



NOTES

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Where applicable this drawing is to be read in conjunction with the Consultants' drawings.

REV	DESCRIPTION	DATE	AUTHOR	CHK'D
A	Issued for Planning	29.01.19	MK	

KEY:

- Application Red Line
- Close Board Fence - Ref Boundary Materials
- Layout and details for detailed specification
- 1.8m Boundary Wall
- Garden Gate
- Root Protection Area
- Proposed Trees
- Existing Trees to be Retained
- Bin Collection Point
- Bin Storage Area

NOTE: For Landscape/Boundary/Surface Materials Please Refer To Hard & Soft Landscape Drawings
NOTE: For specific location of retaining structures & steps please refer to engineers drawings.

scale 1:500

PLANNING

architects

Romsey Office

Building 300, The Grange, Romsey Road, Michelmersh, SO51 0AE
t: 01794 367703 f: 01794 367276 www.thrivearchitects.co.uk

PROJECT

Padnell Grange,
Cowplain, Waterlooville

For: Bellway Homes Ltd (Wessex) & The Borrow Foundation Ltd

DRAWING

Coloured Site Layout

SCALE

DATE

AUTHOR

CHK'D

1:500 @ A1

30/11/18

MK

JOB NO.

DRAWING NO.

REV

BELL170217

CSL.01

A

CLIENT REF.

PRIVATE							
House Type		Storey Height	No of Bedrooms	Sqft	SqM	No	Total Sqft
PO	Potter	2	2	769	71.4	6	4614
TA	Tailor	2	3	802	74.5	16	12832
TH	Thatcher	2	3	921	85.6	3	2763
CH	Chandler	2	3	951	88.3	9	8859
CA	Carver	2	3	981	91.1	3	2943
LA	Larch	2	3	1087	101.0	7	7609
SC	Scrivener	2	4	1214	112.8	1	1214
CU	Cutter	2	4	1335	124.0	7	9345
BO	Bowyer	2	4	1356	126.0	9	12204
TOTALS						61	62083

Private housing plot areas (sqft)							62083
Net developable area (acres)							4.400
Coverage sqft/acre							14110

AFFORDABLE RENTED							
House Type		Storey Height	No of Beds	Sqft	SqM	No	Total Sqft
1B FOG	1B2P	1	1	538	50.0	1	538
1B FLAT	1B2P	1	1	538	50.0	6	3228
2B FLAT	2B4P	1	2	754	70.0	6	4524
S02	3B6P	2	3	985	91.5	1	985
S05	1B2P	2	1	585	54.3	2	1170
TOTALS						16	13445

Affordable Rent Housing plot areas (sqft)							10445
Net developable area (acres)							0.400
Coverage sqft/acre							26113

SHARED OWNERSHIP							
House Type		Storey Height	No of Beds	Sqft	SqM	No	Total Sqft
S01	2B4P	2	2	842	78.2	7	5894
S02	3B6P	2	3	985	91.5	1	985
S03	4B6P	2	4	1138	105.7	1	1138
TOTALS						9	8017

Shared Ownership Housing plot areas (sqft)							8017
Net developable area (acres)							0.403
Coverage sqft/acre							19693

SITE TOTALS			86	80545			
Total Housing plot areas (sqft)				80545			
Total Net developable area (acres)				5.203			
Total Coverage sqft/acre				15480			

Soils Limited
Geotechnical & Environmental Consultants

Newton House
Cross Road, Tadworth
Surrey KT20 5SR

T 01737 814221
W soilslimited.co.uk

APPENDIX E INFILTRATION TEST RESULTS



Phase II Ground Investigation Report

at

Padnell Grange, Padnell Road, Cowplain, Hampshire PO8 8ED

for

Bellway Homes (Wessex)

Reference: I6362/GIR

August 2017

Section 3 Discussion of Geotechnical In-Situ and Laboratory Testing

3.1 Dynamic Probe Tests

Dynamic probing (DPSH) was undertaken at eight locations adjacent and prior to the construction of their corresponding trial hole depths ranging between 3.60m and 8.00m bgl. The results were converted to equivalent SPT "N" values based on dynamic energy using commercial computer software (Geostru). The results were then interpreted based on the classifications outlined in Appendix B.1, Table B.1.1 to Table B.1.2.

The cohesive soils of the Lambeth Group recorded equivalent SPT "N" values between 0 and 14, typically 3 and 9, showing general increase in strength with depth. Classifying the cohesive soils as extremely low to medium strength, typically low to medium, with inferred undrained cohesive strengths ranging between >10kPa and 70kPa and typical values of 15kPa to 45kPa.

The granular soils of the Lambeth Group recorded equivalent SPT "N" values between 3 and >50, typically 12 to 23. The granular soils were classified as ranging between loose to very dense relative density, typically medium dense.

It should be noted that SPT 'N' values used within Table B.2.1 are uncorrected. Whilst values within the foundation design, are corrected values in accordance with BS EN 22476 Part 3, to account for the rig efficiency, borehole depth, overburden factors etc. Further correction of the 'N60' values should therefore not be necessary. Raw field data is archived within the Soils Limited project file and can be provided on request.

A full interpretation of the DPSH tests are outlined in Appendix B.2, Table B.2.1.

3.2 Dynamic Cone Penetrometer Tests

The Transport Research Laboratory (TRL), Dynamic Cone Penetrometer (DCP) was undertaken at five locations (DCP1 – DCP5). The results were interpreted based on the classification outlined in Appendix B.1.

DCP testing was undertaken through the Made Ground/Topsoil and in to the cohesive soils of the Lambeth Group. The results from DCP testing indicated CBR values of between 4% and 20% for the soils encountered in the top 1.00m bgl.

The DCP results are presented in Appendix B.3.

3.3 Infiltration Tests

Infiltration testing was undertaken in SK1 and SK2 within the granular soils of the Lambeth Group following the principles of BRE Digest 365 Soakaway design: 2016. BRE 365 states that for an accurate infiltration rate to be obtained a soakage pit needs to be

filled three times in quick succession. Each test can only be ended once 75% of the water present has drained away.

A single test was undertaken in SK1 and SK2. Neither test fully completed within the monitoring period due to insufficient infiltration. Results within SK2 have been extrapolated after 220minutes in order to calculate an infiltration rate.

BRE software BRESOAK was used to calculate the infiltration rates in SK2 and the results outlined in Table 3.1.

Table 3.1 Infiltration Rates

Trial Hole	Test No.	Infiltration Rate (m/s)	Notes
SK2	I	1.47×10^{-6}	Results have been extrapolated after 220minutes in order to calculate an estimated infiltration rate.

Infiltration testing within SK2 was undertaken directly into groundwater, which was encountered at 2.98m bgl. In accordance with BRE Digest DG365 and Environment Agency guidance, a soakaway system cannot discharge directly into groundwater. Therefore, the results from SK2 should not be used for the purpose of a surface water drainage system and the rate of 1.47×10^{-6} should only be taken for the preliminary design of a surface water drainage system.

3.4 Atterberg Limit Tests

Atterberg Limit tests were performed on six samples from the cohesive soils of the Lambeth Group. The results were classified in accordance with BRE Digest 240 and NHBC Standards Chapter 4.2.

The cohesive soils of the Lambeth Group were classified as medium volume change potential in accordance with both BRE Digest 240 and NHBC Standards Chapter 4.2.

A full interpretation of the Atterberg Limit tests are outlined in Table B.2.2, Appendix B.2 and the laboratory report in Appendix B.3.

3.5 Particle Size Distribution Tests

Particle Size Distribution (PSD) tests were performed on four samples from the Lambeth Group.

PSD classified the granular beds of the Lambeth Group as having a volume change potential in accordance BRE Digest 240 in three of four samples. The results from grading analysis confirmed that one of the four samples tested had a volume change potential in accordance with NHBC Standards Chapter 4.2. One sample (WS4:2.20) did not have a volume change potential. Further detailed assessment of the samples has

**Figure 3 – Trial Hole Plan****Project**

Padnell Grange, Padnell Road,
Cowplain, Hampshire PO8 8ED

Client

Bellway Homes (Wessex)

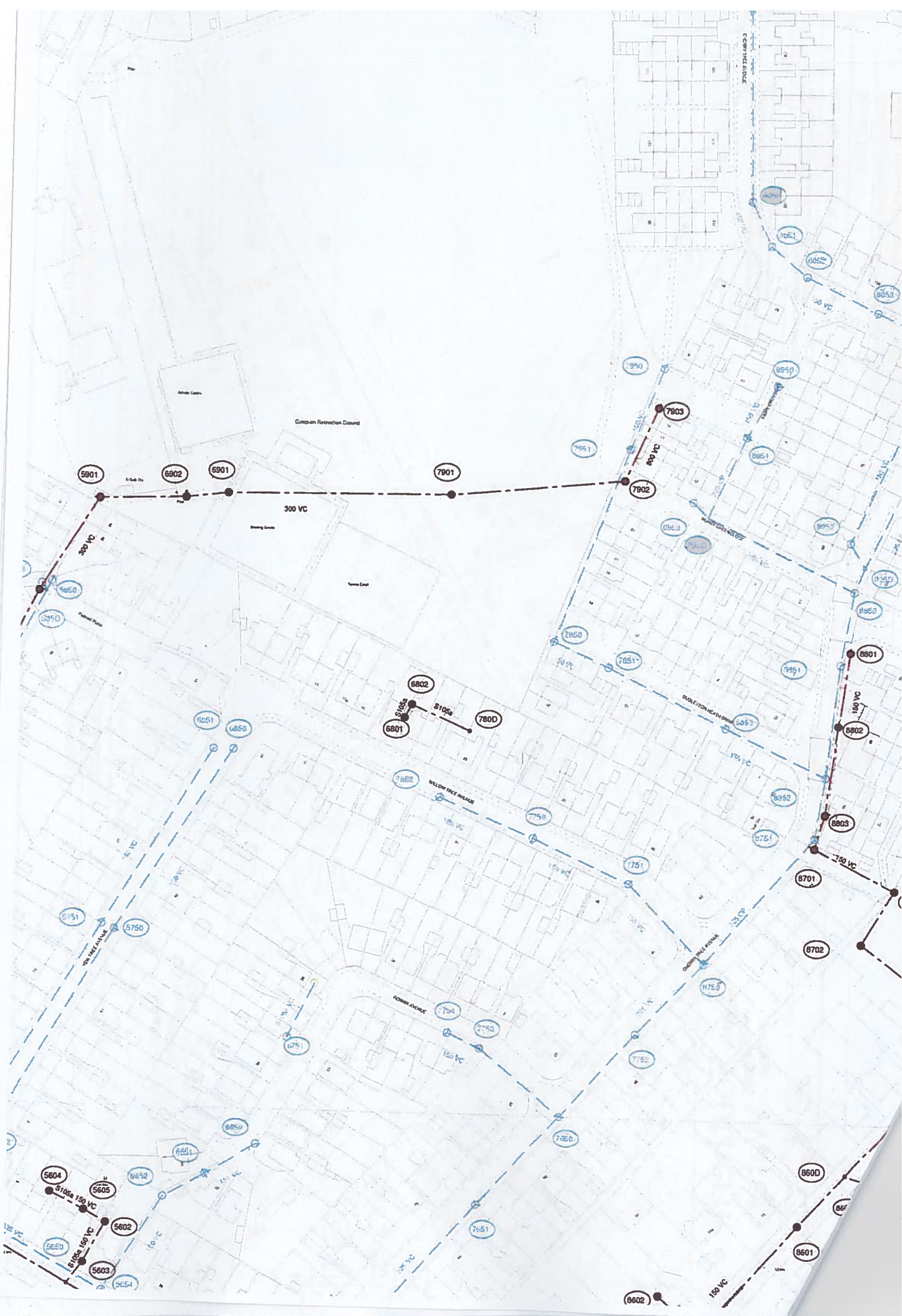
Date

August 2017

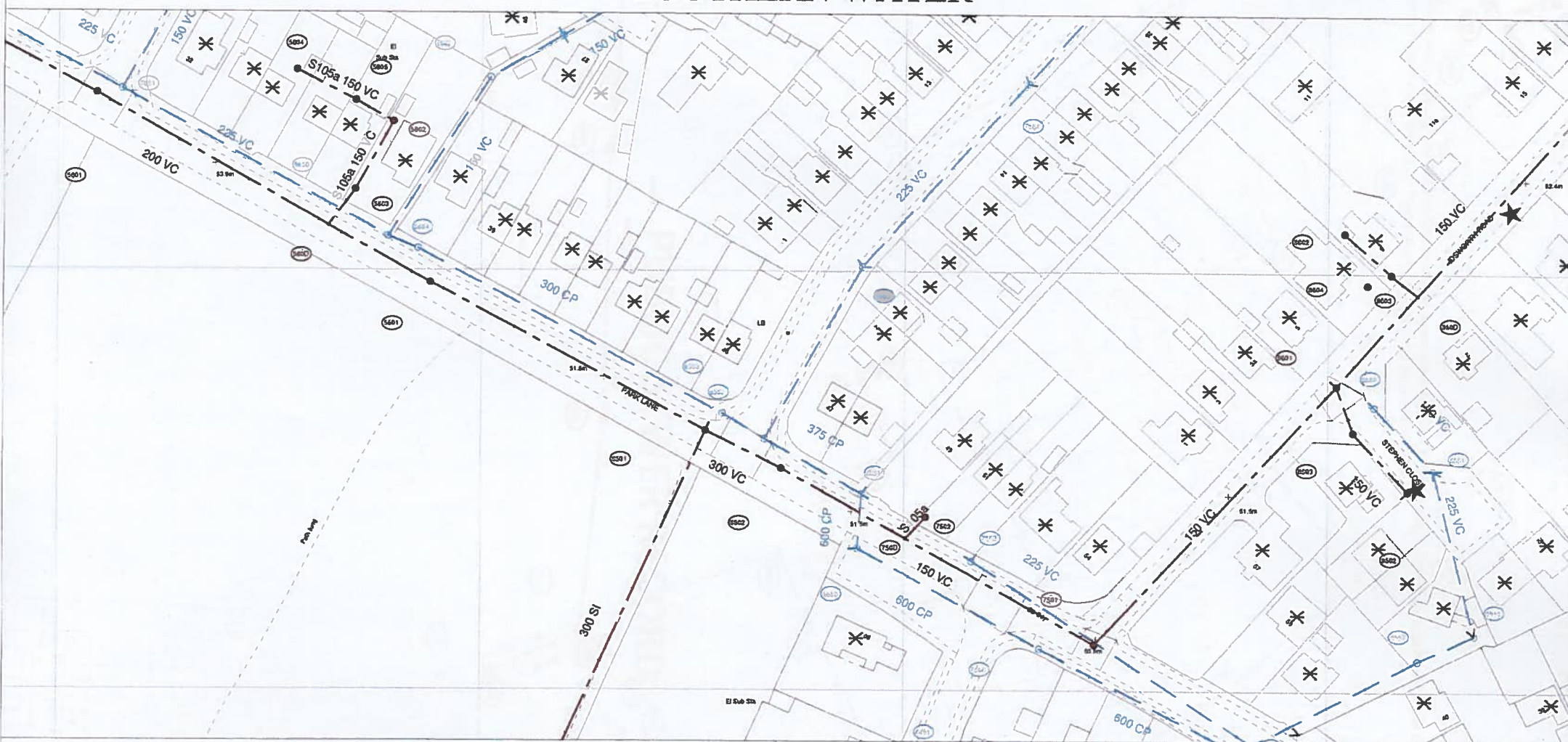
Job Number

16362





SOUTHERN WATER



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.

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O.S. REF: SU6910NE

Scale: 1:1250



Printed By: Gouri

Improvements

Requested By:

Date: 8-4-2014

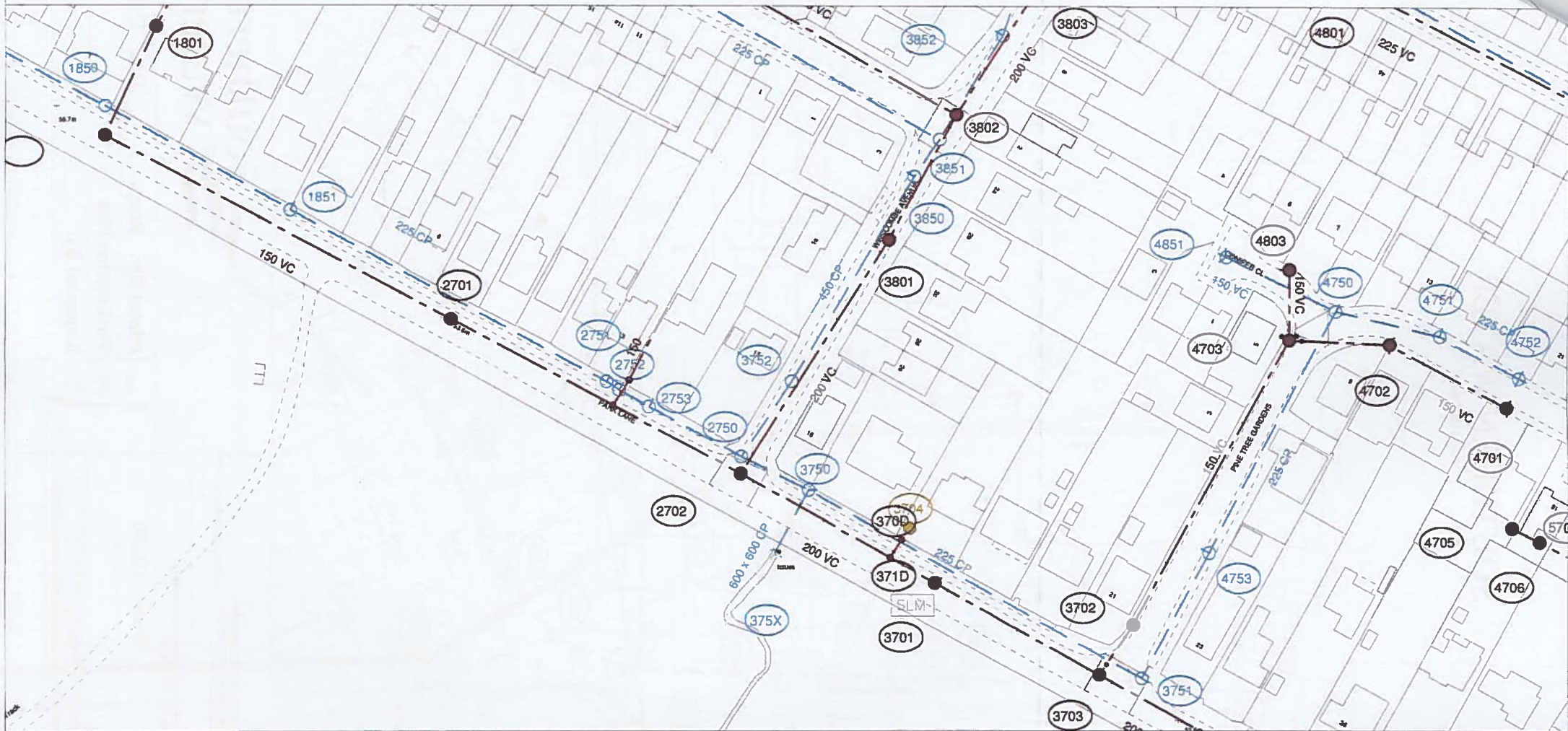
Screen Print

WARNING: BAC pipes are constructed of Bonded Asbestos Cement

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



SOUTHERN WATER



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O.S. REF: SU6910NW

Scale: 1:1250

Sewer Plot

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

Southern Water



Printed By: Gouri

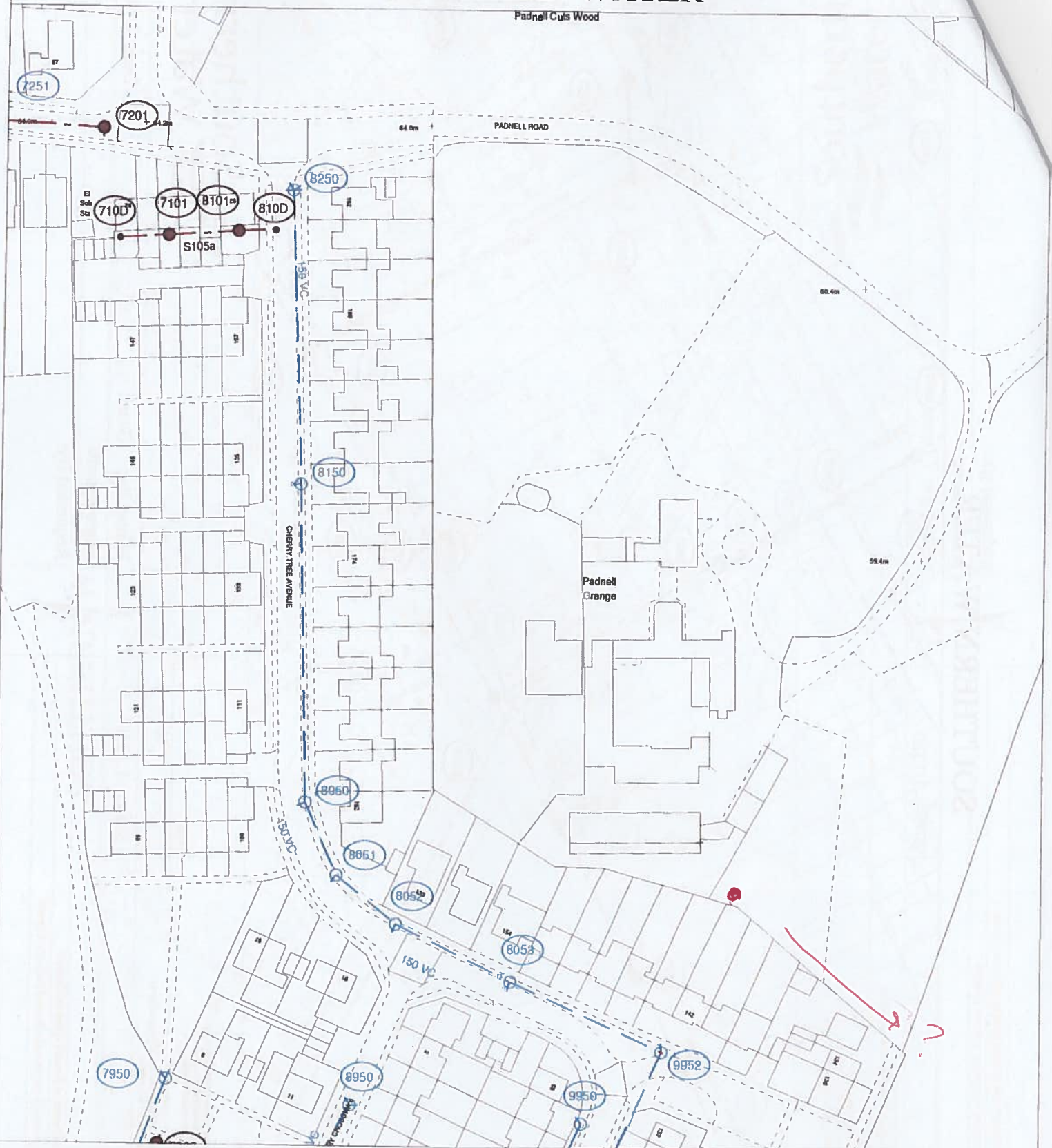
Date: 8-4-2014

Improvements

Requested By:

SOUTHERN WATER

Padnell Culs Wood



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O.S. REF: SU6911SE

Scale: 1:1250

Sewer Plot

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Southern Water

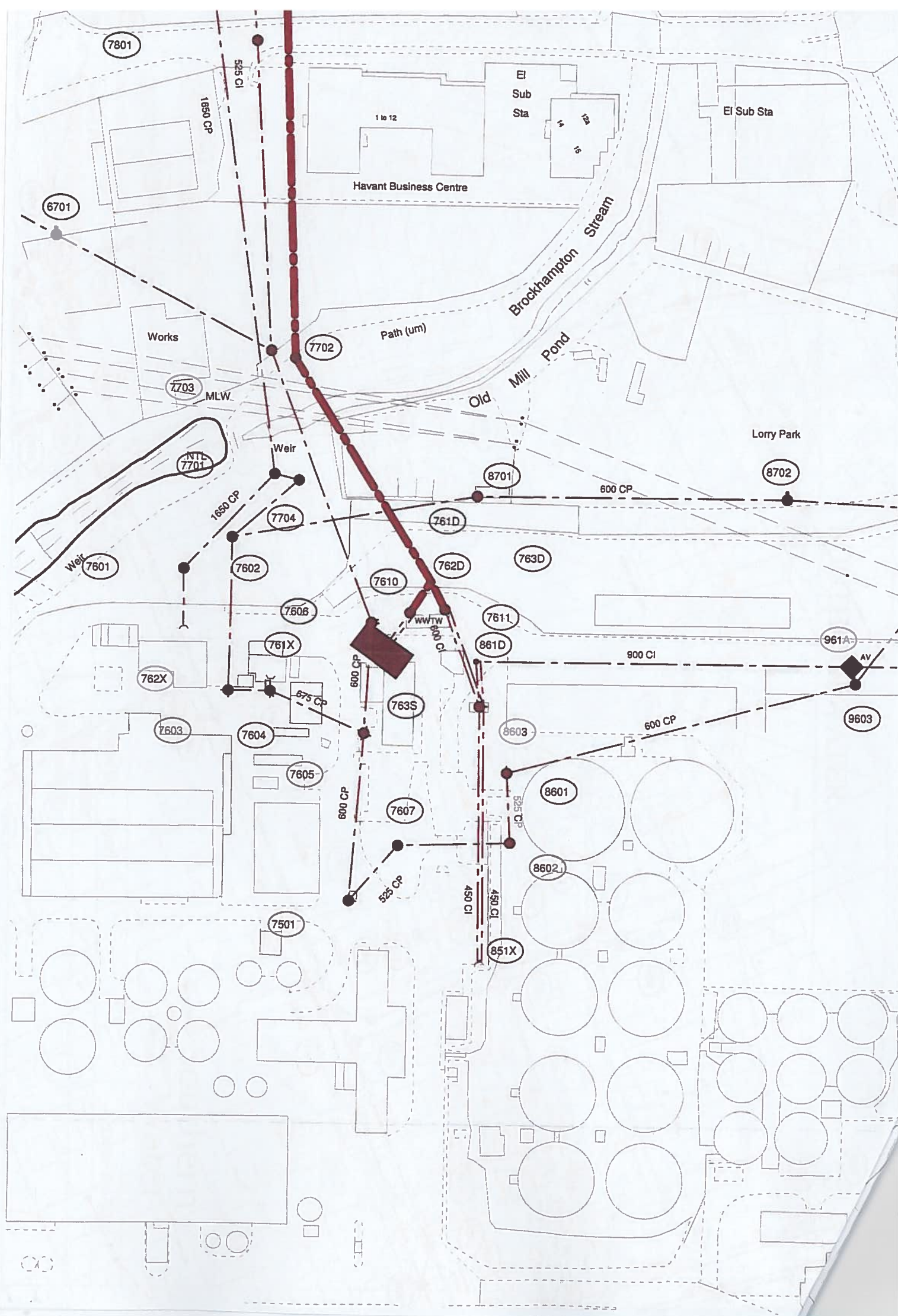
Printed By: Roopa

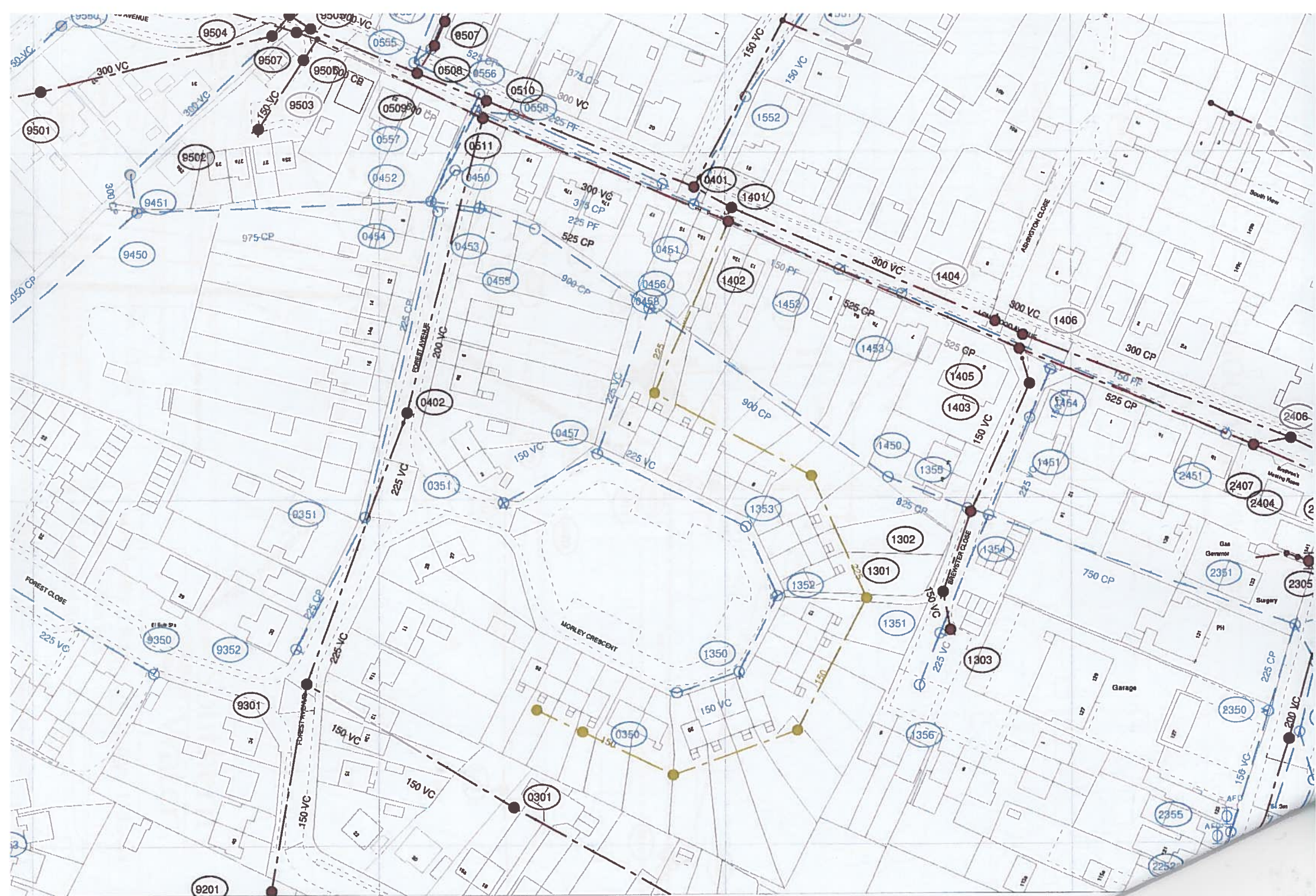
Date: 13-3-2014

Site Location Plan

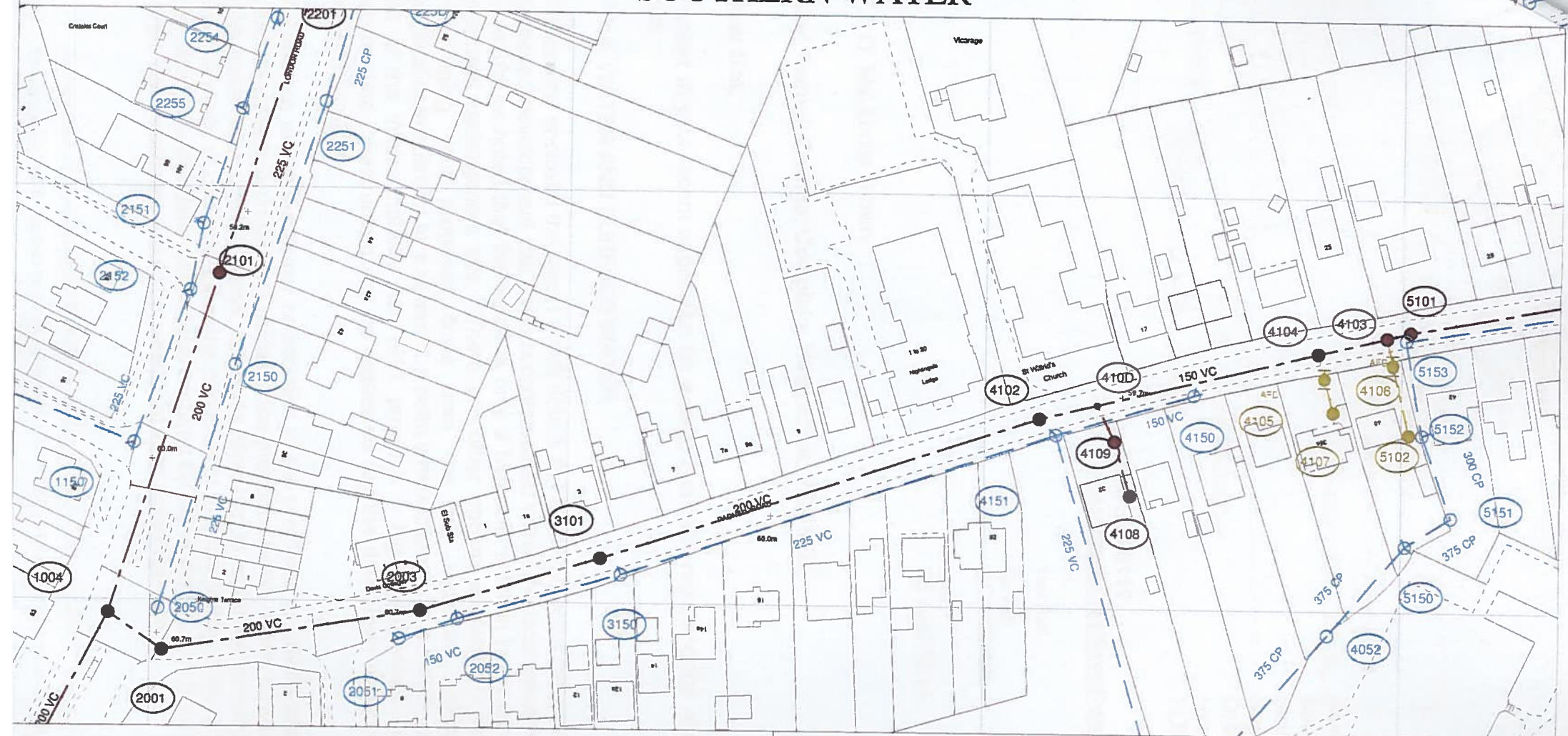
Requested By:







SOUTHERN WATER



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O.S. REF: SU6911SW

Scale: 1:1250

Screen Print

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



Printed By: Gouri

Improvements

Requested By:

Date: 8-4-2014



APPENDIX G DRAINAGE CALCULATIONS

1. Greenfield runoff rates
2. Existing brownfield runoff rates and volumes
3. Proposed runoff rates, volumes and drainage model calculations

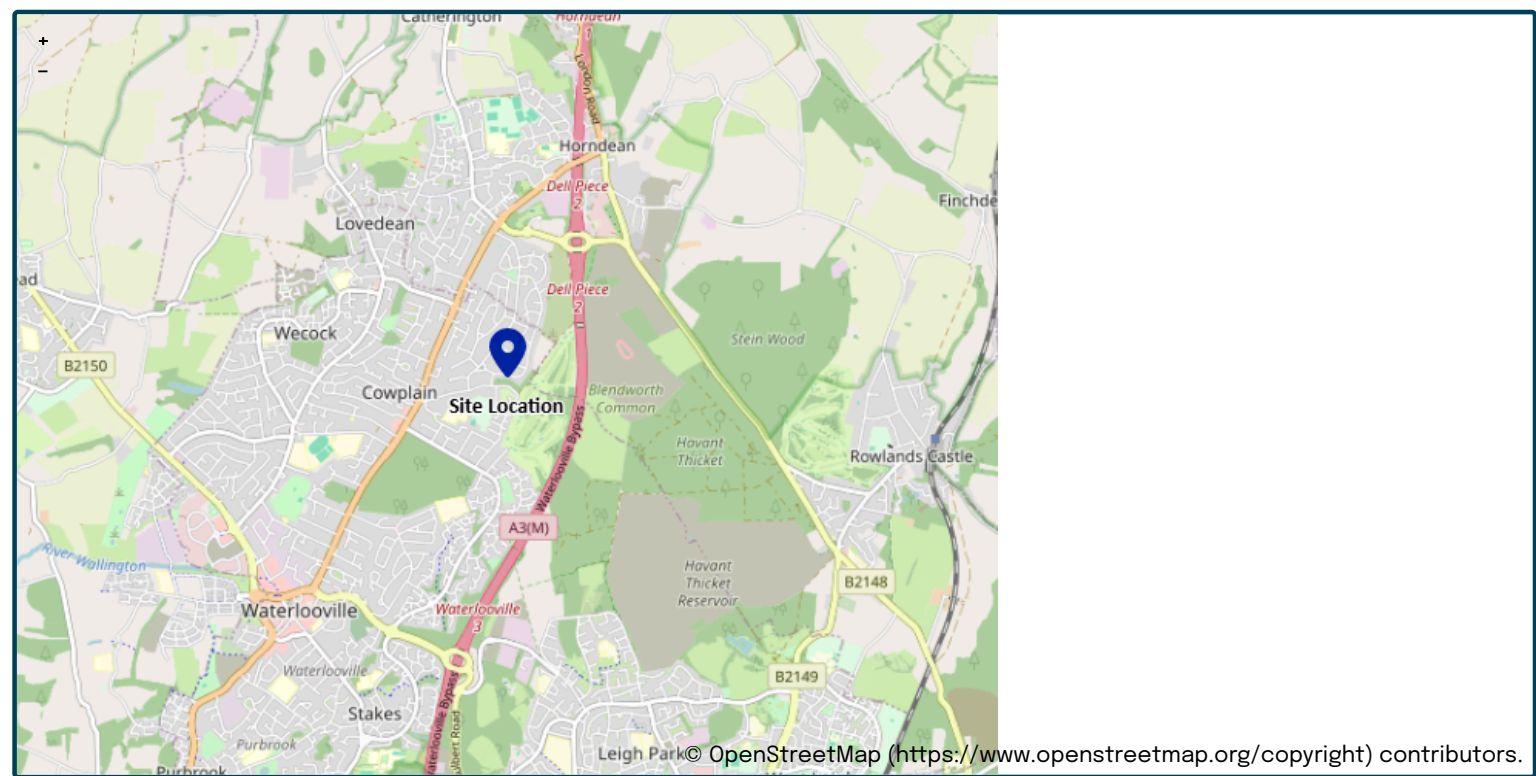
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	26/03/2026
Calculated by	Adam
Reference	250595
Model version	2.2.3

Location

Site name	Padnell Grange
Site location	Waterlooville



Site easting (British National Grid)	469913
Site northing (British National Grid)	111118

Site details

Total site area (ha)	2.82	ha
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MORE INFO

Greenfield runoff

Method

Method	FEH statistical (2025)
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FEH statistical (2025)

	<u>My value</u>	<u>Map value</u>
SAAR9120 (mm)	<input type="text" value="919"/>	<input type="text" value="mm"/>
BFIHOST19scaled	<input type="text" value="0.269"/>	<input type="text"/>
QMed-QBar conversion	<input type="text" value="1.136"/>	<input type="text" value="1.136"/>
QMed (l/s)	<input type="text" value="25.5"/>	<input type="text" value="l/s"/>
QBar (FEH statistical 2025) (l/s)	<input type="text" value="28.9"/>	<input type="text" value="l/s"/>

Growth curve factors

	<u>My value</u>	<u>Map value</u>
Hydrological region	<input type="text" value="7"/>	<input type="text" value="7"/>
1 year growth factor	<input type="text" value="0.85"/>	<input type="text"/>
2 year growth factor	<input type="text" value="0.88"/>	<input type="text"/>
10 year growth factor	<input type="text" value="1.62"/>	<input type="text"/>
30 year growth factor	<input type="text" value="2.3"/>	<input type="text"/>
100 year growth factor	<input type="text" value="3.19"/>	<input type="text"/>
200 year growth factor	<input type="text" value="3.74"/>	<input type="text"/>

Results

Method	FEH statistical (2025)
Flow rate 1 year (l/s)	<input type="text" value="24.6"/>
Flow rate 2 year (l/s)	<input type="text" value="25.5"/>
Flow rate 10 years (l/s)	<input type="text" value="46.8"/>
Flow rate 30 years (l/s)	<input type="text" value="66.5"/>
Flow rate 100 years (l/s)	<input type="text" value="92.3"/>
Flow rate 200 years (l/s)	<input type="text" value="108.2"/>

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent ‘zero’ figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.3) developed by HR Wallingford and available at uksuds.com (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at [uksuds.com/terms-conditions](https://www.uksuds.com/terms-conditions) (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

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Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	30.00	Preferred Cover Depth (m)	1.200
Return Period (years)	30	Maximum Rainfall (mm/hr)	50.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	✓
CV	1.000	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	0.200		

Nodes

Name	Area (ha)	Cover Level (m)	Diameter (mm)
Existing Impermeable Area	0.560	10.000	1200
Outflow		10.000	1200

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	Existing Impermeable Area	Outflow	28.475	0.600	8.500	8.021	0.479	59.4	300	5.23	50.0

Name	Σ Area (ha)	Σ Add Inflow (l/s)
1.000	0.560	0.0

Simulation Settings

Rainfall Methodology	FEH-22	Winter CV	1.000	Drain Down Time (mins)	240	Check Discharge Rate(s)	x
Rainfall Events	Singular	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0	Check Discharge Volume	x
Summer CV	1.000	Skip Steady State	x	Starting Level (m)			

Storm Durations

360

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0	30	0	0	0
2	0	0	0	100	0	0	0

Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute summer	Existing Impermeable Area	184	8.580	0.080	21.5	0.6880	0.0000	OK
360 minute summer	Outflow	184	8.098	0.077	21.3	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute summer	Existing Impermeable Area	1.000	Outflow	21.3	1.451	0.148	0.4185	118.9

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute summer	Existing Impermeable Area	184	8.590	0.090	27.0	0.7766	0.0000	OK
360 minute summer	Outflow	184	8.108	0.087	26.8	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute summer	Existing Impermeable Area	1.000	Outflow	26.8	1.544	0.186	0.4941	149.1

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute summer	Existing Impermeable Area	184	8.629	0.129	50.8	1.1059	0.0000	OK
360 minute summer	Outflow	184	8.142	0.121	50.6	0.0000	0.0000	OK
Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute summer	Existing Impermeable Area	1.000	Outflow	50.6	1.821	0.350	0.7907	281.1

Results for 100 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute summer	Existing Impermeable Area	184	8.645	0.145	62.4	1.2498	0.0000	OK
360 minute summer	Outflow	184	8.157	0.136	62.1	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute summer	Existing Impermeable Area	1.000	Outflow	62.1	1.915	0.430	0.9236	345.5

Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	30.00	Preferred Cover Depth (m)	1.200
Return Period (years)	30	Maximum Rainfall (mm/hr)	50.0	Include Intermediate Ground	x
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	x
CV	1.000	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	0.200		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
SWMH01	0.108	5.00	62.250	1200	108.212	48.580	1.575
SWMH02	0.046	5.00	61.500	1200	108.477	0.645	1.600
SWMH03			61.500	1200	118.095	-9.608	1.680
SWMH04	0.042	5.00	63.250	1200	95.030	-34.541	3.150
SWMH05	0.019	5.00	61.500	1200	118.166	-34.093	1.780
SWMH06	0.067	5.00	61.000	1200	122.266	-90.832	1.700
SWMH07	0.040	5.00	61.100	1200	135.148	-54.263	2.120
SWMH08	0.044	5.00	62.150	1200	135.744	-34.258	3.400
SWMH09	0.036	5.00	61.850	1200	152.327	-24.345	3.150
SWMH10	0.026	5.00	62.400	1200	159.281	-19.989	3.720
SWMH11	0.013	5.00	59.700	1200	179.269	-97.175	1.700
SWMH12	0.088	5.00	59.950	1200	189.348	-68.218	2.220
SWMH13	0.036	5.00	60.200	1200	195.706	-49.616	2.600
SWMH14	0.130	5.00	60.250	1500	194.454	-19.749	3.140
SWMH15	0.033	5.00	59.950	1500	212.138	-0.493	3.247
SWMH16		5.00	60.630	1050	184.241	35.292	2.250
SWMH17	0.016	5.00	59.750	1050	209.575	15.258	3.047
SWMH18	0.024	5.00	59.850	2100	216.318	12.428	3.180
SWMH19			58.100	1500	223.804	11.184	1.850
Attenuation Basin		5.00	58.100	2100	245.723	28.941	1.850
SWMH20			57.100	1500	247.598	32.219	0.900
Outfall			57.100	1200	259.350	75.163	1.100
PP01	0.014	5.00	61.500		102.283	52.919	0.500
PP02	0.012	5.00	61.800		112.594	58.911	0.500
PP03	0.015	5.00	61.650		101.286	6.799	0.500
PP04	0.009	5.00	63.400		89.245	-32.921	0.500
PP05	0.059	5.00	61.000		117.402	-90.504	0.500
PP06	0.012	5.00	62.000		133.731	-75.237	0.500
PP07	0.021	5.00	62.000		128.551	-48.190	0.500
PP08	0.015	5.00	62.000		147.455	-41.362	0.500
PP09	0.055	5.00	61.150		143.085	-10.020	2.250
PP10	0.017	5.00	60.200		180.828	-14.586	0.500
PP11	0.015	5.00	60.200		180.437	-24.742	0.500
PP12	0.060	5.00	59.700		166.551	-116.191	0.500
PP13	0.025	5.00	59.950		200.509	-60.244	0.500
PP14	0.033	5.00	59.800		188.319	-34.720	0.500
PP15	0.008	5.00	60.250		189.750	-9.942	0.500
PP16	0.014	5.00	59.750		194.628	23.874	0.500

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.001	SWMH01	SWMH02	47.936	0.600	60.675	59.900	0.775	61.9	300	5.54	50.0
1.002	SWMH02	SWMH03	14.058	0.600	59.900	59.820	0.080	175.7	300	5.74	50.0
1.003	SWMH03	SWMH05	24.485	0.600	59.820	59.720	0.100	244.9	300	6.14	50.0
2.001	SWMH04	SWMH05	23.140	0.600	60.100	59.720	0.380	60.9	225	5.28	50.0
1.004	SWMH05	SWMH08	17.579	0.600	59.720	58.750	0.970	18.1	300	6.22	50.0
3.001	SWMH06	SWMH07	38.772	0.600	59.300	58.980	0.320	121.2	300	5.49	50.0
3.002	SWMH07	SWMH08	20.014	0.600	58.980	58.900	0.080	250.2	300	5.83	50.0
1.005	SWMH08	SWMH09	19.320	0.600	58.750	58.700	0.050	386.4	450	6.54	50.0
4.001	PP09	SWMH09	17.048	0.600	58.900	58.700	0.200	85.2	150	5.26	50.0
1.006	SWMH09	SWMH10	8.206	0.600	58.700	58.680	0.020	410.3	450	6.67	50.0
1.007	SWMH10	SWMH14	35.174	0.600	58.680	57.110	1.570	22.4	450	6.81	50.0
5.001	SWMH11	SWMH12	30.661	0.600	58.000	57.730	0.270	113.6	300	5.75	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.001	2.002	141.5	24.3	1.275	1.300	0.134	0.0	83	1.507
1.002	1.183	83.6	35.3	1.300	1.380	0.195	0.0	136	1.135
1.003	1.000	70.7	35.3	1.380	1.480	0.195	0.0	150	0.999
2.001	1.679	66.7	9.3	2.925	1.555	0.051	0.0	57	1.192
1.004	3.710	262.2	48.0	1.480	3.100	0.266	0.0	86	2.848
3.001	1.427	100.9	22.8	1.400	1.820	0.126	0.0	96	1.159
3.002	0.989	69.9	32.2	1.820	2.950	0.178	0.0	143	0.969
1.005	1.028	163.5	91.9	2.950	2.700	0.509	0.0	241	1.056
4.001	1.089	19.2	9.9	2.100	3.000	0.055	0.0	76	1.098
1.006	0.997	158.6	111.1	2.700	3.270	0.615	0.0	278	1.076
1.007	4.309	685.3	121.6	3.270	2.690	0.673	0.0	127	3.282
5.001	1.474	104.2	13.3	1.400	1.920	0.073	0.0	72	1.020

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
5.002	SWMH12	SWMH13	19.659	0.600	57.730	57.600	0.130	151.2	300	6.01	50.0
5.003	SWMH13	SWMH14	29.893	0.600	57.600	57.110	0.490	61.0	300	6.26	50.0
1.008	SWMH14	SWMH15	26.144	0.600	57.110	57.050	0.060	435.7	525	7.22	50.0
6.001	SWMH16	SWMH17	32.298	0.600	58.380	58.180	0.200	161.5	225	5.52	50.0
1.010	SWMH18	SWMH19	7.589	0.600	56.670	56.620	0.050	151.8	600	5.06	50.0
1.012	Attenuation Basin	SWMH20	3.776	0.600	56.250	56.200	0.050	75.5	300	5.03	50.0
1.013	SWMH20	Outfall	44.523	0.600	56.200	56.000	0.200	222.6	300	5.74	50.0
6.000p	PP05	SWMH06	4.875	0.600	60.500	60.300	0.200	24.4	150	5.04	50.0
7.000p	PP06	SWMH07	21.022	0.600	61.500	60.000	1.500	14.0	150	5.13	50.0
12.000p	PP12	SWMH11	22.877	0.600	59.200	59.000	0.200	114.4	150	5.41	50.0
13.000p	PP13	SWMH13	11.663	0.600	59.450	59.300	0.150	77.8	150	5.17	50.0
14.000p	PP14	SWMH14	16.179	0.600	59.300	59.000	0.300	53.9	150	5.20	50.0
15.000p	PP11	SWMH10	21.683	0.600	59.700	59.500	0.200	108.4	150	5.37	50.0
16.000p	PP10	SWMH10	22.214	0.600	59.700	59.500	0.200	111.1	150	5.39	50.0
17.000p	PP07	SWMH08	15.679	0.600	61.500	61.300	0.200	78.4	150	5.23	50.0
18	PP04	SWMH04	6.008	0.600	62.900	62.700	0.200	30.0	150	5.05	50.0
19	PP08	SWMH09	17.701	0.600	61.500	61.300	0.200	88.5	150	5.28	50.0
20	PP15	SWMH14	10.877	0.600	59.750	59.550	0.200	54.4	150	5.13	50.0
21	PP16	SWMH17	17.252	0.600	59.250	59.050	0.200	86.3	150	5.27	50.0
22	PP03	SWMH02	9.465	0.600	61.150	61.000	0.150	63.1	150	5.12	50.0
23	PP01	SWMH01	7.347	0.600	61.000	60.800	0.200	36.7	150	5.07	50.0
24	PP02	SWMH01	11.222	0.600	61.300	61.100	0.200	56.1	150	5.14	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
5.002	1.276	90.2	29.2	1.920	2.300	0.161	0.0	117	1.141
5.003	2.016	142.5	40.3	2.300	2.840	0.223	0.0	109	1.741
1.008	1.066	230.8	192.7	2.615	2.375	1.066	0.0	368	1.187
6.001	1.026	40.8	0.0	2.025	1.345	0.000	0.0	0	0.000
1.010	1.974	558.1	4.3	2.580	0.880	0.024	0.0	37	0.606
1.012	1.811	128.0	0.0	1.550	0.600	0.000	0.0	0	0.000
1.013	1.049	74.2	0.0	0.600	0.800	0.000	0.0	0	0.000
6.000p	2.048	36.2	10.7	0.350	0.550	0.059	0.0	56	1.789
7.000p	2.705	47.8	2.2	0.350	0.950	0.012	0.0	22	1.383
12.000p	0.939	16.6	10.9	0.350	0.550	0.060	0.0	89	1.001
13.000p	1.141	20.2	4.6	0.350	0.750	0.025	0.0	48	0.923
14.000p	1.372	24.3	5.9	0.350	1.100	0.033	0.0	51	1.139
15.000p	0.964	17.0	2.7	0.350	2.750	0.015	0.0	40	0.704
16.000p	0.953	16.8	3.1	0.350	2.750	0.017	0.0	43	0.723
17.000p	1.136	20.1	3.8	0.350	0.700	0.021	0.0	44	0.876
18	1.843	32.6	1.7	0.350	0.400	0.009	0.0	23	0.972
19	1.069	18.9	2.7	0.350	0.400	0.015	0.0	38	0.761
20	1.367	24.2	1.4	0.350	0.550	0.008	0.0	25	0.752
21	1.083	19.1	2.5	0.350	0.550	0.014	0.0	37	0.750
22	1.268	22.4	2.8	0.350	0.350	0.015	0.0	35	0.863
23	1.666	29.4	2.6	0.350	1.300	0.014	0.0	30	1.032
24	1.345	23.8	2.2	0.350	1.000	0.012	0.0	31	0.842

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.001	47.936	61.9	300	Circular	62.250	60.675	1.275	61.500	59.900	1.300
1.002	14.058	175.7	300	Circular	61.500	59.900	1.300	61.500	59.820	1.380
1.003	24.485	244.9	300	Circular	61.500	59.820	1.380	61.500	59.720	1.480
2.001	23.140	60.9	225	Circular	63.250	60.100	2.925	61.500	59.720	1.555
1.004	17.579	18.1	300	Circular	61.500	59.720	1.480	62.150	58.750	3.100
3.001	38.772	121.2	300	Circular	61.000	59.300	1.400	61.100	58.980	1.820
3.002	20.014	250.2	300	Circular	61.100	58.980	1.820	62.150	58.900	2.950
1.005	19.320	386.4	450	Circular	62.150	58.750	2.950	61.850	58.700	2.700
4.001	17.048	85.2	150	Circular	61.150	58.900	2.100	61.850	58.700	3.000
1.006	8.206	410.3	450	Circular	61.850	58.700	2.700	62.400	58.680	3.270
1.007	35.174	22.4	450	Circular	62.400	58.680	3.270	60.250	57.110	2.690

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.001	SWMH01	1200	Manhole	Adoptable	SWMH02	1200	Manhole	Adoptable
1.002	SWMH02	1200	Manhole	Adoptable	SWMH03	1200	Manhole	Adoptable
1.003	SWMH03	1200	Manhole	Adoptable	SWMH05	1200	Manhole	Adoptable
2.001	SWMH04	1200	Manhole	Adoptable	SWMH05	1200	Manhole	Adoptable
1.004	SWMH05	1200	Manhole	Adoptable	SWMH08	1200	Manhole	Adoptable
3.001	SWMH06	1200	Manhole	Adoptable	SWMH07	1200	Manhole	Adoptable
3.002	SWMH07	1200	Manhole	Adoptable	SWMH08	1200	Manhole	Adoptable
1.005	SWMH08	1200	Manhole	Adoptable	SWMH09	1200	Manhole	Adoptable
4.001	PP09		Junction		SWMH09	1200	Manhole	Adoptable
1.006	SWMH09	1200	Manhole	Adoptable	SWMH10	1200	Manhole	Adoptable
1.007	SWMH10	1200	Manhole	Adoptable	SWMH14	1500	Manhole	Adoptable