Thames Water Utilities Ltd
Developer Services
Asset Development
Second Floor West, Clearwater Court, Vastern Road, Reading RG1 8DB

Potable Water Capacity
Flow & Pressure Investigation

Location: Agar Grove, London NW1 9SY

DATE	ISSUE	REFERENCE	AUTHOR	APPROVED
04/09/15	1.0	50075236	N Lazarow	M Cieslak

CONTENTS

1. INTRODUCTION

As per your request received 18 August 2015, this report is to evaluate the results of the flow and pressure test and to ascertain the availability of capacity within the existing local mains network and its ability to supply the proposed new domestic peak demand profile for the regeneration of the Agar Grove housing estate, London NW1 9SY consisting of the demolition of 112 dwellings, new build 345 dwellings, refurbishment of Lulworth Tower (137 dwellings) to include an additional 11 dwellings, a café, shop and community space.

The investigation will also determine whether or not any enhancement to the existing network is necessary to supply your requirement, while maintaining existing flows and pressures to our present customers.

Should your development proposal change, this report would become invalid and a further test would be required. If other developments are completed within the Water Pressure Zone before your development and depending on their size and location, this may also necessitate the test to be retaken.

2. EXISTING NETWORK

The local mains network is hydraulically dominated by the Maiden Lane Reservoir. Water to the zone is supplied through the Tunnel Water Ring Main and pumped out in the strategic network at Barrow Hill, Stoke Newington and New River shafts.

The District Metered Area is supplied from the 17" trunk main into a 7" main at Camden Road to the north and from the 450mm trunk main in Goods Way (Kings Cross) into a 200mm main in Camley Street to the south. These supply the distribution mains in the area including the 4" mains adjacent to the Agar Grove estate.

3. EXISTING DEMAND TYPE

The local demand type is predominately residential and residential amenities, which have an overall peak morning water demand profile from the distribution mains network.

4. DOMESTIC DEMAND

The redevelopment of the site consists of the demolition of 112 dwellings, new build 345 dwellings, refurbishment of Lulworth Tower (137 dwellings) to include an additional 11 dwellings, a café, shop and community space. The net increase will be 244 residential dwellings.

Based on empirical and historical data for this type of use, maximum additional daily consumption will be 68,320 litres. By applying diversity factors, this equates to a morning peak demand profile of 3.2 l/s. There will be small break tanks proposed within each building, estimated at 2 m3 each in blocks A and F,G, and H. Applied at the same rate across all the new buildings this reduces the peak infill rate to 2.8 l/s.

5. TEST LOCATION

It was essential to select a suitable washout to induce your flow requirements on our existing network. The following three criteria have determined the location of this washout:

a) must be located on the main proposed to supply your domestic demand;

b) must be closest to the point of entry of your connection; and

c) located in such a manner that when the calibrated flow gauge is operated to induce the required flow rates, the discharged water will not cause flooding of existing properties.

The washout selected was on the 4" diameter main in Agar Grove, London, NW1 9QW Please refer to appendix for plan of the test location.

6. PRESSURE LOGGER LOCATIONS

Pressure Logger locations have been selected to comprehensively monitor the impact of the morning domestic peak demand profile on the existing mains network. Please refer to appendix for pressure logger location plans.

LOGGER 1. 4” MAIN ASHMORE, AGAR GROVE, LONDON, NW1 9SX
LOGGER 2. 7” MAIN 5, WROTHAM ROAD, LONDON, NW1 0RE
LOGGER 3. 6” MAIN 36, ST. AUGUSTINES ROAD, LONDON, NW1 9RN
LOGGER 4. 4” MAIN SOANE COURT, ST. PANCRAS WAY, LONDON, NW1 9EG
LOGGER 5. 200mm MAIN 30, CEDAR WAY, LONDON, N1C 4PD

See Appendix for the location of the site, test and pressure loggers.

7. INDUCED FLOWS

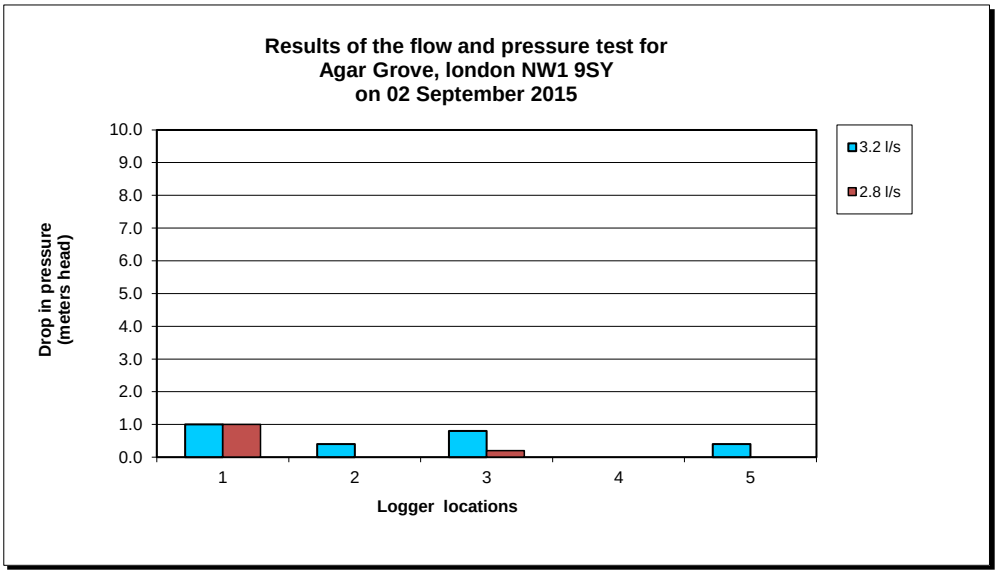
For the domestic demand, flow rates of was induced for a 3 minute period.

The flow rate was induced during the weekday peak morning demand period, Monday to Friday 07:00 - 08:30 inclusive. The pressure loggers monitoring the investigation will show a significant drop in pressure, if the network has insufficient spare capacity to supply the new peak demand.

8. INVESTIGATION RESULTS

The investigation was undertaken on 02 September 2015. All five pressure loggers provided the field data for the duration of the investigation. The drops in pressure recorded during the test are represented in the table and graph below.

Flow rates	3.2 l/s	2.8 l/s
Logger location 1	1.0	1.0
Logger location 2	0.4	<0.1
Logger location 3	0.8	0.2
Logger location 4	<0.1	<0.1
Logger location 5	0.4	<0.1



These are within acceptable levels and show that the mains network has sufficient capacity to supply the regeneration of the Agar Grove housing estate.

The result of the seven day pressure logger showed the minimum pressure available at the site was 34.34 meters head, (3.434 Bar). This occurs at approximately 8.00AM on week days.

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Please note that irrespective of the pressure which currently exists within the local mains network, Thames Water's minimum level of service is 10 metres head of pressure at the boundary stop valve.

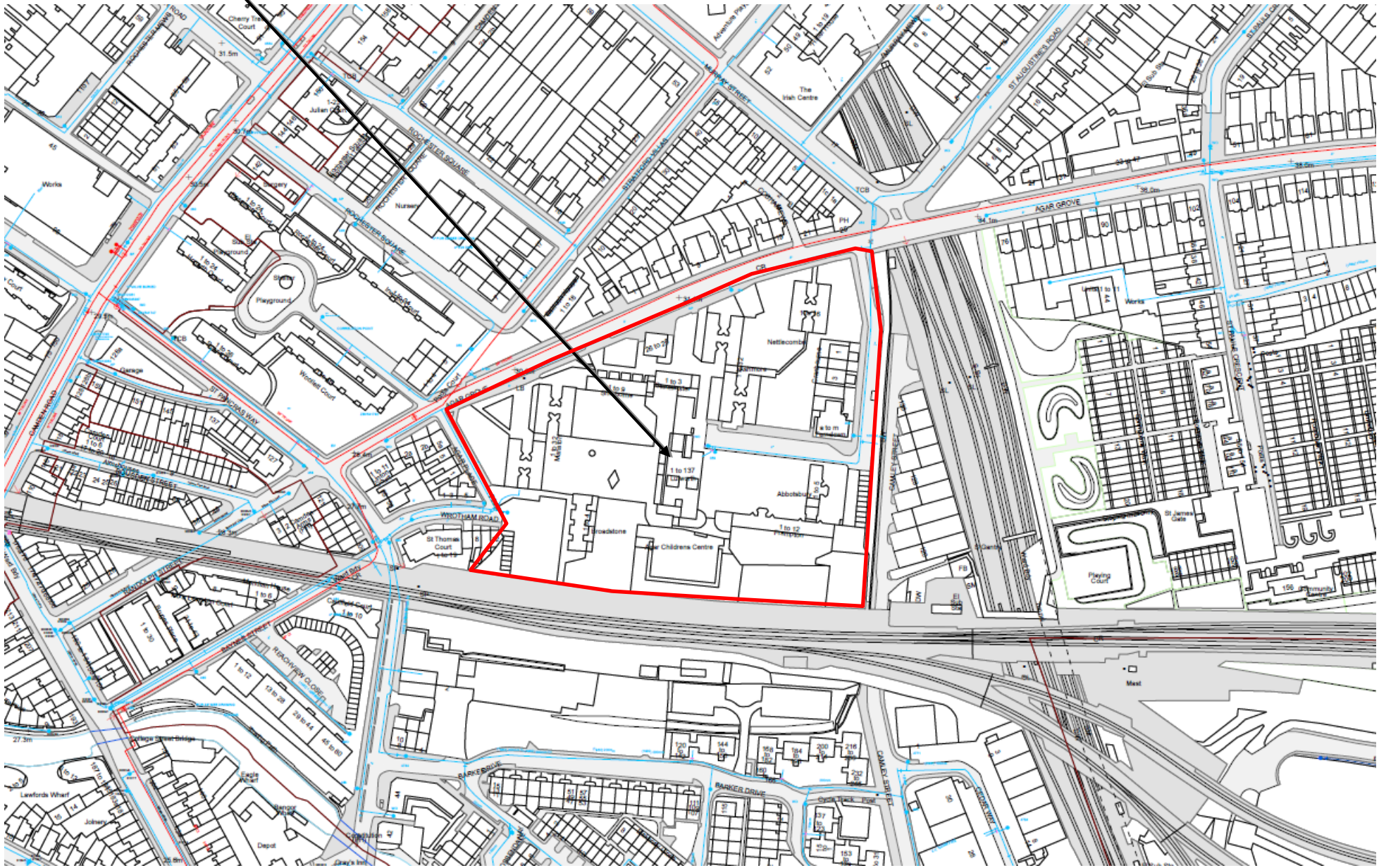
See Appendix for the results graph of the 7 day pressure logger.

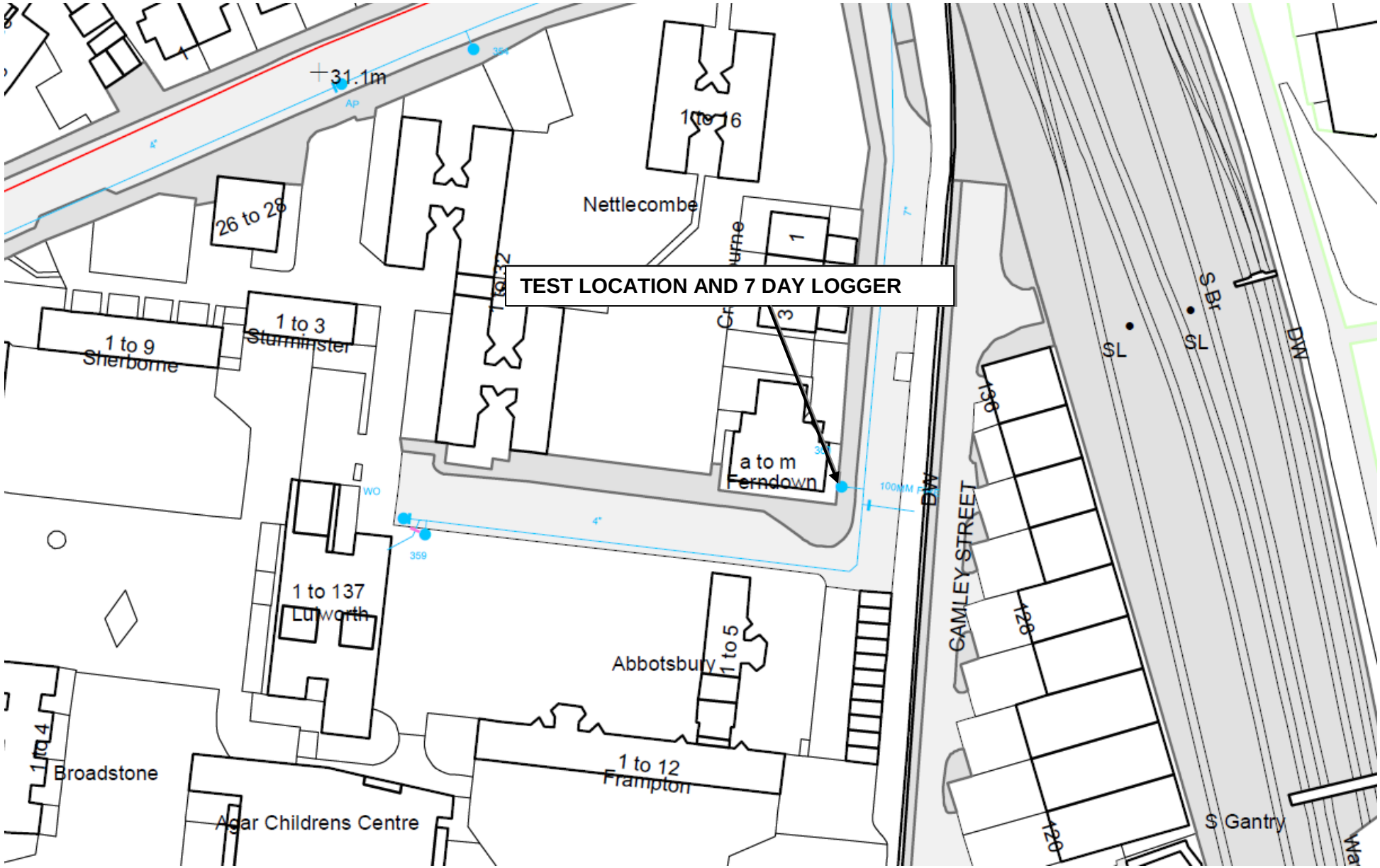
9. CONCLUSION

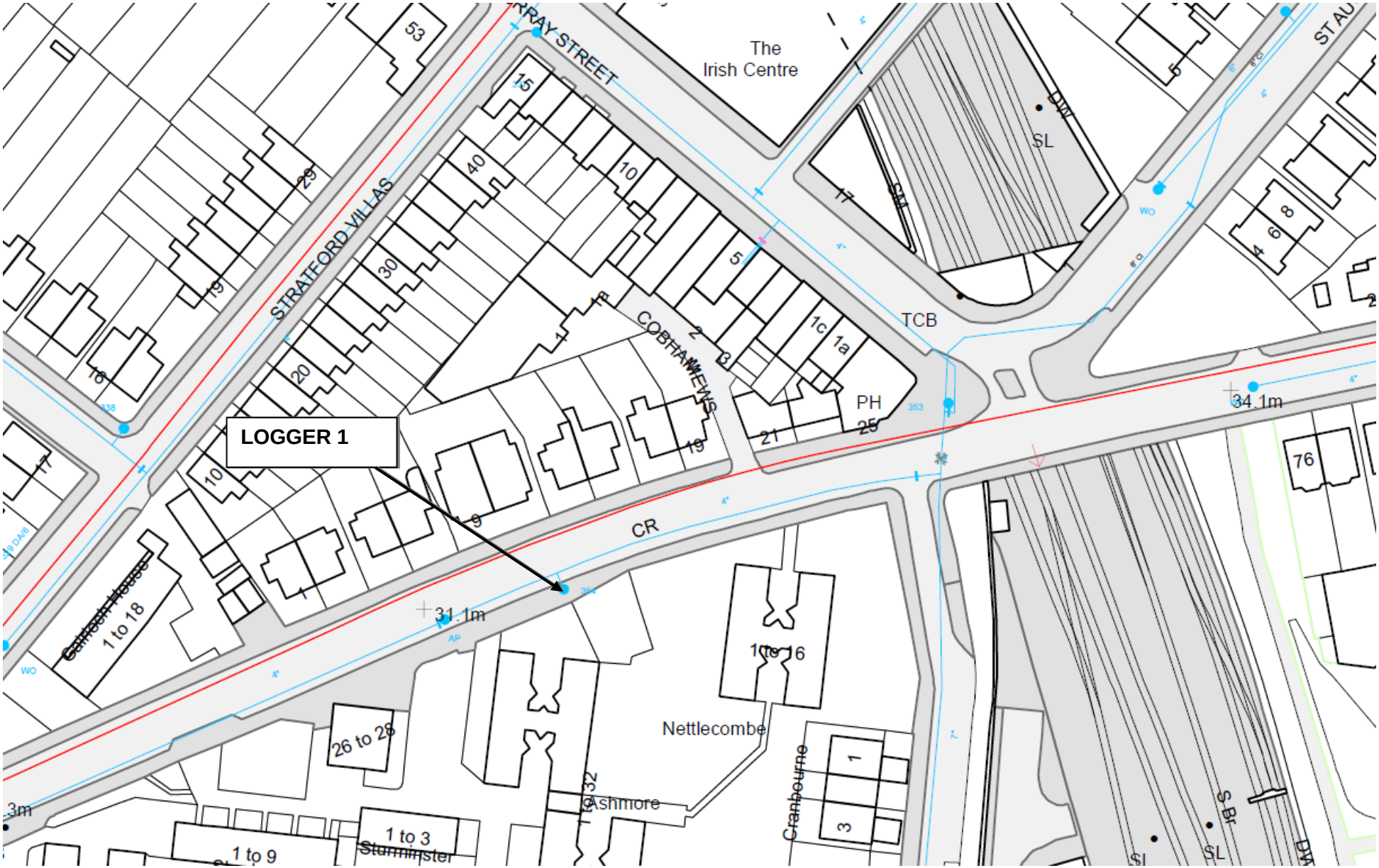
The result of the investigation has established the following: The network has sufficient spare capacity in the distribution mains in and around the Agar Grove estate to supply the additional domestic peak demand profile for the proposed estate regeneration consisting of the demolition of 112 dwellings, new build 345 dwellings, refurbishment of Lulworth Tower (137 dwellings) to include an additional 11 dwellings, a café, shop and community space.

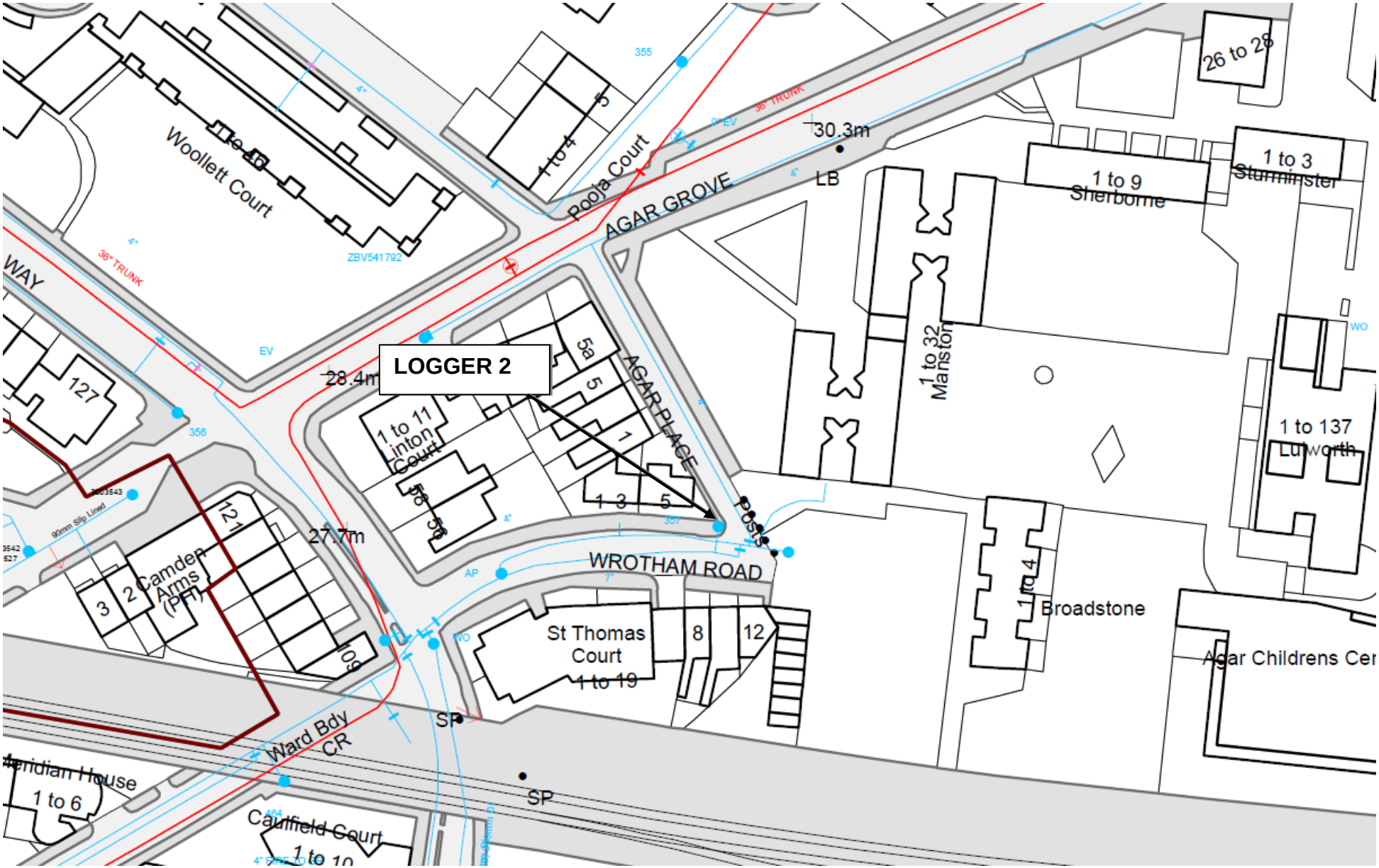
APPENDIX

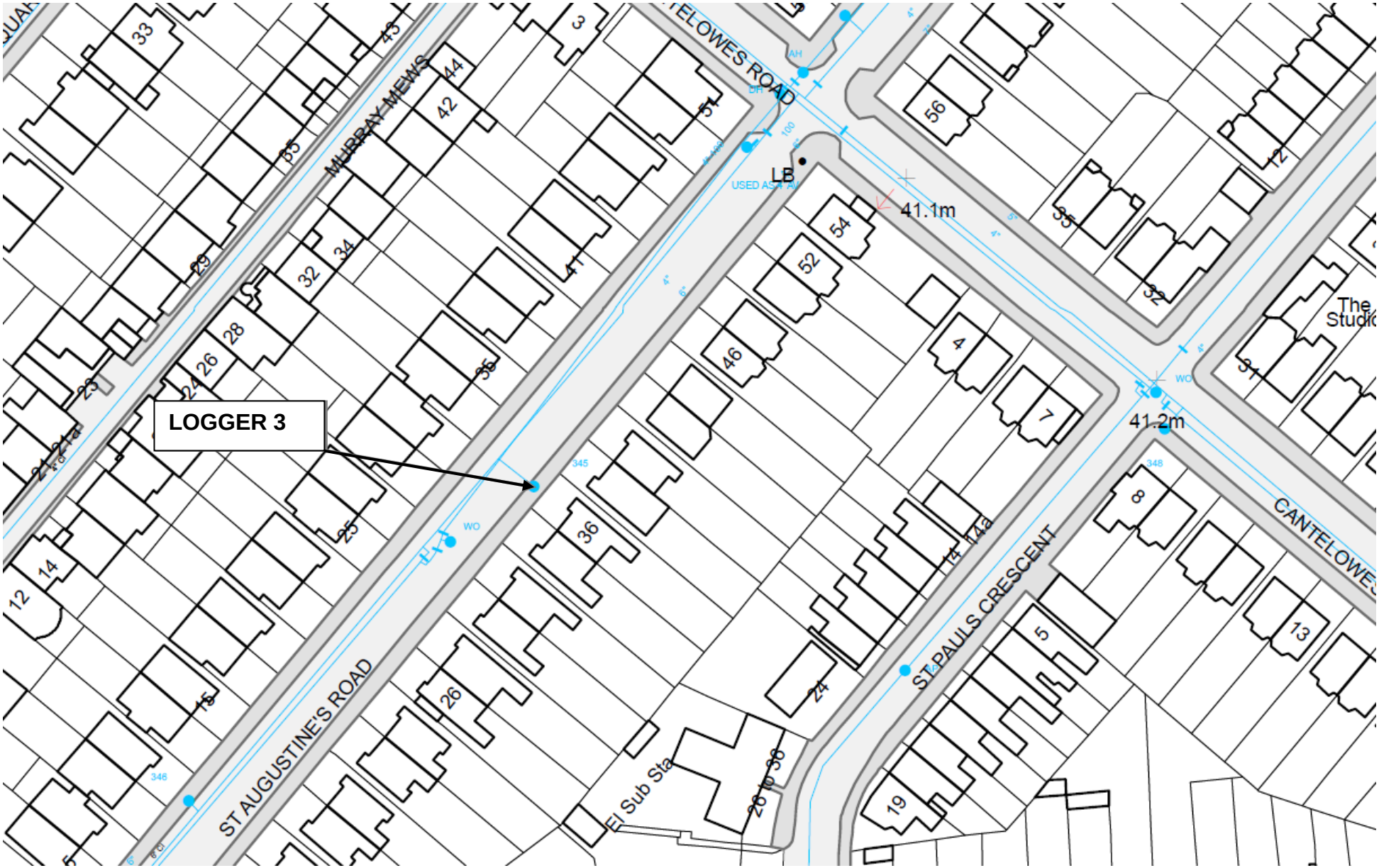
SITE LOCATION

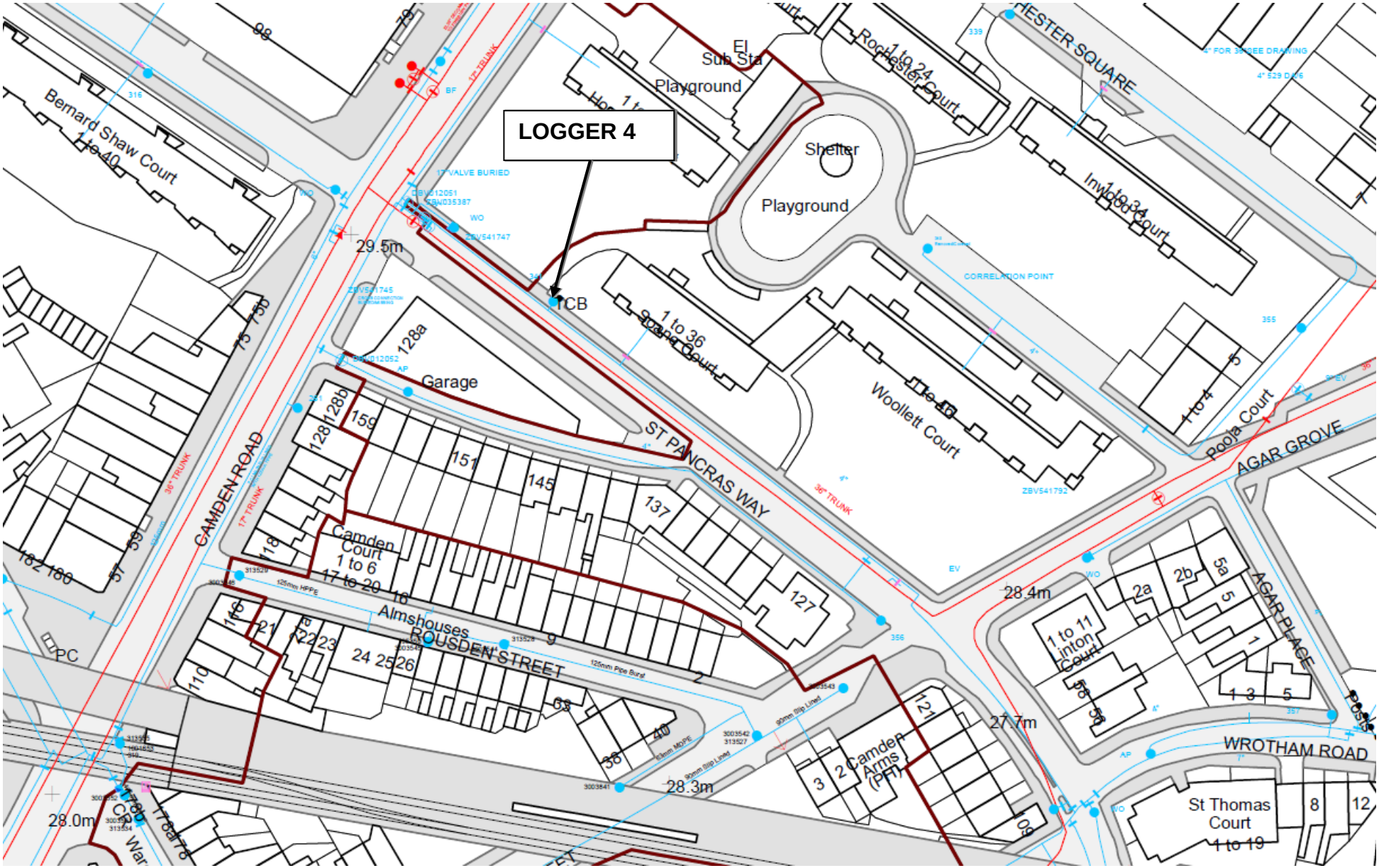


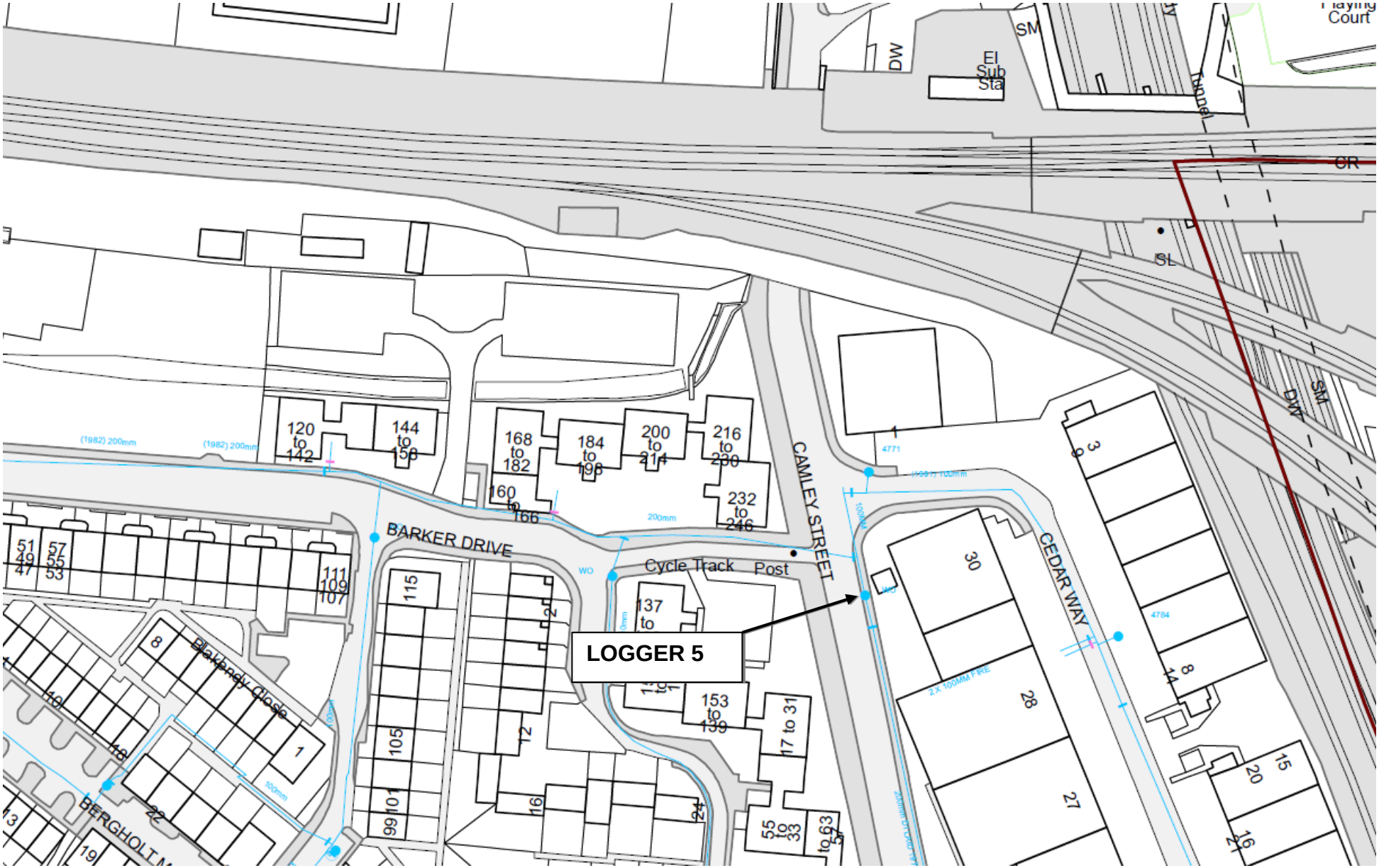

TEST LOCATION AND 7 DAY LOGGER
31.1m
1 to 16
Nettlecombe
26 to 28
1 to 32
1 to 3
Sturminster
1 to 9
Sherborne
a to m
Ferndown
1 to 137
Lulworth
Abbotsbury
1 to 5
1 to 12
Frampton
Broadstone
Agar Childrens Centre
CAMLEY STREET
SL
SL
S Br
DW
S Gantry
359
WO


LOGGER 1
The Irish Centre
STRATFORD VILLAS
COBHAM MEWS
TCB
PH
CR
34.1m
31.1m
Nettlecombe
Ashmore
Cranbourne
1 to 18
1 to 16
26 to 28
1 to 3 Stunminster
1 to 9
SL
SL
S.Br

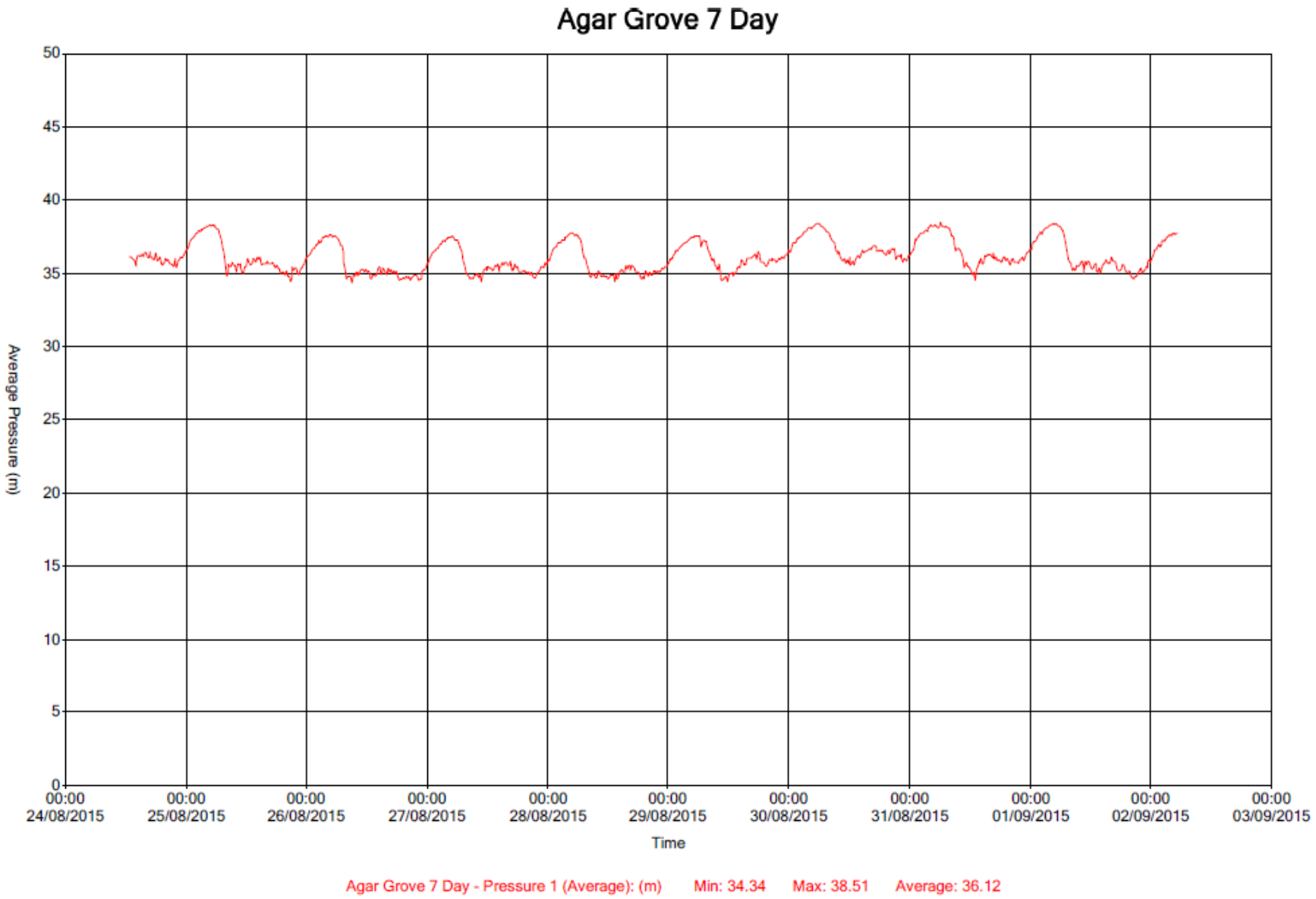

LOGGER 2
AGAR GROVE
AGAR PLACE
WROTHAM ROAD
Woollett Court
1 to 16
Pooja Court
1 to 4
5
355
30.3m
LB
26 to 28
1 to 3
Sturminster
1 to 9
Sherborne
1 to 32
Manston
1 to 137
Lutworth
WO
127
356
28.4m
1 to 11
Linton Court
5a
5
1
1 3 5
357
27.7m
121
Camden Arms (PH)
3
2
06
St Thomas Court
1 to 19
8
12
1 to 4
Broadstone
Agar Childrens Cer
SP
Ward Bdy CR
Meridian House
1 to 6
Caulfield Court
1 to 10
ZBV541792
36" TRUNK
EV
90mm Slip Lined
AP
POST


LOGGER 3
MURRAY MEWS
CANTELOWES ROAD
ST AUGUSTINE'S ROAD
ST PAULS CRESCENT
CANTELOWES
LB
41.1m
41.2m
El Sub Sta
The Studio


LOGGER 4
Bernard Shaw Court
1 to 40
Playground
El Sub Sta
Shelter
Playground
Rochester Court
1 to 24
HESTER SQUARE
Inwood Court
1 to 34
CORRELATION POINT
29.5m
TCB
Sidney Court
1 to 36
Woollett Court
1 to 46
Garage
128a
128b
128
159
151
145
137
127
Camden Court
1 to 6
17 to 20
Almshouses
ROUSDEN STREET
ST PANCRAS WAY
CAMDEN ROAD
Pooja Court
AGAR GROVE
AGAR PLACE
1 to 4
1 to 11
Linton Court
28.4m
27.7m
28.3m
28.0m
Camden Arms (PH)
St Thomas Court
1 to 19
WROTHAM ROAD
PC
CP
182 180
57 59
75 75b
98
79
121
109
40
36
63
24 25 26
22 23
21
21a
16
14
11d
178a 178
178b
12
8
2a
2b
5a
1 to 4
1 to 11
1 3 5
17" TRUNK
36" TRUNK
125mm Pipe Burst
90mm Slip Lined
63mm MDPE


LOGGER 5
BARKER DRIVE
CAMLEY STREET
CEDAR WAY
Cycle Track
Post
Blakeney Close
BERGHOLT
Playing Court
El Sub Sta
SM
DW
SL
OR
120 to 142
144 to 158
168 to 182
184 to 198
200 to 214
216 to 230
232 to 246
160 to 166
137 to 151
153 to 169
17 to 31
55 to 63
51 49 47
57 55 53
111 109 107
115
105
101
99
12
16
24
30
28
27
15
20
16
21
14
8
4771
4784
(1982) 200mm
200mm
100mm
2 X 100MM F WE

7 DAY PRESSURE TREND FOR AGAR GROVE, LONDON NW1 9SY
MINIMUM PRESSURE 34.34m HEAD MAXIMUM PRESSURE 38.51m HEAD



PLEASE NOTE, THAMES WATER'S MINIMUM LEVEL OF SERVICE IS 10M HEAD AT THE PROPERTY BOUNDARY VALVE