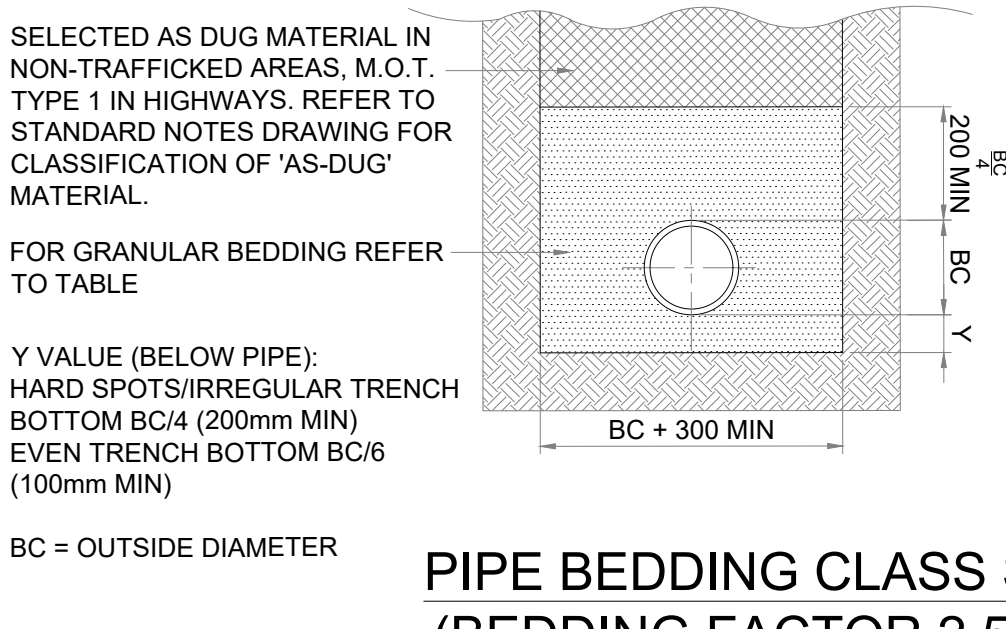
MAXIMUM TRENCH WIDTHS	
PIPE DIA (mm)	WIDTH (mm)
100	600
150	700
225	800
300	900
375	1050
450	1150
525	1200
600	1350
750	1450
825	1500
950	1600
1050	1900

RIGID PIPES BEDDING GRADING

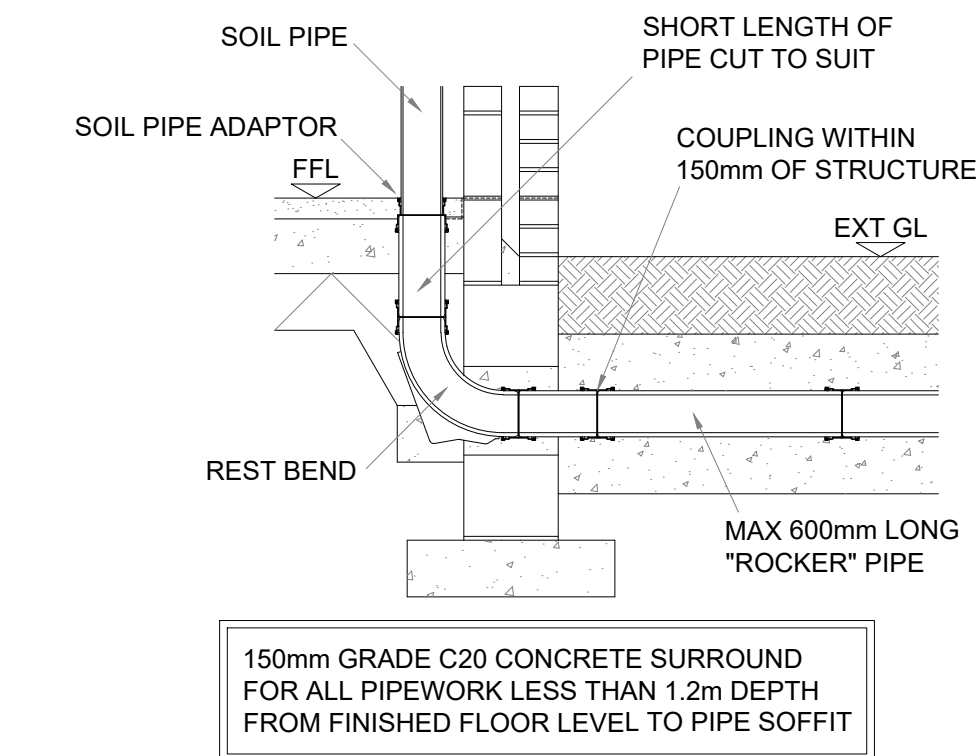
BASED ON BS EN 1610 : 1997 TABLE B.15
FOR RIGID PIPES THE BEDDING SHOULD BE SINGLE SIZE MATERIAL OR GRADED MATERIAL FROM 5MM UP TO A MAX SIZE OF 10mm FOR 100mm PIPES; 14mm FOR 150mm PIPES; 20mm FOR 225mm TO 600mm PIPES; 40mm FOR OVER 675mm PIPES.



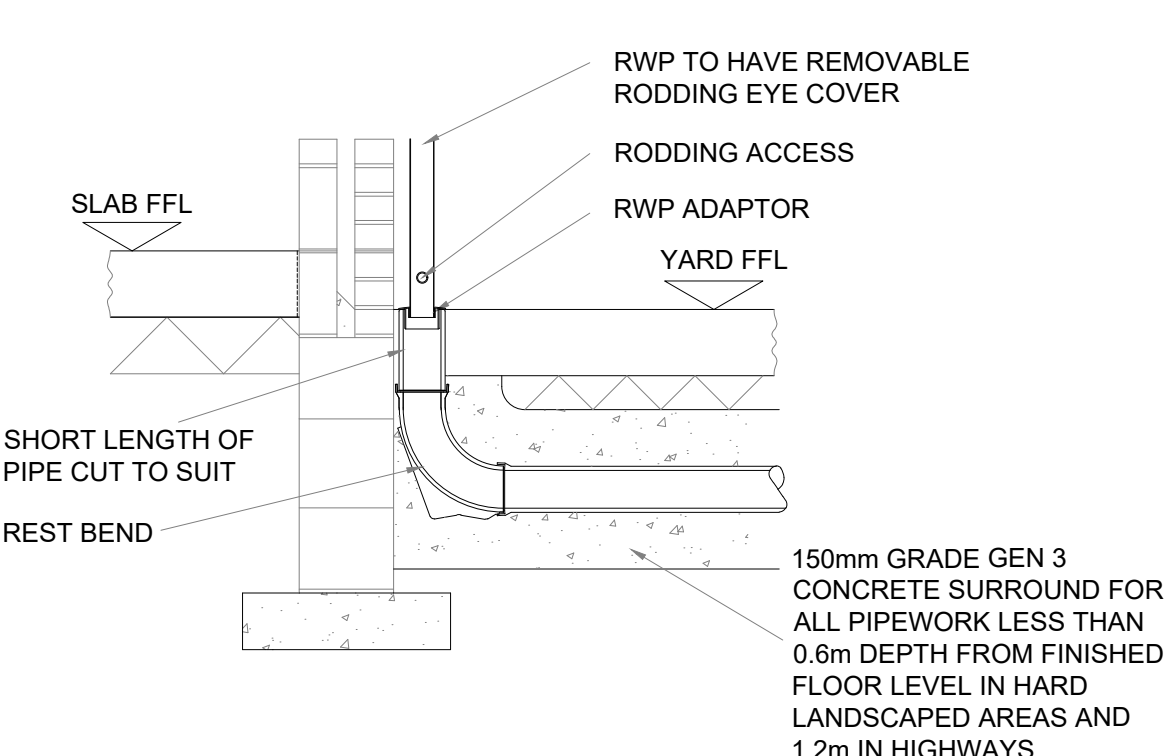
PIPE BEDDING CLASS B (BEDDING FACTOR 1.9)



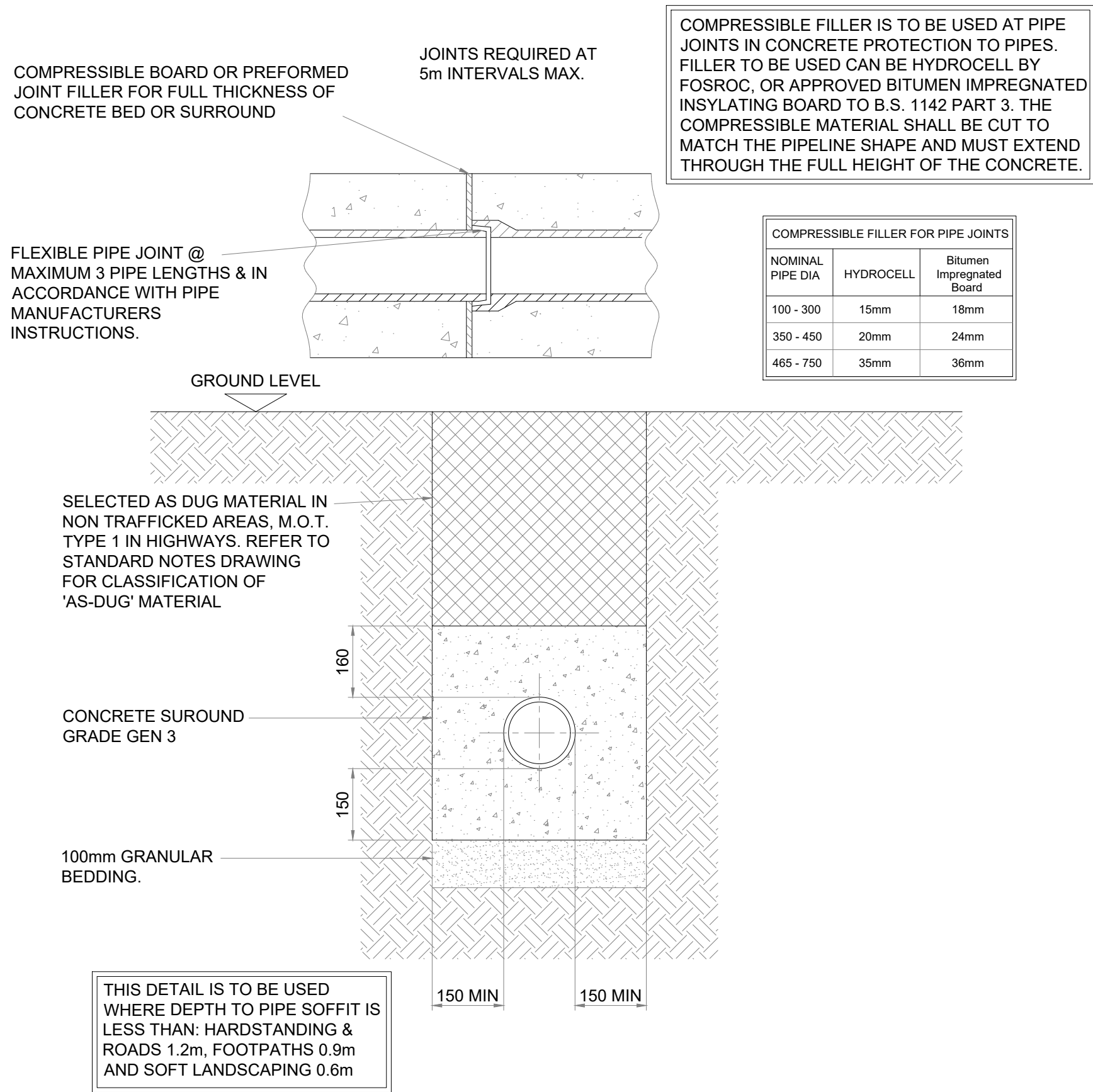
PIPE BEDDING CLASS S (BEDDING FACTOR 2.5)



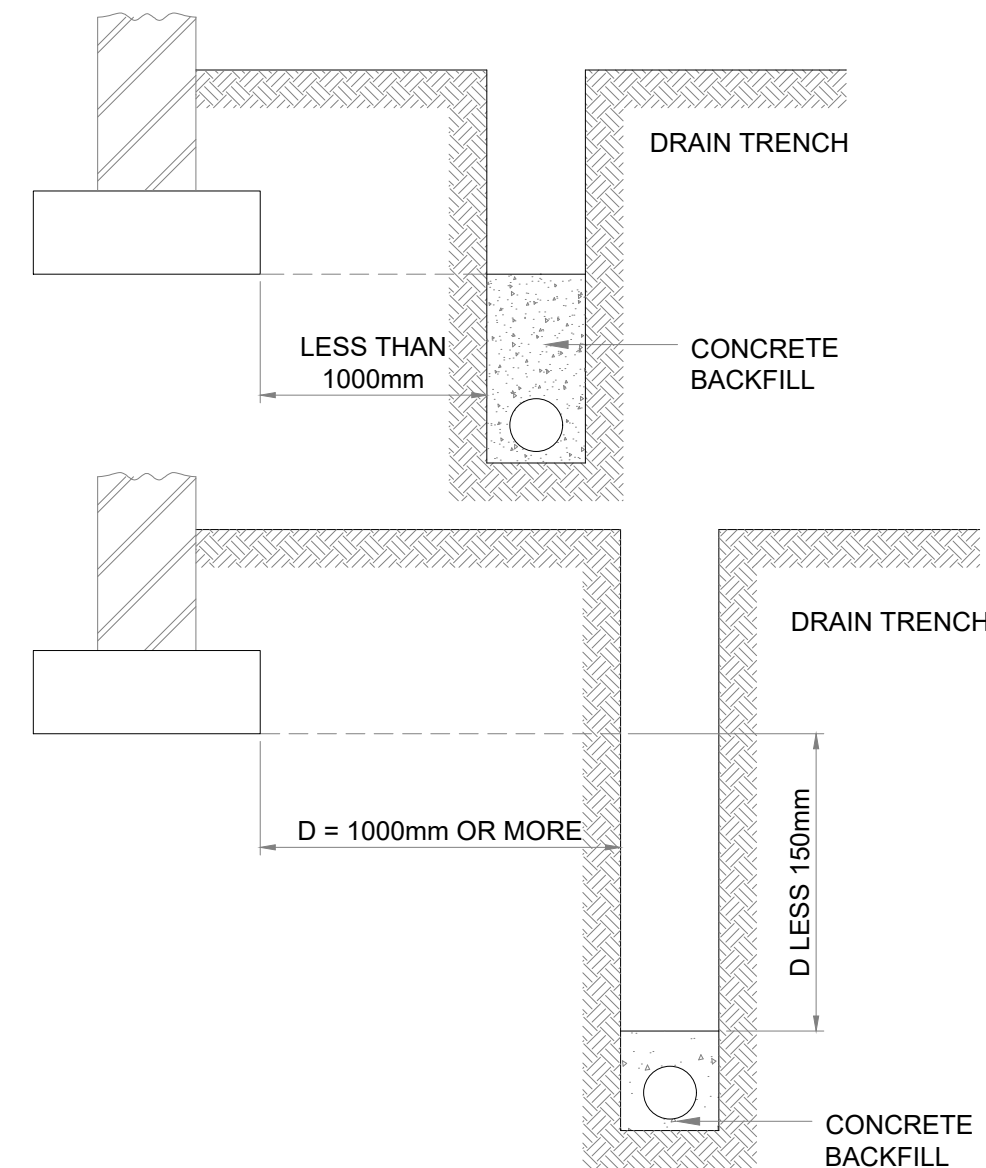
SOIL AND VENT PIPE CONNECTION



EXTERNAL RAINWATER PIPE CONNECTION



CLASS 'Z' PIPE BEDDING



NOTES

- CONCRETE TO BE GRADE GEN 3
- JOINTS TO BE PROVIDED IN CONCRETE SURROUND AT NOT GREATER THAN 5.0m CENTRES. BUILDING REGULATIONS PART H1 PARA A11
- WHERE THE TRENCH IS WITHIN 1m OF THE BUILDING THE TRENCH SHALL BE FILLED WITH CONCRETE UP TO THE LOWEST LEVEL OF THE FOUNDATIONS. WHERE THE TRENCH IS FURTHER THAN 1000mm FROM THE BUILDING, THE TRENCH SHALL BE FILLED WITH CONCRETE UP TO A LEVEL, BELOW THE LOWEST LEVEL OF THE FOUNDATION, EQUAL TO THE DISTANCE FROM THE BUILDING LESS 150mm.

PIPE RUNS ADJACENT TO BUILDING

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DRAWING NOTES:

P01	PRELIMINARY ISSUE	21.04.23	LWP	PB
REV	DESCRIPTION	DATE	BY	CHKD

ORIGINATOR:

RIDGE

CLIENT:

KIRKLAND DEVELOPMENT LTD

IN ASSOCIATION WITH:

PROJECT:

VINE STREET
GORTON

TITLE:

TYPICAL DRAINAGE DETAILS
SHEET 2

ENG/TECH:	CSE:	ICSE:	SCALE:	1:20	@	A1
LWP	PB	PB	STATUS ISSUEPRELIMINARY			

STATUS:

PRELIMINARY

UNLESS ISSUED FOR CONSTRUCTION - WORKS AT CLIENT/CONTRACTORS RISK

SUITABILITY: S0 - Initial Status or WIP

PROJECT:	ORG:	ZONE:	LEVEL:	TYPE:	ROLE:	NUMBER:	REV:
VSG	RDG	XX	XX	DR	C	0103	P01



APPENDIX C –

Vine Street
Gorton
Surface Water Drainage

Designed by LWP
Checked by PB



Network 2020.1

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
1.001	20.570	0.052	395.6	0.097	0.00	0.0	0.600	[]	-1	Pipe/Conduit	
1.002	26.920	0.066	407.9	0.016	0.00	0.0	0.600	[]	-1	Pipe/Conduit	
1.003	21.070	0.053	397.5	0.022	0.00	0.0	0.600	[]	-1	Pipe/Conduit	
1.004	14.900	0.037	402.7	0.161	0.00	0.0	0.600	[]	-1	Pipe/Conduit	
1.005	7.100	0.018	394.4	0.036	0.00	0.0	0.600	[]	-1	Pipe/Conduit	
1.006	14.460	0.072	200.8	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)
1.001	50.00	5.35	79.677	0.170	0.0	0.0	0.0	1.87	3037.3	23.0
1.002	50.00	5.60	79.625	0.186	0.0	0.0	0.0	1.85	2990.8	25.2
1.003	50.00	5.78	79.559	0.208	0.0	0.0	0.0	1.87	3029.7	28.2
1.004	50.00	5.92	79.506	0.369	0.0	0.0	0.0	1.86	3010.1	50.0
1.005	50.00	5.98	79.469	0.405	0.0	0.0	0.0	1.88	3041.7	54.8
1.006	50.00	5.26	79.451	0.000	7.0	0.0	0.0	0.92	36.5	7.0

Ridge and Partners LLP		Page 3
The Cowyards Blenheim Park, Oxford Road Woodstock OX20 1QR	Vine Street Gorton Surface Water Drainage	
Date 10/05/2023 File VSG Surface Water Calcs 23.05.10.MDX	Designed by LWP Checked by PB	
Innovyze Network 2020.1		

Online Controls for Storm

Hydro-Brake® Optimum Manhole: FLOW CONTROL, DS/PN: 1.006, Volume (m³): 11.5

Unit Reference MD-SHE-0120-6900-1200-6900	Sump Available	Yes
Design Head (m) 1.200	Diameter (mm)	120
Design Flow (l/s) 6.9	Invert Level (m)	79.451
Flush-Flo™	Calculated Minimum Outlet Pipe Diameter (mm)	150
Objective Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface	

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.200	6.9	Kick-Flo®	0.760	5.6
Flush-Flo™	0.356	6.9	Mean Flow over Head Range	-	6.0

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.2	0.600	6.5	1.600	7.9	2.600	9.9	5.000	13.5	7.500	16.4
0.200	6.5	0.800	5.7	1.800	8.3	3.000	10.6	5.500	14.2	8.000	16.9
0.300	6.9	1.000	6.3	2.000	8.8	3.500	11.4	6.000	14.8	8.500	17.4
0.400	6.9	1.200	6.9	2.200	9.2	4.000	12.2	6.500	15.3	9.000	17.9
0.500	6.8	1.400	7.4	2.400	9.5	4.500	12.9	7.000	15.9	9.500	18.4

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Ridge and Partners LLP			Page 5																									
The Cowyards Blenheim Park, Oxford Road Woodstock OX20 1QR	Vine Street Gorton Surface Water Drainage																											
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Innovyze	Network 2020.1																											
<u>1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm</u>																												
<table><thead><tr><th></th><th></th><th>Pipe</th><th></th><th></th></tr><tr><th></th><th>US/MH</th><th>Flow</th><th>Level</th><th></th></tr><tr><th>PN</th><th>Name</th><th>(l/s)</th><th>Status</th><th>Exceeded</th></tr></thead><tbody><tr><td>1.000</td><td>S01A</td><td>8.8</td><td>OK</td><td></td></tr><tr><td>1.001</td><td>S01</td><td>18.7</td><td>OK</td><td></td></tr></tbody></table>						Pipe				US/MH	Flow	Level		PN	Name	(l/s)	Status	Exceeded	1.000	S01A	8.8	OK		1.001	S01	18.7	OK	
		Pipe																										
	US/MH	Flow	Level																									
PN	Name	(l/s)	Status	Exceeded																								
1.000	S01A	8.8	OK																									
1.001	S01	18.7	OK																									
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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH		Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged	Flooded	Flow / Overflow Cap.	Flow / Overflow (l/s)
	Name									Level	Depth	Volume		
1.002	S02	60	Winter	1	+0%	100/120	Winter			79.687	-0.538	0.000	0.01	
1.003	S03	60	Winter	1	+0%	100/60	Winter			79.687	-0.472	0.000	0.00	
1.004	S04	60	Winter	1	+0%	100/60	Winter			79.687	-0.419	0.000	0.01	
1.005	S05	60	Winter	1	+0%	100/60	Summer			79.687	-0.382	0.000	0.01	
1.006	FLOW CONTROL	60	Winter	1	+0%	1/30	Winter			79.686	0.010	0.000	0.21	

PN	US/MH Name	Half Drain	Pipe	Status	Level Exceeded
		Time (mins)	Flow (l/s)		
1.002	S02		10.9	OK	
1.003	S03		8.2	OK	
1.004	S04		11.5	OK	
1.005	S05		8.5	OK	
1.006	FLOW CONTROL		6.7	SURCHARGED	

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Innovyze										Network 2020.1				



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

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 1 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR M5-60 (mm) 18.000 Cv (Summer) 0.750
Region England and Wales	Ratio R 0.366 Cv (Winter) 0.840

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

Profile(s)

Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440	Summer and Winter
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Half Drain
									Level (m)	Depth (m)	Volume (m³)			Time (mins)
1.000	S01A	120 Winter	30	+40%	100/120 Winter				80.039	-0.284	0.000	0.01		
1.001	S01	120 Winter	30	+40%	100/120 Winter				80.039	-0.238	0.000	0.01		

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The Cowyards Blenheim Park, Oxford Road Woodstock OX20 1QR		Vine Street Gorton Surface Water Drainage																											
Date 10/05/2023 File VSG Surface Water Calcs 23.05.10.MDX		Designed by LWP Checked by PB																											
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		Pipe																											
		US/MH	Flow	Level																									
PN	Name	(l/s)	Status	Exceeded																									
1.000	S01A	9.5	OK																										
1.001	S01	15.9	OK																										
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Vine Street
Gorton
Surface Water Drainage

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Network 2020.1

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

PN	US/MH		Return Period	Climate Change	First (X) Surcharges	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged	Flooded	Flow / Overflow Cap. (l/s)
	Name	Storm							Level (m)	Depth (m)	Volume (m³)	
1.002	S02	120 Winter	30	+40%	100/120 Winter				80.039	-0.186	0.000	0.01
1.003	S03	120 Winter	30	+40%	100/60 Winter				80.038	-0.121	0.000	0.00
1.004	S04	120 Winter	30	+40%	100/60 Winter				80.038	-0.068	0.000	0.01
1.005	S05	120 Winter	30	+40%	100/60 Summer				80.034	-0.035	0.000	0.01
1.006	FLOW CONTROL	120 Winter	30	+40%	1/30 Winter				80.031	0.355	0.000	0.21

PN	US/MH Name	Half Drain	Pipe	Status	Level Exceeded
		Time (mins)	Flow (l/s)		
1.002	S02		11.1	OK	
1.003	S03		6.5	OK	
1.004	S04		11.4	OK	
1.005	S05		9.7	OK	
1.006	FLOW CONTROL		6.9	SURCHARGED	

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

Simulation Criteria

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

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR M5-60 (mm)	18.000	Cv (Summer)	0.750
Region	England and Wales	Ratio R	0.366	Cv (Winter)
				0.840

```

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

```

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 40, 45

									Water	Surcharged	Flooded	Half Drain			
	US/MH			Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Level	Depth	Volume	Flow /	Overflow	Time
PN	Name	Storm		Period	Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)	Cap.	(l/s)	(mins)
1.000	S01A	180	Winter	100	+45%	100/120	Winter			80.591	0.268	0.000	0.01		
1.001	S01	180	Winter	100	+45%	100/120	Winter			80.591	0.314	0.000	0.01		

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		Pipe																											
	US/MH	Flow		Level																									
PN	Name	(l/s)	Status	Exceeded																									
1.000	S01A	9.7	SURCHARGED																										
1.001	S01	20.6	SURCHARGED																										
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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH		Return Period	Climate Change	First (X)		First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged	Flooded	Flow / Overflow Cap.	Flow / Overflow (l/s)
	Name	Storm			Surcharge	Level (m)				Depth (m)	Volume (m³)			
1.002	S02	180 Winter	100	+45%	100/120	Winter				80.591	0.366	0.000	0.01	
1.003	S03	180 Winter	100	+45%	100/60	Winter				80.591	0.432	0.000	0.01	
1.004	S04	180 Winter	100	+45%	100/60	Winter				80.591	0.485	0.000	0.01	
1.005	S05	180 Winter	100	+45%	100/60	Summer				80.591	0.522	0.000	0.01	
1.006	FLOW CONTROL	180 Winter	100	+45%	1/30	Winter				80.591	0.915	0.000	0.21	

PN	US/MH Name	Half Drain	Pipe	Status	Level Exceeded
		Time (mins)	Flow (l/s)		
1.002	S02		27.3	SURCHARGED	
1.003	S03		18.1	SURCHARGED	
1.004	S04		14.4	SURCHARGED	
1.005	S05		10.4	FLOOD RISK	
1.006	FLOW CONTROL		6.9	FLOOD RISK	