

**Thames Water Utilities Ltd**  
**Developer Services**  
**Asset Development**

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**Potable Water Capacity**  
**Flow & Pressure Investigation**

**Location: UCLH Phase 4 Project**  
**Grafton Way**  
**London WC1E 6DB**

DATE	ISSUE	REFERENCE	AUTHOR	APPROVED
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## **1. INTRODUCTION**

As per your request received 14 April 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 building water flow and new domestic peak demand profile for UCLH Phase 4 Project, Grafton Way, London WC1E 6DB.

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. This reservoir in relationship to the development site is located to the north. Water demand to the zone is supplied from the Tunnel Water Ring Main (TWRM) from the pumping shafts at Stoke Newington, Barrow Hill and New River Head.

The distribution mains network has three District Metered inlets, the closest two to the site being at the junctions of Gower Street and Gordon Street with Euston Road.

## **3. EXISTING DEMAND TYPE**

The local demand type is a mix of residential and commercial, with peak water demands occurring between 8.00am and 4.00pm on weekdays.

## **4. DOMESTIC DEMAND**

The redevelopment of the site consists of a 164 bed hospital unit to be supplied from the 125mm main in Huntley Street.

A temporary building water supply is required during construction at 5.6 l/s.

For the permanent supply, based on data for this type of use at 450 litres per bed per day, maximum daily consumption will be 73,800 litres. By applying diversity factors, this equates to a morning peak demand profile of 3.4 l/s. 88,000 litres water storage is proposed at the hospital which will act as a buffer for high peak demand periods within the building allowing the Thames Water main to refill the tank at a lower constant rate.

The consultant Bouygues has advised a peak flow of 13 l/s for the permanent supply.

## **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 125mm diameter main in Huntley Street, London WC1E 6DB. 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. 180mm MAIN 30-40, GRAFTON WAY, LONDON, WC1E 6DX
LOGGER 2. 180mm MAIN BEAUMONT PLACE, LONDON WC1E
LOGGER 3. 250mm MAIN 136, GOWER STREET, LONDON, WC1E 6BP
LOGGER 4. 125mm MAIN 52, HUNTLEY STREET, LONDON, GREATER LONDON, WC1E 6DD
LOGGER 5. 250mm MAIN 15, GORDON STREET, LONDON, WC1H 0AH

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

## 7. INDUCED FLOWS

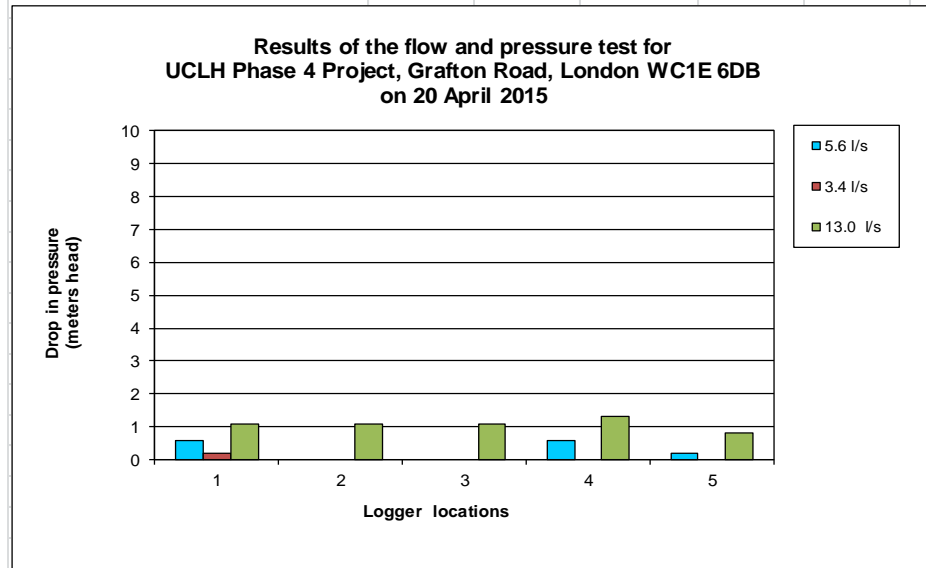
Flow rates of 5.6 l/s for the temporary building supply and 3.4 l/s and 13 l/s for the permanent supply were induced for 3 minute periods.

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 20 April 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	5.6 l/s	3.4 l/s	13.0 l/s
Logger location 1	0.6	0.2	1.1
Logger location 2	<0.1	<0.1	1.1
Logger location 3	<0.1	<0.1	1.1
Logger location 4	0.6	<0.1	1.3
Logger location 5	0.2	<0.1	0.8



For all induced flow rates, including 13 l/s, the reduction in pressures are within acceptable levels with almost no reduction and show that the mains network has sufficient capacity to supply the building water demand and the peak domestic permanent supply.

The result of the seven day pressure logger showed the minimum pressure available at the site was 26.67 meters head, (2.667 Bar).

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

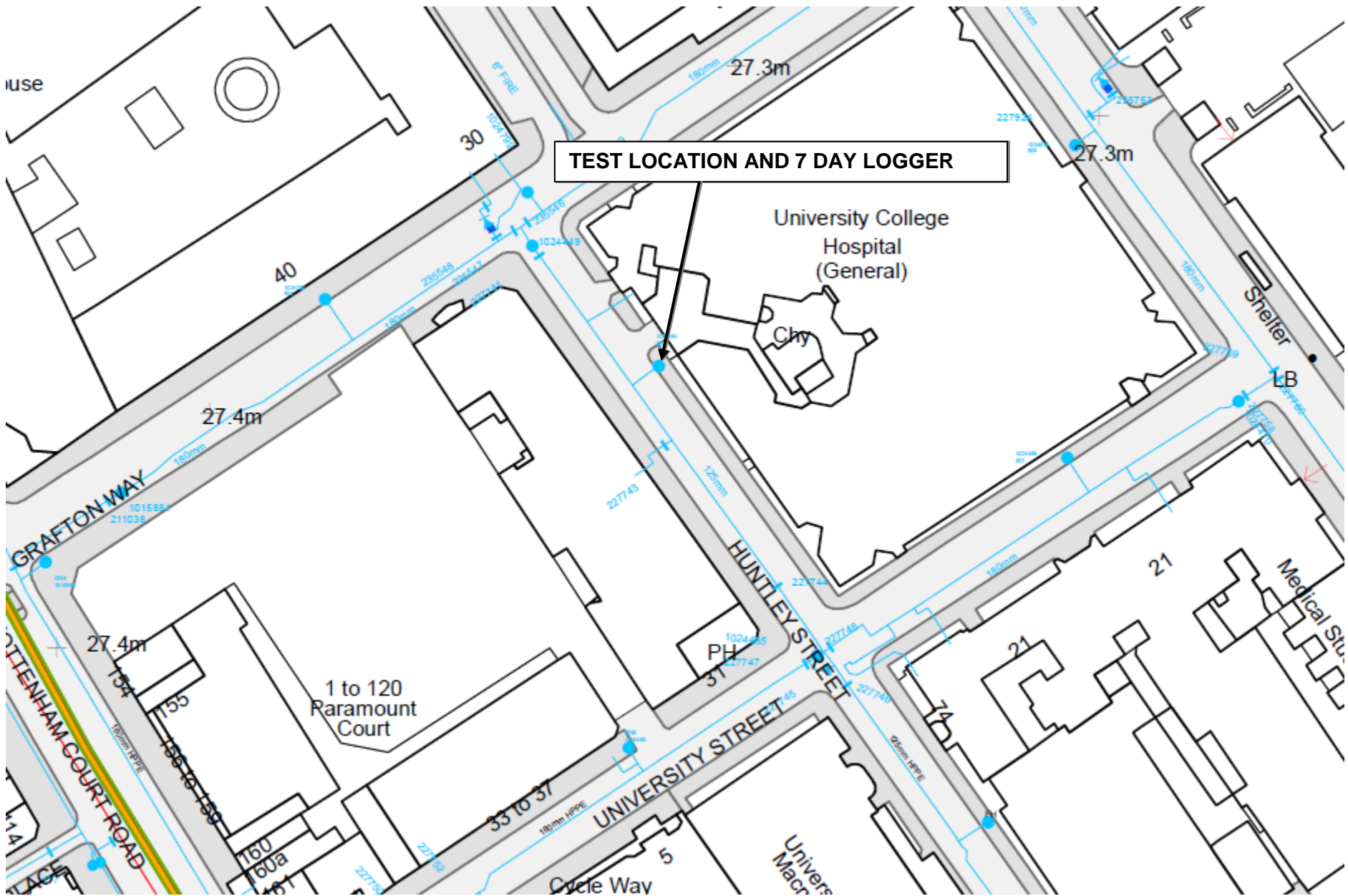
The result of the investigation has established the following: The network has sufficient spare capacity in the 125mm diameter main in Huntley Street, London WC1E 6DB to supply the building water supply and domestic peak demand profile for the proposed development of the 164 bed hospital unit.

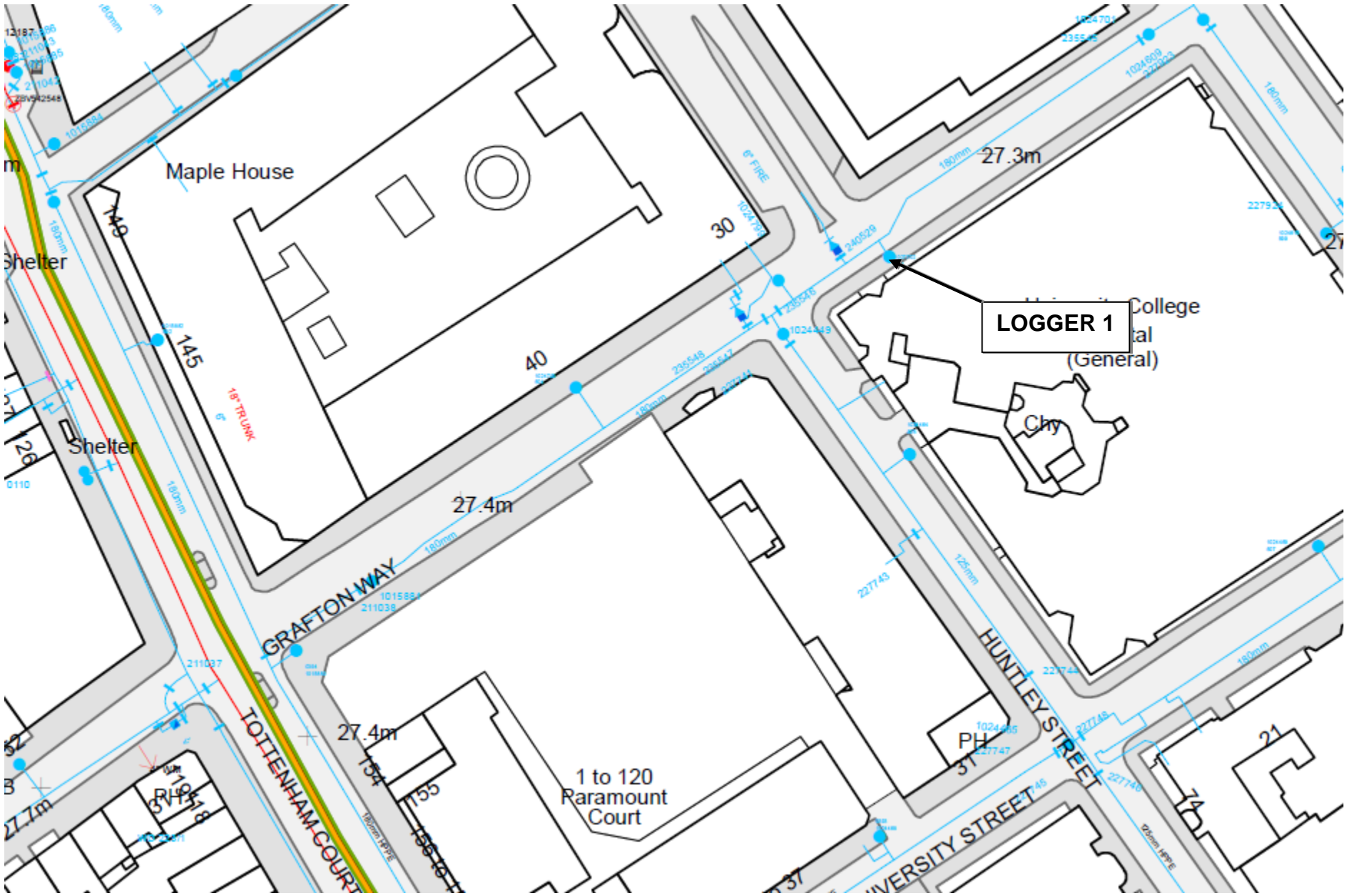
# APPENDIX

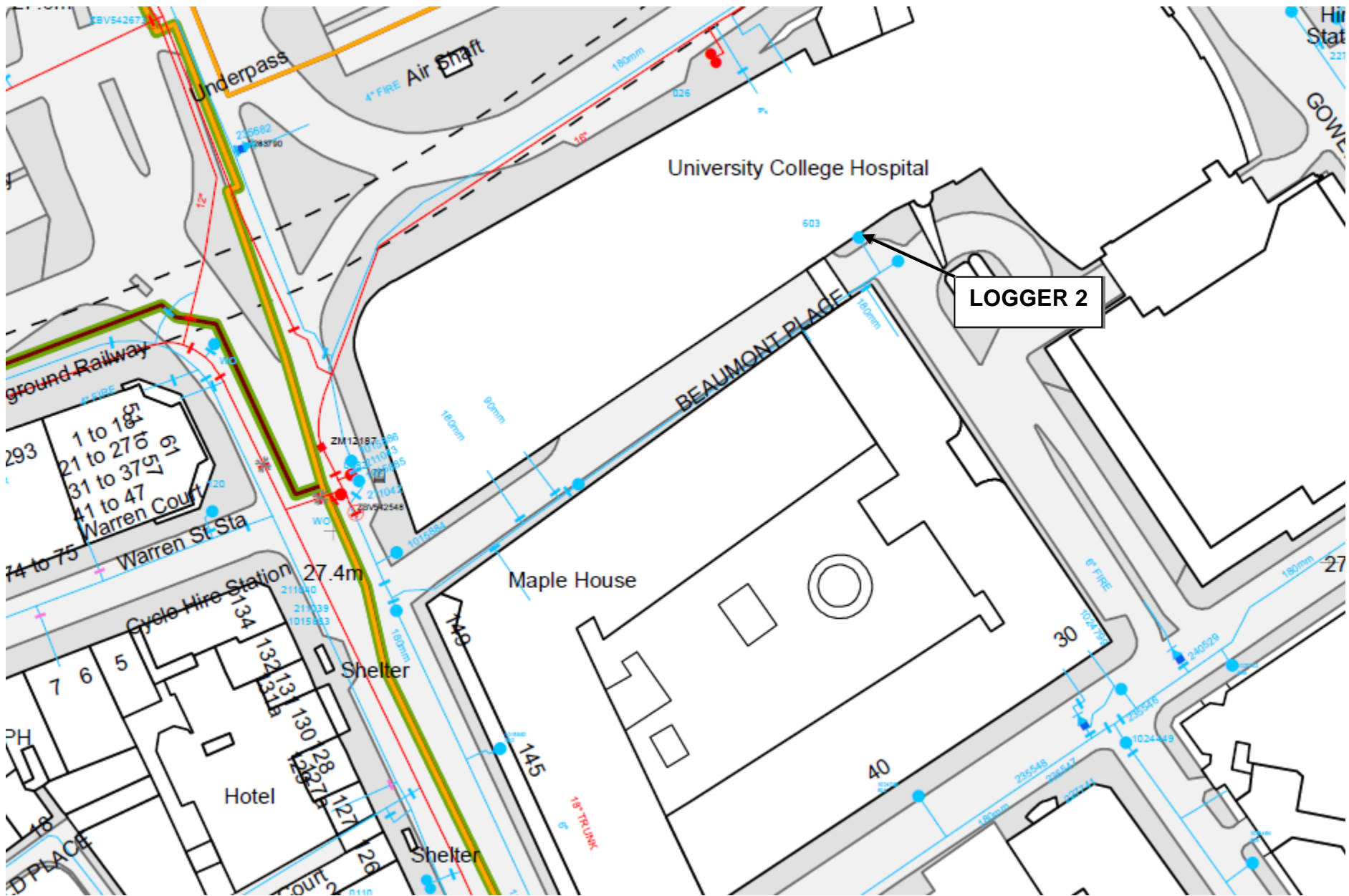
# SITE LOCATION



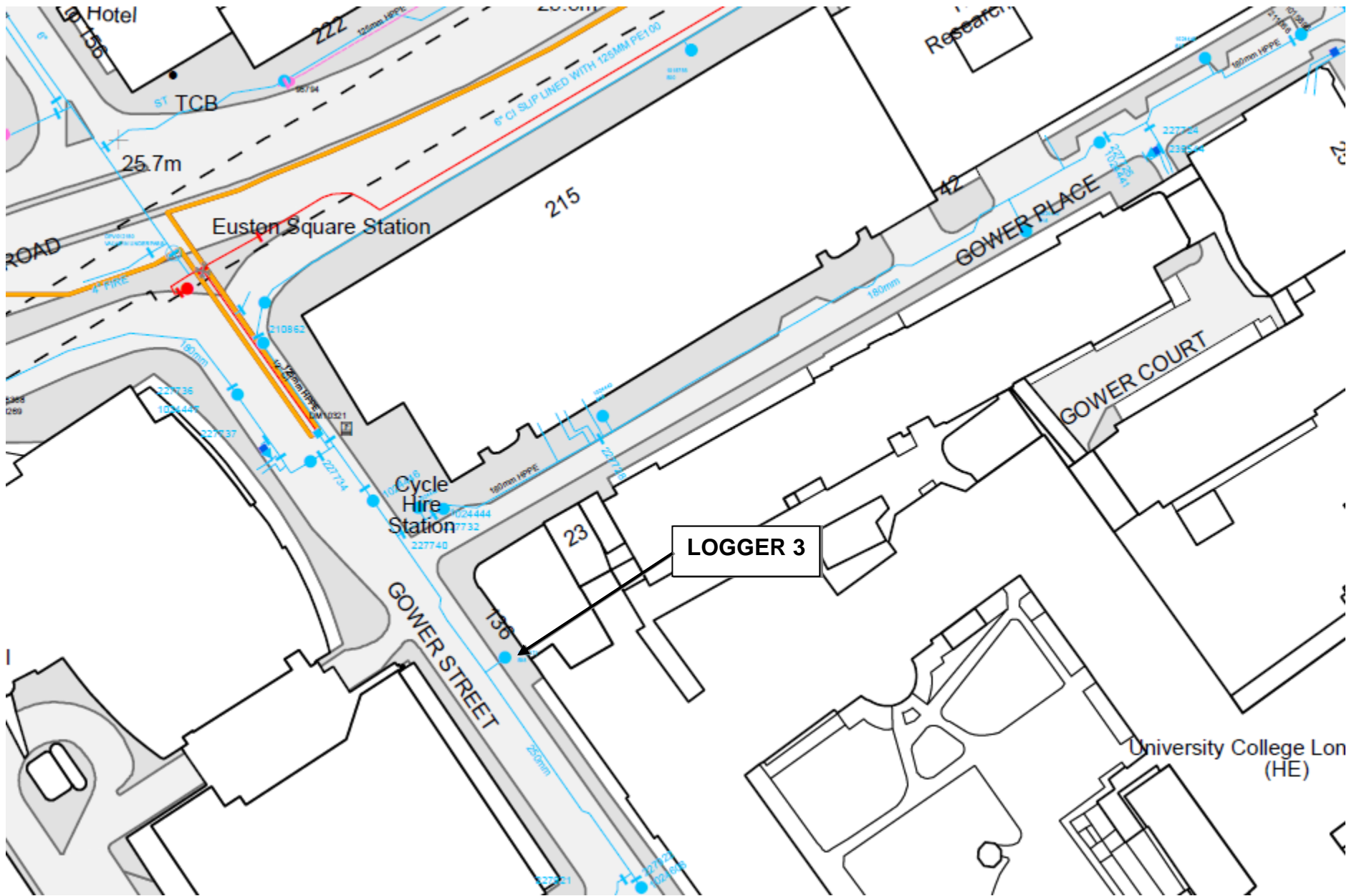


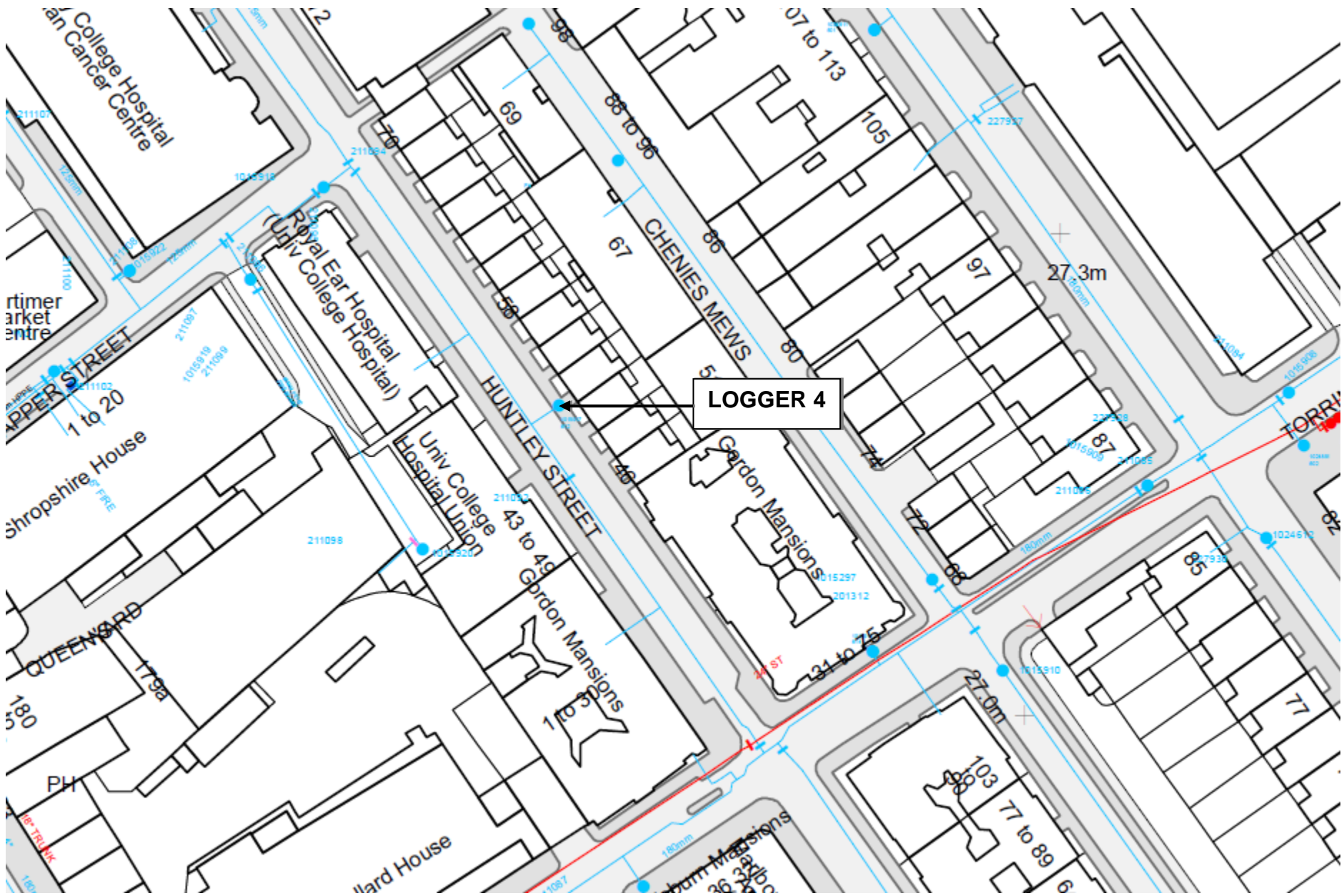




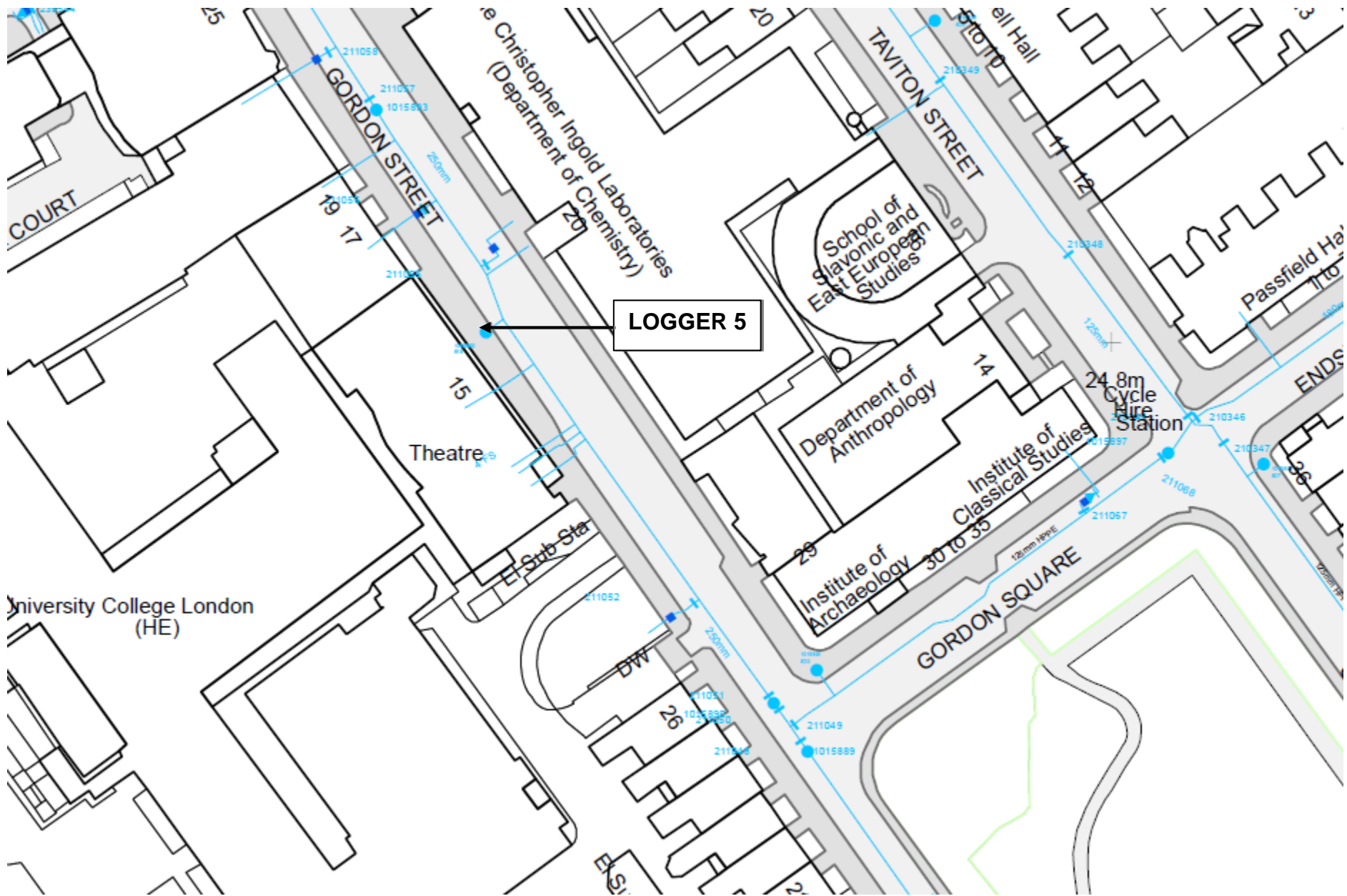




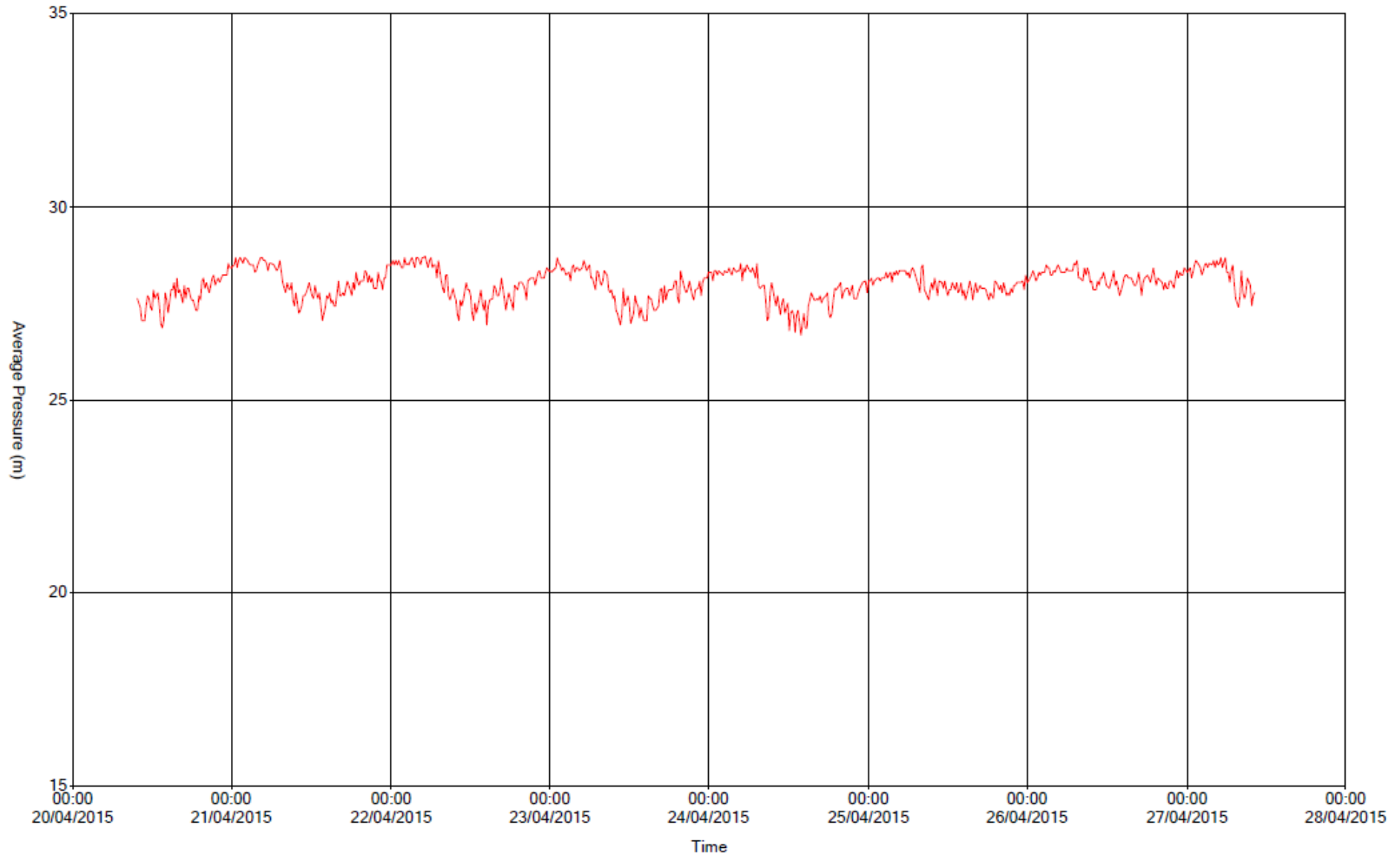




LOGGER 4



7 DAY PRESSURE TREND FOR UCLH PHASE 4 PROJECT, GRAFTON WAY, LONDON WC1E 6DB  
MINIMUM PRESSURE 26.67m    MAXIMUM PRESSURE 28.74m



Grafton Way 7 Day - Pressure 1 (Average): (m)    Min: 26.67    Max: 28.74    Average: 27.99

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