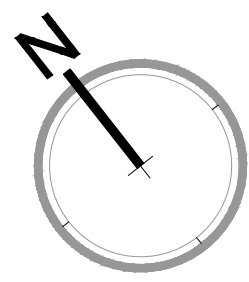
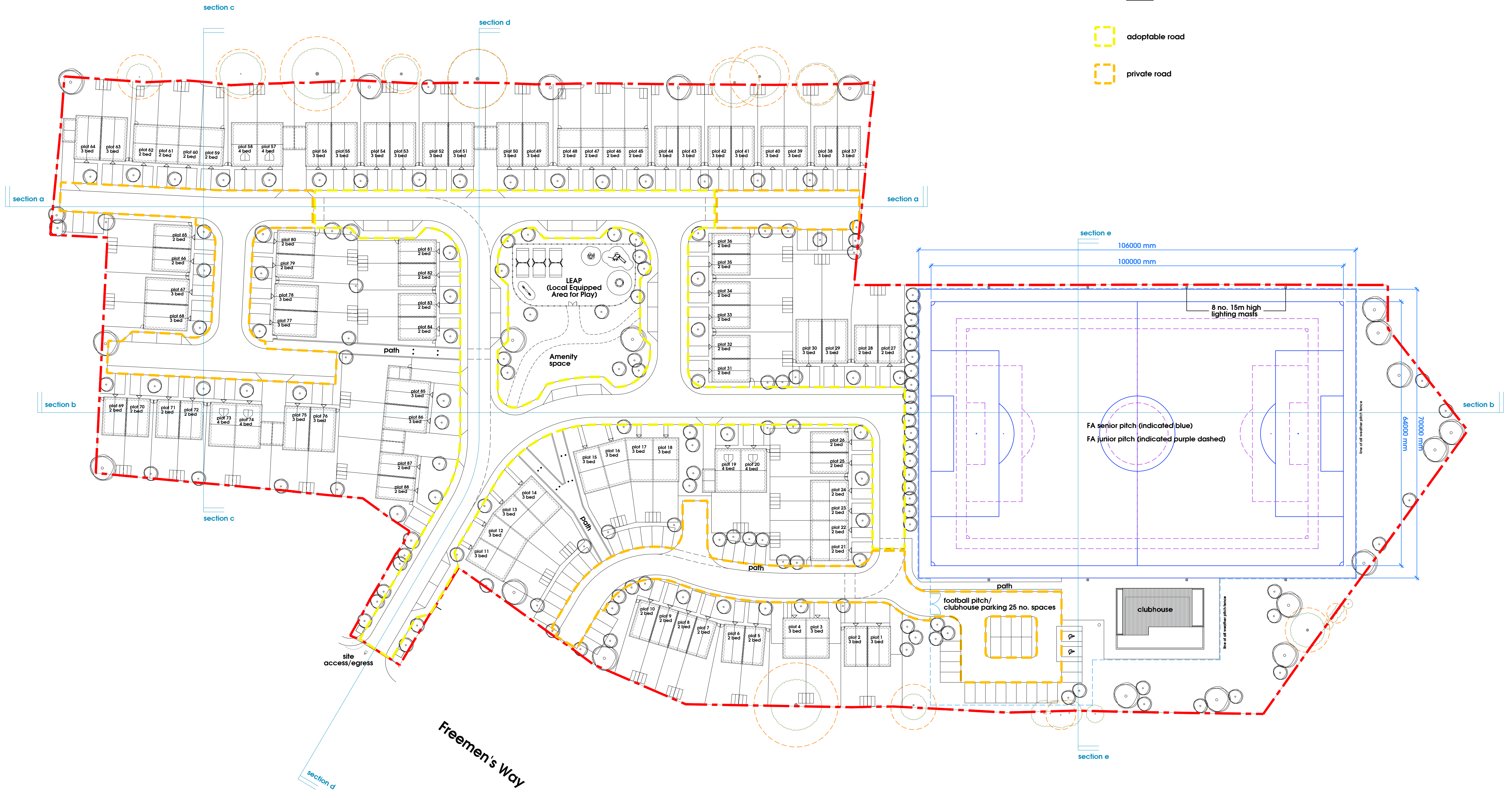


Appendix A.1 – Drawings



key

- adoptable road
- private road



Freemen's Way, Deal adopted roads

number: 3987/p101 | date: may 2019 | scale: 1:500@A1 / 1:1000@A3 | dm: drd chkd: ge appd: ge

THIS DRAWING IS FOR THE PURPOSE OF
PLANNING APPLICATION ONLY AND SHOULD
NOT BE USED FOR ANY OTHER PURPOSE.

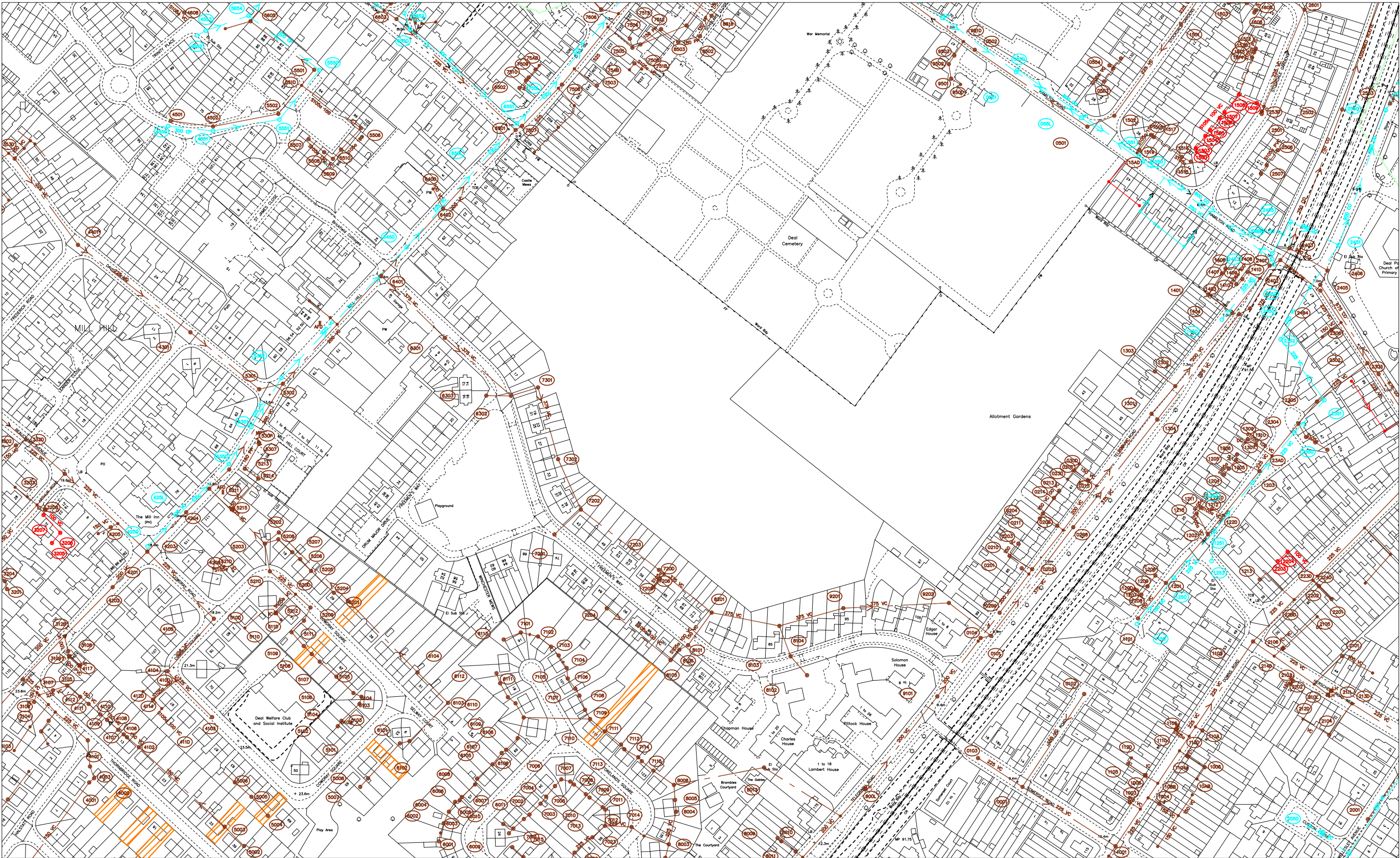
subject to site survey and I.a. approvals
client: Sunningdale House Developments

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Appendix A.2 – Southern Water Asset Location Data

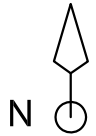
SEWER RECORDS PAGE 1 OF 2

151614



151037

324076

O.S. REF. TR3651SE	Drawn by: yadavs	The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site. WARNING: BAC pipes are constructed of Bonded Asbestos Cement WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement		
	Scale: 1:2500			
Title: 324076_Land at Freemans way, F	Date: 18/01/2019	Based upon Ordnance Survey Digital Data with the permission of the controller of H.M.S.O. Crown Copyright Reserved Licence No. WU 298530.		

636351

637293

SEWER RECORDS PAGE 2 OF 2

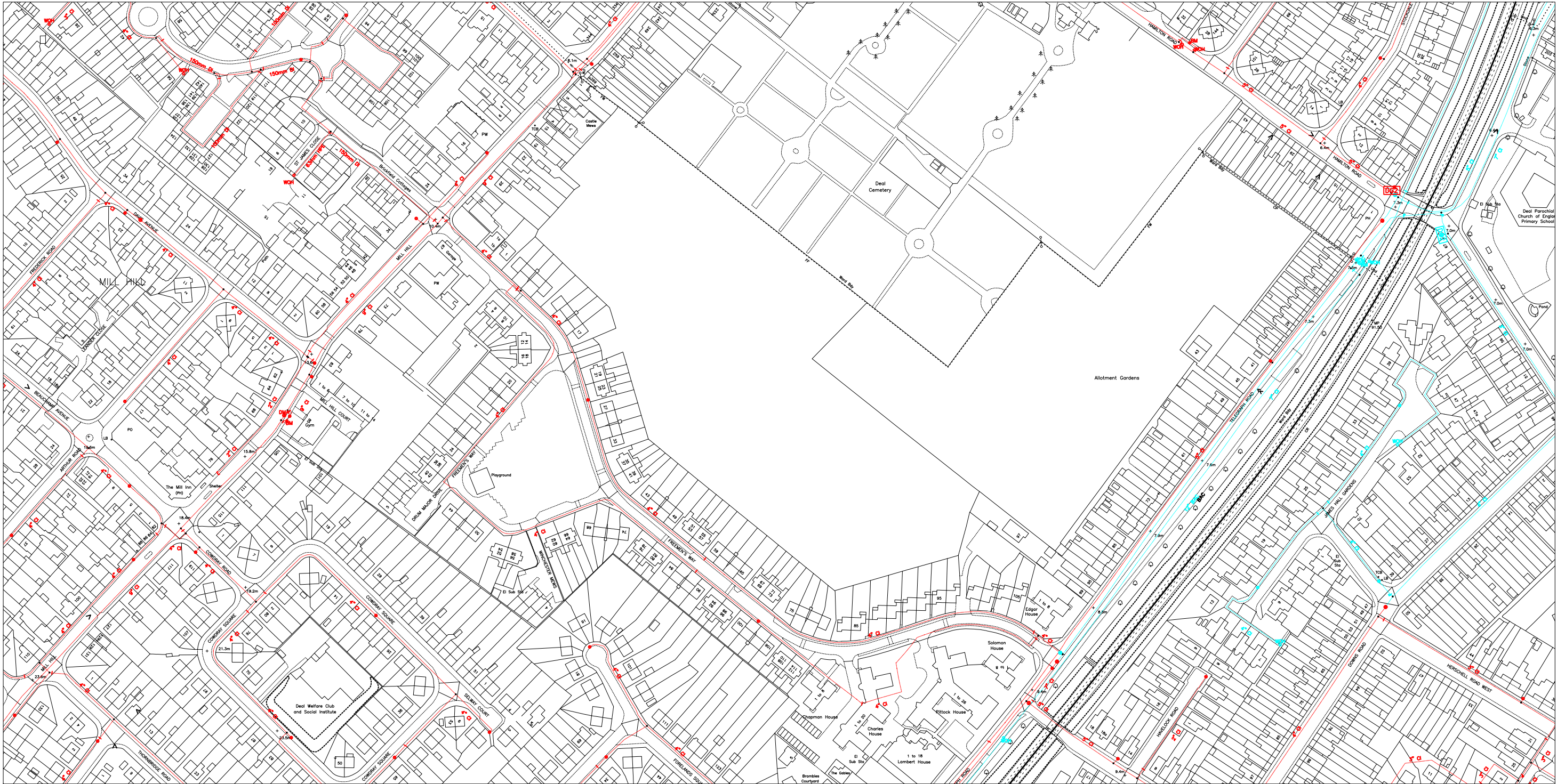
Node	Cover	Invert	Size	Material	Shape	Node	Cover	Invert	Size	Material	Shape	Node	Cover	Invert	Size	Material	Shape	Node	Cover	Invert	Size	Material	Shape
0001X	9.47	7.33	225	VC	CIRC	1212X			UNK	VC	CIRC	2105X			UNK	VC	CIRC	3109X	20.749	19.674	100	PVC	CIRC
001DX			225	VC	CIRC	1213X			UNK	UNK	CIRC	2106X			UNK	VC	CIRC	310BX			225	VC	CIRC
0101X	8.57		375	VC	CIRC	121DX			UNK	VC	CIRC	210DX			225	VC	CIRC	310DX			150	VC	CIRC
0102X	9.31	7.93	150	VC	CIRC	122DX			225	UNK	CIRC	210LX	8.07	6.675	225	VC	CIRC	311BX			225	VC	CIRC
0103X	9.04	7.61	225	VC	CIRC	1250X	8.375	7.035	225	VC	CIRC	211DX			100	VC	CIRC	311DX			225	VC	CIRC
0104X	8.637	7.171	225	VC	CIRC	1251X	8.035	6.625	225	VC	CIRC	211LY	8.07		225	VC	CIRC	312DX			225	VC	CIRC
0201X	7.795	7.015	150	VC	CIRC	1252X	7.755	6.445	225	VC	CIRC	212DX			UNK	VC	CIRC	313DX			UNK	UNK	CIRC
0202X	8.065		200	VC	CIRC	1253X	8.14	7.12	150	VC	CIRC	213DX			225	VC	CIRC	314DX			UNK	UNK	CIRC
0203X	7.405		150	VC	CIRC	1301X	7.34	5.91	200	VC	CIRC	214DX			225	VC	CIRC	3201X	21.98	20.99	100	VC	CIRC
0204X	7.29		150	VC	CIRC	1302X	7.365		200	VC	CIRC	2201X			150	VC	CIRC	3203X	19.6		225	VC	CIRC
0205X	7.775	6.645	150	VC	CIRC	1303X	7.33		UNK	UNK	CIRC	2202X	7.88		150	VC	CIRC	3204X	21.685	20.635	100	VC	CIRC
0208X	7.815	5.865	375	VC	CIRC	1304X			375	VC	CIRC	2203X			100	VC	CIRC	3205X			100	VC	CIRC
0209X	8.366		200	VC	CIRC	1305X			UNK	VC	CIRC	2204X			100	VC	CIRC	3206X			100	VC	CIRC
020DX			200	VC	CIRC	1306X			UNK	UNK	CIRC	220DX			UNK	UNK	CIRC	3207X			100	VC	CIRC
0210X			UNK	UNK	CIRC	1307X			100	VC	CIRC	221DX			UNK	UNK	CIRC	3208X			100	VC	CIRC
0211X			150	VC	CIRC	1309X			100	VC	CIRC	222DX			225	VC	CIRC	320DX			150	VC	CIRC
0213X			100	VC	CIRC	1310X			100	VC	CIRC	223DX			225	VC	CIRC	321DX			150	VC	CIRC
0214X			150	VC	CIRC	1401X	6.615	5.765	225	VC	CIRC	224DX			225	VC	CIRC	322DX			150	VC	CIRC
0215X			150	VC	CIRC	1403X	7.274	5.325	375	VC	CIRC	22BDX			225	VC	CIRC	3302X			UNK	UNK	CIRC
0216X			150	VC	CIRC	1404X	7.515	5.315	375	VC	CIRC	2302X	6.9	4.91	225	VC	CIRC	332DX			225	VC	CIRC
021DX			200	VC	CIRC	1405X			200	VC	CIRC	2303X	6.895	3.565	675	CO	CIRC	340DX			UNK	UNK	CIRC
022DX			200	VC	CIRC	1406X			150	VC	CIRC	2304X	7.69	5.95	225	VC	CIRC	3502X	18.5	16.24	225	VC	CIRC
023DX			100	VC	CIRC	1407X			150	VC	CIRC	2305X	7.6		225	VC	CIRC	350DX			150	VC	CIRC
030DX			100	VC	CIRC	1408X			100	UNK	CIRC	2306X			150	VC	CIRC	351DX			150	VC	CIRC
040DX			150	VC	CIRC	1409X			100	UNK	CIRC	2307X			UNK	UNK	CIRC	352DX			150	VC	CIRC
0501X	6.59	4.42	225	VC	CIRC	140DX			150	VC	CIRC	2308X			UNK	UNK	CIRC	353DX			225	VC	CIRC
0502X	7.5	4.01	225	VC	CIRC	1410X			100	UNK	CIRC	2309X			UNK	UNK	CIRC	4001X			150	VC	CIRC
0504X			UNK	VC	CIRC	141DX			200	VC	CIRC	230DX			150	VC	CIRC	4002X	24.865		150	VC	CIRC
0550X	7.235	3.645	800	CO	CIRC	1450X	7.185	5.035	225	VC	CIRC	231DX			150	VC	CIRC	4003X	24.5	23.21	150	VC	CIRC
055LX	6.78	3.785	250	VC	CIRC	145DX			UNK	UNK	CIRC	232DY			225	VC	CIRC	4101X	23.665	22.245	225	VC	CIRC
1001X	10.25		225	VC	CIRC	146DX			UNK	UNK	CIRC	233DX			150	VC	CIRC	4102X	23.795		150	VC	CIRC
1003X			150	VC	CIRC	147DX			UNK	UNK	CIRC	2350X	7.61	6.33	225	VC	CIRC	4103X	22.075	20.535	225	VC	CIRC
1004X			UNK	UNK	CIRC	148DX			UNK	UNK	CIRC	2351X	7.525	6.225	225	VC	CIRC	4104X	21.425	19.915	225	VC	CIRC
1005X			150	VC	CIRC	1501X	6.195	4.595	225	VC	CIRC	2352X			225	VC	CIRC	4105X	19.305	17.715	225	VC	CIRC
1006X			150	VC	CIRC	1502X	6.365	4.505	225	VC	CIRC	23ADX			225	VC	CIRC	4106X			150	VC	CIRC
101BX			150	VC	CIRC	1503X			100	VC	CIRC	2401X	7.165		250	PVC	CIRC	4107X			150	VC	CIRC
102BX			225	VC	CIRC	1504X			100	VC	CIRC	2402X	6.99	5.21	375	CO	CIRC	4108X			150	VC	CIRC
103DX			150	VC	CIRC	1505X			100	VC	CIRC	2403Y	7.2		UNK	UNK	CIRC	4109X			150	VC	CIRC
104BX			225	VC	CIRC	1506X			100	VC	CIRC	2403X	7.2		750	CO	CIRC	410DX			225	VC	CIRC
104DX			150	VC	CIRC	1507X			100	VC	CIRC	2404X	6.995		225	VC	CIRC	4110X			150	VC	CIRC
10ABX			150	VC	CIRC	1508X			100	VC	CIRC	2405X	7.02	3.46	675	CO	CIRC	4111X			150	VC	CIRC
10BBX			225	VC	CIRC	1509X			100	VC	CIRC	2406X	6.9	3.35	900	CO	CIRC	4112X			150	VC	CIRC
1101X	8.8	7.79	150	VC	CIRC	150DX			100	VC	CIRC	2407X			UNK	PVC	CIRC	4114X			100	VC	CIRC
1102X	8.62	6.2	225	VC	CIRC	1510X			UNK	VC	CIRC	2450X			225	VC	CIRC	4117X	20.815	19.962	100	PVC	CIRC
1103X			UNK	UNK	CIRC	1511X			UNK	VC	CIRC	2451X	6.79		900	CO	CIRC	411DX			100	VC	CIRC
1104X			150	VC	CIRC	1512X			UNK	PVC	CIRC	2453X	7.12	4.77	250	VC	CIRC	412DX			100	VC	CIRC
1105X			150	VC	CIRC	1513X			UNK	PVC	CIRC	2454X	7.025	1.915	900	CO	CIRC	4201X	18.15	16.78	200	VC	CIRC
1106X			UNK	UNK	CIRC	1514X			UNK	PVC	CIRC	2455X	7.14		900	CO	CIRC	4202X	19.47	18.03	200	VC	CIRC
110DX			225	VC	CIRC	1515X			UNK	UNK	CIRC	2501X	6.215		UNK	UNK	CIRC	4203X	16.735	15.405	200	VC	CIRC
111DX			225	VC	CIRC	1516X			150	UNK	CIRC	2502X			UNK	UNK	CIRC	4204X	15.995	14.595	200	VC	CIRC
112DX			150	VC	CIRC	1517X			150	UNK	CIRC	2503X	6.385		225	VC	CIRC	4205X			150	VC	CIRC
113DX			225	VC	CIRC	1518X			150	UNK	CIRC	2504X	6.215		225	VC	CIRC	4208X			UNK	VC	CIRC
1150X	8.845	7.605	150	VC	CIRC	1519X			UNK	UNK	CIRC	2507X			UNK	PVC	CIRC	420DX			225	VC	CIRC
1201X	8.44	7.26	225	UNK	CIRC	153DX			UNK	PVC	CIRC	252DX			225	VC	CIRC	421DX			150	VC	CIRC
1202X	8.05	6.67	225	UNK	CIRC	1550X	6.165	4.135	250	VC	CIRC	253DX			225	VC	CIRC	4250X	18.08	16.31	225	VC	CIRC
1203X	7.72	6.32	225	VC	CIRC	1551X	6.095	2.525	800	CO	CIRC	2550Y	6.42		900	CO	CIRC	425LX	16.36	14.57	225	VC	CIRC
1204X			UNK	VC	CIRC	1603X			UNK	VC	CIRC	2601X	6.185		225	VC	CIRC	4301X	15.86	14.4	225	VC	CIRC
1205X			UNK	VC	CIRC	1605X			UNK	VC	CIRC	3003X	28.4		150	VC	CIRC	4401X	18.785	15.905	225	VC	CIRC
1206X			UNK	UNK	CIRC	1606X			UNK	VC	CIRC	301DX			150	VC	CIRC	4501X			UNK	UNK	CIRC
1207X			UNK	UNK	CIRC	2001X	7.69	6.19	225	VC	CIRC	3103X	24.07	23	150	VC	CIRC	4502X			UNK	UNK	CIRC
1208X			UNK	UNK	CIRC	2050X	8.13	7.22	150	VC	CIRC	3104X	23.275	22.525	150	VC	CIRC	4550X			300	CP	CIRC
1209X			UNK	UNK	CIRC	2051X	7.975		225	VC	CIRC	3105X	22.6		225	VC	CIRC	4551X			300	CP	CIRC
120DX			UNK	UNK	CIRC	2101X	7.88	0.86	100	VC	CIRC	3106X			150	VC	CIRC	4552X			300	CP	CIRC
1210X			UNK	VC	CIRC	2102X			150	VC	CIRC	3107X			225	VC	CIRC	4553X			300	CP	CIRC
1211X			UNK	VC	CIRC	2104X			UNK	VC	CIRC	3108X	20.655	19.391	100	VC	CIRC	4608X			UNK	VC	CIRC

LINE STYLES / COLOURS	
Brown	Foul
Red	Foul Syphon Sewer
Red	Foul Vacuum Main
Red	Foul Rising Main
Red	Combined
Red	Combined Syphon Sewer
Red	Combined Rising Main
Orange	Lateral Drain
Orange	Building Over Agreement Area
Dark Blue	Treated Effluent
Purple	Sludge
Purple	Sewer Catchment
Purple	Section 104 Area
Light Blue	Surface Water
Light Blue	Surface Water Rising Main
Yellow	Private
Green	Access Shaft
Green	Decommissioned

MATERIALS	
AK	Alkathene
BAC	Bonded Asbestos Cement
BRC	Brick (Common)
BRE	Brick (Engineering)
CC	Concrete Box Culvert
CI	Cast Iron
CO	Concrete (In-Situ)
CP	Concrete (Pre-Cast)
CSB	Concrete Segments (bolted)
CSU	Concrete Segments (unbolted)
DI	Ductile Iron
GRC	Glass Reinforced Concrete
GRP	Glass Reinforced Plastic
MAR	Masonry in regular Courses
MAR	Masonry in random Courses
PE	Polyethylene
PF	Pitch Fibre
PP	Polypropylene
PVC	Polyvinyl Chloride
RPM	Reinforced Plastic Matrix
SI	Spun Iron
ST	Steel
VC	Verified Clay
XXX	Other
ZZZ	Unknown

	Manhole (SW)
	Manhole (F&C)
	Lamp hole (SW)
	Lamp hole (F&C)
	Pumping Station (SW)
	Pumping Station (F&C)
	Side entry manhole (SW)
	Side entry manhole (F&C)
	Blind shaft (SW)
	Blind shaft (F&C)
	Ejector station (SW)
	Ejector station (F&C)
	Watertight door (SW)
	Watertight door (F&C)
	Flushing ch. M-ne (SW)
	Flushing ch. M-ne (F&C)
	Flushing ch. No-e (SW)
	Flushing ch. No-e (F&C)
	Demarcation Chamber

151568



151083

636339

637304

LEGEND - MAINS

- | | | | |
|--|--|--|------------------------------------|
| | Distribution Main / Communication pipe | | Clockwise closing valve |
| | Trunk Main | | Fire Hydrant |
| | Raw water main | | Washout |
| | Non potable | | Washout hydrant |
| | Abandoned main | | Meter |
| | Proposed Main | | Capped end |
| | Fire main | | Emptying plug |
| | Non SWS | | Stopcock |
| | Sluice valve | | Leak Noise Correlator Survey Point |
| | Closed valve | | Anode |
| | Air valve | | Telemetry cable |
| | Butterfly valve | | Access point / hatchbox |
| | Pressure reducing valve | | |
| | Reflux valve | | |
| | Motorised valve | | |

MATERIALS

- | | | |
|--|----------------------------|------------------------------------|
| | Dialysis machine | Alkathene |
| | Break pressure tank | Cast iron |
| | Change node | Spun (grey) iron |
| | Pumping station | Concrete |
| | Booster station | Ductile iron |
| | Insertion Flow Meter Point | Bonded Asbestos Cement |
| | Water tower | Glass reinforced plastic |
| | Service reservoir | Glass reinforced epoxy |
| | Water Supply Works | (Unplasticised) Polyvinyl chloride |
| | Bore hole / Well | Polyethylene |
| | Intake | Steel |
| | Customer site | Concrete segments bolted |
| | Swab insertion point | Concrete segments unbolted |
| | | Galvanised iron |
| | | Ductile sleeve |
| | | Concrete pre-stressed |
| | | High performance polyethylene |
| | | Unknown |

- | | |
|-----|--|
| AK | |
| CI | |
| SI | |
| CO | |
| DI | |
| BAC | |
| GRP | |
| GRE | |
| PVC | |
| PE | |
| ST | |
| CSB | |
| CSU | |
| GI | |
| DS | |
| CPS | |
| HPE | |
| ?? | |

Drawn by: yadavs

Scale: 1:2500

Date: 18/01/2019

The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd. accept no responsibility in the event of inaccuracy. The actual positions of pipes should be determined on site.

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O.S.Ref: TR3651SE

TITLE: 324076_Land at Freemans way, F



WARNING: BAC pipes are constructed of Bonded Asbestos Cement

WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement

Appendix A.3 – Indicative Drainage Layout Plan



PRIVATE DRAINAGE AND LEVELS KEY

PERMEABLE PAVING

CELLULAR STORAGE

SURFACE WATER DRAIN

Notes

1. Contains Ordnance Survey data © Crown copyright and database right 2019.
2. All dimensions are in metres unless otherwise stated elsewhere.
3. Proposed drainage positions will be subject to detailed design.
4. All drainage systems will need to be installed and designed for suitable loading requirements.
5. Line and level of all public sewer to be confirmed with engineer prior to construction.
6. Drainage design is subject to a full topographic survey.

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www.herringtonconsulting.co.uk

Rev	Description	Made	Checked	Date
P3	Masterplan Updated	LA	SB	28/06/2019
P2	Masterplan Updated	LA	SB	06/03/2019
P1	First issue	LA	SB	16/01/2019

CLIENT Sunningdale House Developments Ltd

PROJECT Freemen's Way, Deal

SCALE	PROJ REF	ORIGINATOR	CHECKED BY
1:500	2264	LA	SB
DWG REF. INDICATIVE DRAINAGE LAYOUT			DWG No. HC-2264-500

PERMEABLE SURFACING 2
AREA = 1,445m²
DEPTH = 600mm
POROSITY = 0.3
PEAK DISCHARGE RATE = 3.2 l/s

TANK 1
STORAGE VOLUME = 173m³
DISCHARGE RATE = 4.3l/s

TANK 2
STORAGE VOLUME = 912m³
PEAK DISCHARGE RATE = 0.9l/s

PERMEABLE SURFACING 2
AREA = 1,765m²
DEPTH = 600mm
POROSITY = 0.3
PEAK DISCHARGE RATE = 3.1 l/s

SEWER ACQUISITION TO BE
UNDERTAKEN AND DESIGNED AT
DETAILED DESIGN STAGE

PEAK DISCHARGE RATE TO
SEWER = 0.9 l/s

section c

section d

section a

section e

section

FA senior pitch (indicated blue)
FA junior pitch (indicated purple dashed)

clubhouse

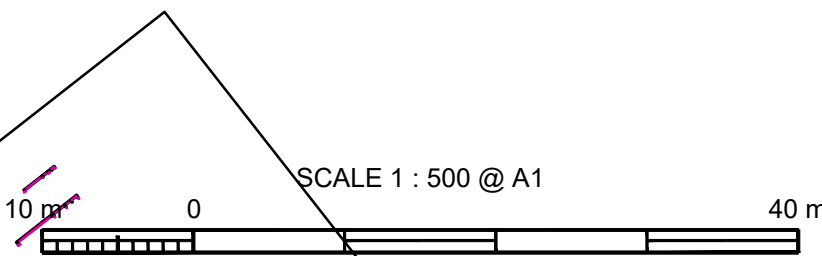
football pitch
clubhouse parking 25 no
cars

line of all weather pitch fence

site access/egress

section d

section e



Appendix A.4 – Surface Water Management Calculations

Drainage Design Report

Flow+

v7.0

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Network	Storm Network
Filename	\\HC_SERVER_2\FRM_Drive\LIVE Project Files\2264 - Freeman's Way, Deal\Analysis\Causeway\Proposed\Proposed.pfd
Username	Lee Adderley (lee@herringtonconsulting.co.uk)
Last analysed	28/06/2019 13:17:08
Report produced on	28/06/2019 15:09:08

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Email:	marketing@causeway.com
Web:	www.causeway.com

Technical support web portal:

<http://support.causeway.com>

Rainfall Methodology	FSR
Return Period (years)	100
Additional Flow (%)	0
FSR Region	England and Wales
M5-60 (mm)	26.250
Ratio-R	0.400
CV	1.000
Time of Entry (mins)	4.00
Maximum Time of Concentration (mins)	30.00
Maximum Rainfall (mm/hr)	200.0
Minimum Velocity (m/s)	1.00
Connection Type	Level Soffits
Minimum Backdrop Height (m)	0.200
Preferred Cover Depth (m)	0.600
Enforce best practice design rules	

	Name	Area (ha)	T of E (mins)	Add Inflow (l/s)	Cover Level (m)	Node Type	Diameter (mm)	Depth (m)	Notes
	SWMH1	0.496	4.00		10.000	Manhole	2200	1.900	
	SWMH2	0.496	4.00		10.000	Manhole	2500	1.900	
	SWMH3	0.496	4.00		10.000	Manhole	2200	1.900	
	Permeable paving 1				10.000	Manhole	2200	2.000	
	Permeable Paving 2				10.000	Manhole	2500	1.950	
	Tank 1				10.000	Manhole	2200	2.000	
	Tank 2				10.000	Manhole	2200	2.492	
	Sewer				10.000	Manhole	2200	2.512	

	Name	US Node	DS Node	Length (m)	ks (mm) / n	Velocity Equation	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)	Con Offset (m)	Min DS IL (m)
	2.000	SWMH1	Permeable paving 1	150.000	0.600	Colebrook-White	8.100	8.000	0.100	1500.0	1300	Circular	6.49	200.0		
?	3.000	SWMH2	Permeable Paving 2	150.000	0.600	Colebrook-White	8.100	8.050	0.050	3000.0	1300	Circular	7.53	188.7		
	1.000	SWMH3	Tank 1	150.000	0.600	Colebrook-White	8.100	8.000	0.100	1500.0	1300	Circular	6.49	200.0		
	2.001	Permeable paving 1	Tank 2	50.000	0.600	Colebrook-White	8.000	7.950	0.050	1000.0	1300	Circular	7.16	192.9		
	3.001	Permeable Paving 2	Tank 2	50.000	0.600	Colebrook-White	8.050	8.000	0.050	1000.0	1300	Circular	8.21	181.4		
	1.001	Tank 1	Tank 2	492.443	0.600	Colebrook-White	8.000	7.508	0.492	1000.9	1300	Circular	13.14	142.8		
?	1.002	Tank 2	Sewer	20.000	0.600	Colebrook-White	7.508	7.488	0.020	1000.0	1300	Circular	13.41	141.2		

	Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Minimum Depth (m)	Maximum Depth (m)	Σ Area (ha)
	2.000	SWMH1	Permeable paving 1	1.005	1334.3	358.5	0.600	0.700	0.600	0.700	0.496
?	3.000	SWMH2	Permeable Paving 2	0.707	938.9	338.2	0.600	0.650	0.600	0.650	0.496
	1.000	SWMH3	Tank 1	1.005	1334.3	358.5	0.600	0.700	0.600	0.700	0.496
	2.001	Permeable paving 1	Tank 2	1.234	1637.8	345.8	0.700	0.750	0.700	0.750	0.496
	3.001	Permeable Paving 2	Tank 2	1.234	1637.8	325.2	0.650	0.700	0.650	0.700	0.496
	1.001	Tank 1	Tank 2	1.233	1637.0	256.0	0.700	1.192	0.700	1.192	0.496
?	1.002	Tank 2	Sewer	1.234	1637.8	759.4	1.192	1.212	1.192	1.212	1.488

Link Name	Length (m)	Slope (1:X)	Dia (mm)	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)	US Node Name	Dia (mm)	Width (mm)	Node Type	MH Type	DS Node Name	Dia (mm)	Node Type	MH Type
2.000	150.000	1500.0	1300	10.000	8.100	0.600	10.000	8.000	0.700	SWMH1	2200		Manhole	Adoptable	Permeable paving 1	2200	Manhole	Adoptable
3.000	150.000	3000.0	1300	10.000	8.100	0.600	10.000	8.050	0.650	SWMH2	2500		Manhole	Adoptable	Permeable Paving 2	2500	Manhole	Adoptable
1.000	150.000	1500.0	1300	10.000	8.100	0.600	10.000	8.000	0.700	SWMH3	2200		Manhole	Adoptable	Tank 1	2200	Manhole	Adoptable
2.001	50.000	1000.0	1300	10.000	8.000	0.700	10.000	7.950	0.750	Permeable paving 1	2200		Manhole	Adoptable	Tank 2	2200	Manhole	Adoptable
3.001	50.000	1000.0	1300	10.000	8.050	0.650	10.000	8.000	0.700	Permeable Paving 2	2500		Manhole	Adoptable	Tank 2	2200	Manhole	Adoptable
1.001	492.443	1000.9	1300	10.000	8.000	0.700	10.000	7.508	1.192	Tank 1	2200		Manhole	Adoptable	Tank 2	2200	Manhole	Adoptable
1.002	20.000	1000.0	1300	10.000	7.508	1.192	10.000	7.488	1.212	Tank 2	2200		Manhole	Adoptable	Sewer	2200	Manhole	Adoptable

Node Name	CL (m)	Depth (m)	Dia (mm)		Link ID	IL (m)	Dia (mm)
SWMH1	10.000	1.900	2200				
				0	2.000	8.100	1300
SWMH2	10.000	1.900	2500				
				0	3.000	8.100	1300
SWMH3	10.000	1.900	2200				
				0	1.000	8.100	1300
Permeable paving 1	10.000	2.000	2200	1	2.000	8.000	1300
				0	2.001	8.000	1300
Permeable Paving 2	10.000	1.950	2500	1	3.000	8.050	1300
				0	3.001	8.050	1300
Tank 1	10.000	2.000	2200	1	1.000	8.000	1300
				0	1.001	8.000	1300
Tank 2	10.000	2.492	2200	1	3.001	8.000	1300
				2	2.001	7.950	1300
				3	1.001	7.508	1300
				0	1.002	7.508	1300
Sewer	10.000	2.512	2200	1	1.002	7.488	1300

Rainfall Methodology	FSR		Return Period (years)	Climate Change (%)
FSR Region	England and Wales		1	0
M5-60 (mm)	26.250		30	0
Ratio-R	0.400		100	0
Summer CV	1.000		100	20
Winter CV	0.840		100	40
Analysis Speed	Normal			
Drain Down Time (mins)	240			
Additional Storage (m³/ha)	20.0			
Storm Durations (mins)	15			
	30			
	60			
	120			
	180			
	240			
	360			
	480			
	600			
	720			
	960			
	1440			
Check Discharge Rate(s)	x			
1 year (l/s)				
30 year (l/s)				
100 year (l/s)				
Check Discharge Volume	x			
100 year 360 minute (m³)				

Orifice													
Node	Flap Valve	Online / Offline	Downstream Link	Replaces Downstream Link	Loop to Node	Invert Level (m)	Design Depth (m)	Design Flow (l/s)	Diameter (m)	Discharge Coefficient			
Permeable Paving 2	x	Online				8.050			0.040	0.600			
Permeable paving 1	x	Online				8.000			0.040	0.600			
Tank 1	x	Online				8.000	1.500	1.0	0.040	0.600			
Hydro-Brake®													
Node	Flap Valve	Online / Offline	Downstream Link	Replaces Downstream Link	Loop to Node	Invert Level (m)	Design Depth (m)	Design Flow (l/s)	Objective	Sump Available	Product Number	Min Outlet Diameter (m)	Min Node Diameter (mm)
Tank 2	x	Online				7.508	1.000	1.0 (HE)	Minimise upstream storage		CTL-SHE-0047-1000-1000-1000	0.075	1200

Depth/Area/Inf Area											
Node	Base Inf Coefficient (m/hr)	Side Inf Coefficient (m/hr)	Safety Factor	Porosity	Invert Level (m)	Time to half empty (mins)	Depth (m)	Area (m²)	Inf. Area (m²)		
Tank 1	0.00000	0.00000	2.0	0.95	8.800		0.000	231.0	0.0		
							1.500	231.0	0.0		
							1.501	0.0	0.0		
Tank 2	0.00000	0.00000	2.0	1.00	7.508		0.000	912.0	0.0		
							1.000	912.0	0.0		
							1.001	0.0	0.0		
Carpark											
Node	Base Inf Coefficient (m/hr)	Side Inf Coefficient (m/hr)	Safety Factor	Porosity	Invert Level (m)	Time to half empty (mins)	Width (m)	Length (m)	Slope (1:X)	Depth (m)	Inf Depth (m)
Permeable Paving 2	0.00000	0.00000	2.0	0.35	8.050		144.500	10.000	500.0	0.600	
Permeable paving 1	0.00000	0.00000	2.0	0.30	8.000		176.400	10.000	500.0	0.600	

Default Values		Overrides						
Entry Loss (manhole)	0.250		Link	Entry Loss	Exit Loss		Node	Flood Risk (m)
Exit Loss (manhole)	0.250							
Entry Loss (junction)	0.000							
Exit Loss (junction)	0.000							
Flood Risk (m)	0.300							

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.11%															
Event	US Node ID	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status	Link ID	DS Node ID	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SWMH1	10	8.369	0.269	131.5	2.4287	0.0000	OK	2.000	Permeable paving 1	133.9	1.518	0.100	15.4851	
15 minute summer	SWMH2	10	8.423	0.323	131.5	3.2726	0.0000	OK	3.000	Permeable Paving 2	160.2	1.559	0.171	19.6459	
480 minute summer	SWMH3	368	8.695	0.595	20.9	5.3721	0.0000	OK	1.000	Tank 1	11.5	0.192	0.009	98.3071	
1440 minute summer	Permeable paving 1	1050	8.238	0.238	9.1	121.6358	0.0000	OK	Orifice	Tank 2	1.6				
1440 minute summer	Permeable Paving 2	1050	8.289	0.239	8.6	117.1435	0.0000	OK	Orifice	Tank 2	1.6				
480 minute summer	Tank 1	376	8.696	0.696	11.5	2.6437	0.0000	OK	Orifice	Tank 2	2.7				
1440 minute summer	Tank 2	1680	7.875	0.367	5.8	335.8669	0.0000	OK	Hydro-Brake®	Sewer	0.8				57.1
15 minute summer	Sewer	1	7.488	0.000	0.6	0.0000	0.0000	OK							

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.11%															
Event	US Node ID	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status	Link ID	DS Node ID	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SWMH1	10	8.495	0.395	321.8	3.5662	0.0000	OK	2.000	Permeable paving 1	332.9	1.967	0.249	28.3380	
15 minute summer	SWMH2	9	8.528	0.428	321.8	4.3333	0.0000	OK	3.000	Permeable Paving 2	357.8	1.976	0.381	30.5182	
480 minute summer	SWMH3	472	9.105	1.005	42.8	9.0694	0.0000	OK	1.000	Tank 1	29.6	0.255	0.022	172.1098	
960 minute summer	Permeable paving 1	930	8.457	0.457	22.4	238.5252	0.0000	OK	Orifice	Tank 2	2.2				
960 minute summer	Permeable Paving 2	930	8.513	0.463	22.1	231.4819	0.0000	OK	Orifice	Tank 2	2.2				
480 minute summer	Tank 1	480	9.105	1.105	29.6	71.1329	0.0000	OK	Orifice	Tank 2	3.5				
1440 minute summer	Tank 2	1680	8.053	0.545	7.8	499.0155	0.0000	OK	Hydro-Brake®	Sewer	0.8				60.5
15 minute summer	Sewer	1	7.488	0.000	0.7	0.0000	0.0000	OK							

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.11%															
Event	US Node ID	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status	Link ID	DS Node ID	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute summer	SWMH1	960	8.574	0.474	31.2	4.2742	0.0000	OK	2.000	Permeable paving 1	27.7	0.243	0.021	74.8685	
960 minute summer	SWMH2	960	8.632	0.532	31.2	5.3923	0.0000	OK	3.000	Permeable Paving 2	27.4	0.213	0.029	81.2394	
480 minute summer	SWMH3	480	9.342	1.242	54.3	11.2097	0.0000	OK	1.000	Tank 1	42.8	0.244	0.032	196.8263	
960 minute summer	Permeable paving 1	960	8.574	0.574	27.7	300.5145	0.0000	OK	Orifice	Tank 2	2.5				
960 minute summer	Permeable Paving 2	960	8.632	0.582	27.4	292.3041	0.0000	OK	Orifice	Tank 2	2.5				
480 minute summer	Tank 1	480	9.341	1.341	42.8	123.8954	0.0000	SURCHARGED	Orifice	Tank 2	3.8				
1440 minute summer	Tank 2	1680	8.117	0.609	8.6	558.1038	0.0000	OK	Hydro-Brake®	Sewer	0.8				62.0
15 minute summer	Sewer	1	7.488	0.000	0.7	0.0000	0.0000	OK							

Results for 100 year +20% Critical Storm Duration. Lowest mass balance: 99.11%															
Event	US Node ID	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status	Link ID	DS Node ID	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute summer	SWMH1	960	8.885	0.785	37.4	7.0804	0.0000	OK	2.000	Permeable paving 1	32.9	0.256	0.025	134.3816	
960 minute summer	SWMH2	960	8.960	0.860	37.4	8.7113	0.0000	OK	3.000	Permeable Paving 2	32.6	0.226	0.035	143.9949	
480 minute summer	SWMH3	480	9.661	1.561	65.1	14.0804	0.0000	SURCHARGED	1.000	Tank 1	49.6	0.248	0.037	198.3477	
960 minute summer	Permeable paving 1	960	8.883	0.883	32.9	315.8506	0.0000	OK	Orifice	Tank 2	3.1				
960 minute summer	Permeable Paving 2	960	8.962	0.912	32.6	303.1221	0.0000	OK	Orifice	Tank 2	3.2				
480 minute summer	Tank 1	480	9.661	1.661	49.6	195.3067	0.0000	SURCHARGED	Orifice	Tank 2	4.3				
1440 minute summer	Tank 2	1680	8.207	0.699	10.3	640.3605	0.0000	OK	Hydro-Brake®	Sewer	0.9				63.7
15 minute summer	Sewer	1	7.488	0.000	0.8	0.0000	0.0000	OK							

Results for 100 year +40% Critical Storm Duration. Lowest mass balance: 99.11%															
Event	US Node ID	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status	Link ID	DS Node ID	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute summer	SWMH1	900	9.538	1.438	43.6	12.9703	0.0000	SURCHARGED	2.000	Permeable paving 1	38.1	0.270	0.029	198.3477	
720 minute summer	SWMH2	720	9.931	1.831	54.1	18.5481	0.0000	FLOOD RISK	3.000	Permeable Paving 2	46.8	0.262	0.050	198.3477	
600 minute summer	SWMH3	600	9.993	1.893	61.4	17.0752	0.0000	FLOOD RISK	1.000	Tank 1	52.9	0.256	0.040	198.3477	
960 minute summer	Permeable paving 1	885	9.541	1.541	38.1	318.3511	0.0000	SURCHARGED	Orifice	Tank 2	4.1				
720 minute summer	Permeable Paving 2	720	9.946	1.896	46.8	307.9529	0.0000	FLOOD RISK	Orifice	Tank 2	4.6				
600 minute summer	Tank 1	600	9.993	1.993	52.9	269.4033	0.0000	FLOOD RISK	Orifice	Tank 2	4.7				
1440 minute summer	Tank 2	1680	8.323	0.815	12.8	746.4755	0.0000	OK	Hydro-Brake®	Sewer	0.9				65.7
15 minute summer	Sewer	1	7.488	0.000	0.8	0.0000	0.0000	OK							

Appendix A.5 – Maintenance Schedules

Operation and Maintenance Schedule – Pervious Pavement		
Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface).	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment.
Occasional maintenance	Stabilise and mow contributing and adjacent areas.	As required.
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying.	As required – once per year on less frequently used pavements.
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving.	As required.
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material.	As required.
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

General Operation and Maintenance Table for Pervious Pavements in accordance with CIRIA C753 The SuDS Manual.

Operation and Maintenance Schedule – Crate Storage System		
Maintenance Schedule	Required Action	Typical Frequency
Routine maintenance	Inspect for sediment and debris in pre-treatment components and storage crate system	Annually
	Cleaning of gutters and any filters on downpipes	Annually (or as required based on inspections)
	Trimming any roots that may be causing blockages	Annually (or as required)
Occasional maintenance	Remove sediment and debris from pre-treatment components and storage crate system	As required, based on inspections
Remedial Actions	Reconstruct soakaway and/or replace or clean void fill, if performance deteriorates or failure occurs	As required
	Replacement of geotextile surround if not intact or clogged	As required
Monitoring	Inspect silt traps and note rate of sediment accumulation	Monthly in the first year and then annually
	Check crate system to ensure emptying is occurring	Annually

General Operation and Maintenance Table for Crate Storage in accordance with CIRIA C753 The SuDS Manual.