Technical Note
Foul Drainage & Pumping Station

London Sustainable Industries Park
Choats Road
Dagenham
RM9 6RJ

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For and on behalf of Bingham Hall Associates

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1 Introduction

1.1 At the request of Turner & Townsend, the project manager for the above scheme, and following changes to the design flows, this Technical Note will outline:

i) The current design proposal, associated risks and mitigation measures

ii) Alternative approach – retention of Halyard Street pumping station & provision of separate London Sustainable Industries Park (LSIP) North drainage system including pump station.
2 Current Design

Design Basis

2.1 The current design is based upon the existing pumping station in Halyard Street becoming redundant, and all flows into this pump station, along with all flows from LSIP North, being diverted to a new pumping station situated on Plot 4 of LSIP North. This design hinges upon the existing foul sewers on LSIP North being adopted along with the pumping station and rising main. Other than the obvious benefit of removing the responsibility and associated costs of operation and maintenance of the pumping station and sewers from Greater London Authority (GLA), the adoption of the sewers is also critical since the emergency storage volume that must be provided within the pumping station and associated sewer network must be entirely within adopted sewer assets and below the lowest private sewer or lateral. Owing to the depth of the existing network which must be connected, the invert level of the pipe into the pumping station will be approximately 5.5m below ground level, and if this network were not intended to be adopted, then the storage top water level in the pumping station would have to be below the incoming pipe. This would increase the total depth of the pumping station by around 2.5m. The current design top water level is -1.96m AOD (approx. 3.2m below ground), which is just below the level of the lowest incoming private lateral. This happens to be on plot 5, where PDM will be connecting their foul drainage.

2.2 Current design flows are detailed in ‘Foul Drainage Schedule’ Version 8, Tables 1 & 2. This differs from Version 7 only in that flows are now defined as ‘Design Flow’, and ‘1/3 Design Flow’ rather than in terms of ‘Dry Weather Flow’ (DWF) in order to accord more closely with Sewers For Adoption.

2.3 Sketches outlining the current design are attached.

Risk

2.4 Under the current design, the problems that are being experienced due to Closed Loop Recycling’s (CLR) discharge of plastic material, and the uncertainty regarding their flow rates, would remain until resolved by Thames Water Utilities Ltd (TWUL), who have so far apparently made no effort to resolve the current situation. There is therefore a risk that blocked pumps and pipework would also occur in the new pumping station.
2.5 TWUL have issued a letter of ‘approval in principle’ regarding our initial application for Section 104 adoption of the pumping station and sewers on LSIP North. We have had their technical comments relating to the pump station, which are relatively minor and will be addressed in the next revision of the design drawings. Due to the recent increase in design flows, the design has changed somewhat from the original application with regard to the size of the pump station shaft but we do not consider these changes likely to alter TWUL's view.

2.6 While we have not reviewed in detail the construction detail drawings for the LSIP North sewers produced by TR Collier & Associates (2012), we do not feel that these are explicitly compliant with Sewers For Adoption (SFA) 6th Edition. Furthermore, having briefly reviewed the flows in the existing LSIP North sewers, we feel that based on current design flows the minimum self-cleansing velocities called for in SFA 6th Edition are not achieved in most of the existing pipe runs on LSIP North. In their letter of ‘approval in principle’ TWUL state that “All plans should include the following statement: ‘All adoptable drainage works to be constructed as detailed in Sewers for Adoption, 6th edition’ or as stipulated in Thames Water’s Addendum.” The adoption of these sewers will be dependent upon a satisfactory survey and inspection by TWUL, so regardless of the letter of ‘approval in principle’ they could refuse to adopt if it is found that the sewers are non-compliant to SFA 6th Edition. TWUL were sent design flows some time ago and have not commented with regards to flow-velocities, nor have they asked for design calculations or modelling, so most likely this aspect of non-compliance has been missed and will not jeopardise the adoption process, however the risk remains.

2.7 Were TWUL to refuse to adopt the sewers on LSIP North, it is also possible that they could refuse to adopt the pump station and rising main, since it would not be possible to provide the necessary emergency storage below the level of the incoming private sewers. It would be possible (although not desirable) for GLA to continue to own and operate the sewers and pump station, but this would be contingent upon London Borough of Barking & Dagenham (LBBD) accepting the rising main in their highway under a Section 50 agreement.

Risk Mitigation

2.8 In order to provide absolute certainty that the potential non-adoption of the LSIP North sewers would not affect the adoption of the pump station and rising main, it would be necessary to amend the design such that the storage top water level were below the level of the incoming sewer, which in this scenario would be private. This would result in the pump station shaft being approximately 3m deeper.
2.9 Sketches outlining this option are attached.
3 Alternative Approach

Alternative Approach – Halyard Street Pumping Station Retained

3.1 Under The Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011, all privately owned sewers and lateral drains which communicate with an existing public sewer as at 1 July 2011 were adopted on 1 October 2011. Any associated pumping stations were excluded at that time but will have been adopted by 1 October 2016, as will their rising mains. This means that the existing pumping station on Halyard Street, having been constructed prior to July 2011, could be retained in GLA ownership until October 2016 at the latest, when ownership will automatically pass to TWUL, with provision for LSIP North flows made separately by way of an adoptable scheme on Plot 4 of LSIP which would take flows from LSIP North only.

3.2 The benefits of this approach would be that the proposed pumping station shaft could be of a smaller diameter and shallower than the equivalent current design, as it would be required to provide a far smaller storage volume, and the current issues around CLR’s uncontrolled discharge and discharge of plastic waste would become TWUL’s responsibility. Arguably this is the case at the moment, as TWUL have adopted the sewers into which CLR discharge, and also should be enforcing their Trade Effluent Consent (TEC), however were the pump station also to come under their ownership there would be no room for doubt as to who must take action, and the costs of operating and maintaining this pump station, along with any potential litigation by tenants due to poorly functioning sewerage, would pass from GLA to TWUL.

3.3 Under the current scheme, the Halyard Street pump station could not be de-commissioned until the pump station on LSIP North were fully operational, which is likely to be late 2015 at the earliest, so the alternative approach would only entail a few additional months of operation by GLA.

3.4 It is our understanding that all of the plots on LSIP North other than Plot 6 will be let on long leases but retained in the ownership of GLA, while Plot 6 is in private ownership. Having removed the flows from LSIP South it would now be the case that all of the properties connecting to the pumping station would be within the same curtilage, since there is no drainage connection to Plot 6. In order to overcome this, it would be necessary to provide a foul drainage connection to Plot 6.

3.5 Sketches outlining the alternative design are attached.
Risk
3.6 Owing to the inadequacies of the existing Halyard Street pump station and the ongoing issues with CLR, the operation and maintenance of this pump station will incur ongoing costs upon GLA until or unless CLR can be forced to abide by their TEC. Notwithstanding this, the risks associated with the LSIP North pump station component of this option are essentially the same as set out for the current design – i.e. the risk of non-adoption of LSIP North sewers. Also, a connection would need to be provided to Plot 6 – the risk being that the owner of Plot 6 may not want or permit this.

Risk Mitigation
3.7 As with the current design, the mitigating measures associated with the risk of non-adoption of the LSIP North sewers would be the deepening of the pump station shaft by approximately 2.5m to provide all storage below the incoming sewer.

3.8 Sketches outlining this option are attached.
4 Summary

The design options and associated risks are summarised below:

Current Design

- All flows from LSIP North and from Halyard Street pump station diverted to new pump station on Plot 4 of LSIP North. Storage volume partly within LSIP North sewers. Sewers and pump station adopted by TWUL under Section 104.
- Halyard Street pump station de-commissioned.
- RISK – issues of non-compliance by CLR not addressed, therefore could affect new pump station.
- RISK – TWUL may refuse to adopt existing LSIP North sewers if they fail inspection, therefore reducing storage volume and making pump station non-compliant, therefore pump station not adopted.

Current Design Plus Mitigating Measures

- As Current Design, BUT storage volume provided entirely in pump station below incoming pipe.
- RISK – issues of non-compliance by Closed Loop not addressed, therefore could affect new pump station.
- RISK – TWUL may refuse to adopt existing LSIP North sewers if they fail inspection, but this would not affect adoption of pump station.

Alternative Approach

- Halyard Street pump station retained until transfer to TWUL takes place by default on or before October 2016 under The Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011.
- Flows from LSIP North only diverted to new pump station on Plot 4. Storage volume partly within LSIP North sewers.
- Closed Loop’s compliance issues become entirely the responsibility of TWUL once Halyard Street pump station transfers.
• RISK – TWUL may refuse to adopt existing LSIP North sewers if they fail inspection, therefore reducing storage volume and making pump station non-compliant, therefore pump station not adopted.

• RISK – Plot 6 must be connected, otherwise the system will not be adoptable.

Alternative Approach Plus Mitigating Measures

• As Alternative Approach, BUT storage volume provided entirely in pump station below incoming pipe.

• RISK – TWUL may refuse to adopt existing LSIP North sewers if they fail inspection, but this would not affect adoption of pump station.

• RISK – Plot 6 must be connected, otherwise the system will not be adoptable.
Appendix A: Design Sketches - Current Design
Appendix B: Design Sketches - Current Design Plus Mitigation