The Clove Building
4 Maguire Street
London SE1 2NQ
+44 (0)20 7307 1000
www.expedition.uk.com
info@expedition.uk.com

Outfall 2 Assessment

326 – 04 Selfridges Drainage Management Plan

Reason for Issue	Review of capacity of OF2 for new LG toilets	**Author**	T Strachan
Date	03/04/2017	**Reviewed**	

Background

Expedition have made an assessment of the potential for Outfall 2 to cater for an additional toilet block at Lower Ground consisting of 30 No. WCs, 23 No. WHBs and 8 No. Urinals.

Assumptions

The capacity of the outfall is based upon a 150mm pipe diameter at a gradient of 1:39. No allowance has been made for reduction in cross sectional area due to pipe fouling. The assessment assumes that a new pump is sized to manage the additional load on Pump 2 in order to prevent Pump 2 overfilling. A frequency factor (k_{DU}) of 0.7 (to account for congested use) has been used to calculate the foul flow rates. The proposed foul flow rate has been increased by 30% as a contingency to allow for future changes. No additional contingency is applied to the storm water flow.

Findings

Outfall 2 currently caters for foul flows from the Legal toilets and kitchen, Staff locker room toilets, Aubaine kitchen, and the Directors toilet and kitchen. The table below shows that the proposed toilets will increase the foul flow rate by almost 90% and the combined 1 in 50 flow rate by 25%.

Figure 1 shows the maximum discharge capacity for Outfall 2 of approximately 27l/s, therefore indicating that the Outfall is slightly undersized for the additional flows and the contingency for future changes.

Current			Proposed		
Foul DU	**Foul flow rate (l/s)**	**1 in 50 storm combined flow rate (l/s)**	**Foul DU**	**Foul flow rate (inc. 30% contingency) (l/s)**	**1 in 50 storm combined flow rate (l/s)**
80.6	6.28	21.7	175.8	12.1	27.5

Risks/Opportunities

An Aquajet CCTV report dated 16 Mar 17 reports that the cross sectional area of the pipes feeding pump 2 has been reduced by up to 10%. If this same fouling is present in the outfall it will reduce the capacity.

The same CCTV report identified a 150mm diameter pipe currently connecting the Female Staff toilets to Pump 2 (see Fig. 2). Pending confirmation on the remaining capacity of this pipe, this may be a suitable foul connection for the proposed new toilets.

The rising main from Pump 2 to Outfall 2 is known to have a poorly repaired crack. It is recommended that this be replaced.

An Aquajet CCTV report dated 23 Mar 16 noted that there was slight corrosion to the outfall pipe, a 5% cross sectional area loss due to encrustation and no flap valve fitted where the pipe joins the public sewer. It is recommended that ……

Aquajet survey suggests 1:82 gradient. Our calculations use 1:39. Potentially an issue.

Pump connected to BMS?

Continued use of Pump 2 to clear water from Sump 6? – this has not been factored in to the load.

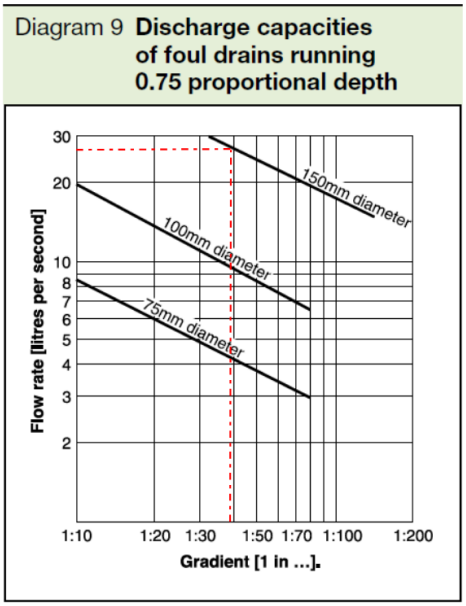

Figure 1 - Discharge capacity (Approved Document Part H)

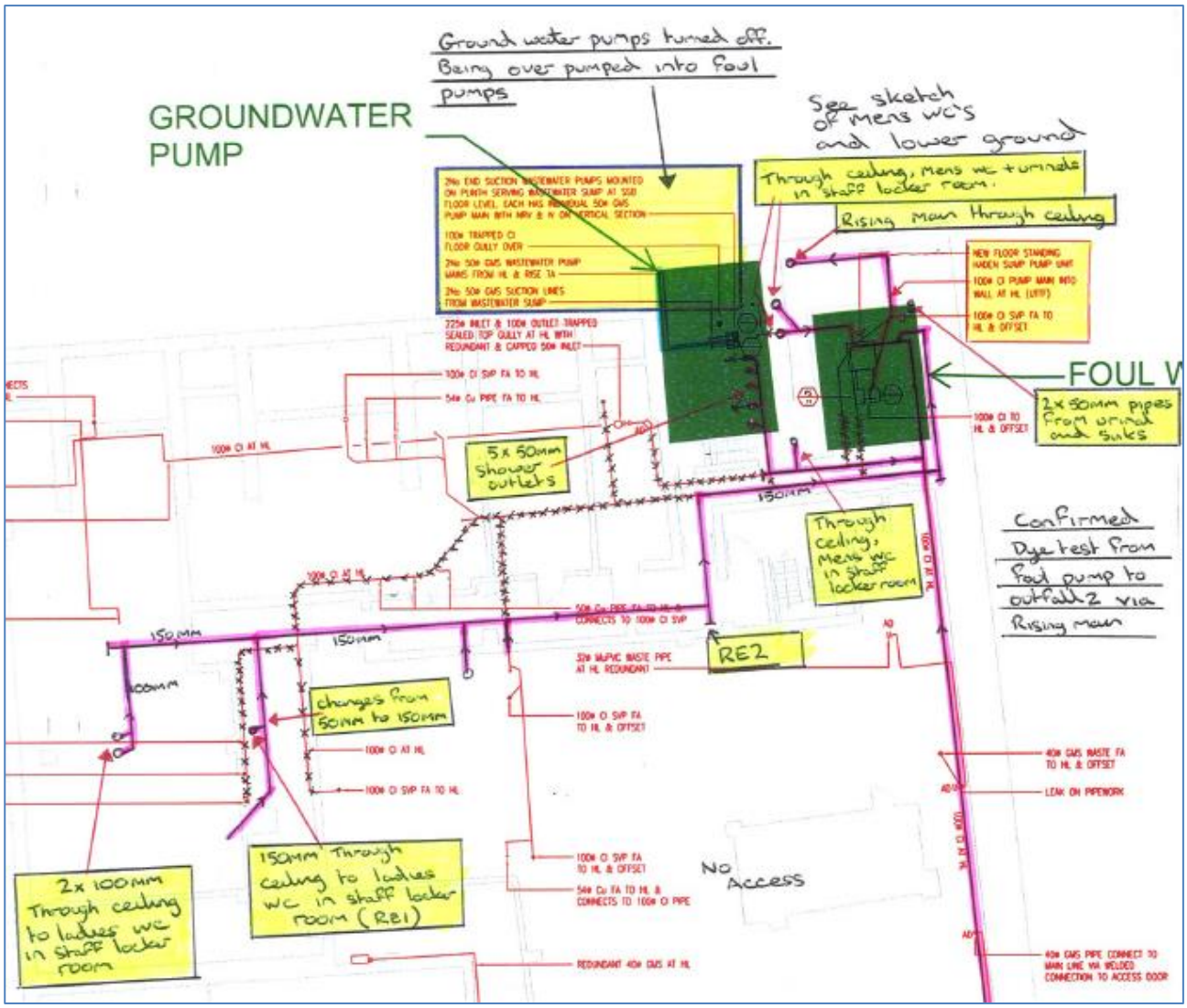

Figure 2 - Extract from Aquajet CCTV report dated 16 Mar 17.