

Gladman Developments Limited

UTILITY LAW SOLUTIONS

**Proposed Development of Land to the West of
White Post Road, Banbury - Foul Drainage
Analysis**

Supplementary Report

August 2015

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Proposed Development of Land to the West of White Post Road, Banbury - Foul Drainage Analysis - Supplementary Report

This report is supplementary to the Foul Drainage Analysis Report (the Analysis) that Utility Law Solutions (ULS) has provided in support of a planning application (application reference 15/01326/OUT) submitted to Cherwell District Council (the Council) in connection with the proposed development of land to the west of White Post Road, Banbury.

In the Analysis, ULS confirmed that notice of the intended planning application associated with the development of this site had been given to Thames Water (the Sewerage Undertaker). ULS has subsequently engaged with the Sewerage Undertaker with a view to confirming that the foul drainage strategy that was set out in the Analysis was acceptable.

The hydraulic model of the public sewerage system that the Sewerage Undertaker has analysed indicates that the foul network requires improvement works to be carried out downstream of the proposed connection manhole in order to receive the foul flows from a development of up to 250 residential units. The planning application recently submitted was for a proposed development of up to 280 units which will make little if any difference to the mitigation measures outlined below.

The Sewerage Undertaker has confirmed that the impact of the foul flows from a development of 250 units can be mitigated by increasing the available capacity in the existing public sewerage network and has provided the following indicative option:-

- Connect development flows to manhole SP46380304.
- Upsize the existing 150mm diameter pipe to 225mm diameter between manholes SP46380304 and SP46380201 (White Post Road) for a length of 71m.
- Provide approximately 16m³ off-line storage connecting to manhole SP46380102 (White Post Road). For modelling purposes, this has been provided using a 450mm diameter pipe for a length of 100m. The off-line storage tank fills from the downstream end during wet weather events as flow backs up in the sewer network. The storage would empty by gravity once there is available capacity in the receiving sewer network.
- Provide approximately 78m³ on-line storage between manholes SP46374101 and SP46366901 (located in Third Party land). For modelling purposes, this has been provided using a 600mm diameter pipe for a length of 274m.
- Control the pass-forward flow at the downstream end of the on-line storage pipe to a peak of 50l/s.

The Sewerage Undertaker's detailed foul drainage impact study report is included in full at Appendix 1.

It is important to note with reference to the development timescales, set out in the Analysis and revised below, that foul flows from the development will not enter the existing public sewerage network until late 2017 or early 2018. This allows more than two years for the Sewerage Undertaker to implement the findings of the impact study (or any other solution it deems appropriate) to ensure that the new foul flows can be accommodated in both the short and longer terms. Furthermore, given that development will increase on a slow, gradual basis, it is probable that any works found to be required would not need to be complete within the next 3 years.

Within the Analysis and this report, the legislative regime pertaining to foul drainage has been set out. The purpose of this report and the Analysis is to avoid any uncertainties in relation to the foul drainage strategy for the development site, to satisfy the planning authority that foul drainage is not a constraint in terms of the development and to set out the responsibilities of sewerage undertakers generally. As detailed within the Analysis, although considered unnecessary, any proposed foul drainage related planning condition must comply with the six tests set out in the National Planning Policy Framework (NPPF) and expanded on in the Planning Practice Guidance (PPG).

The updated timescales for the development referred to in the Analysis are set out below for ease of reference:-

- Upon receipt of a valid planning approval, Gladman Developments will begin to market the site in late 2015.
- Sale of the site is likely to be completed by mid-2016.
- The developer will then complete detailed designs for the site and is likely to make a reserved matters application by the end of 2016.
- Determination of reserved matters may take approximately 3-6 months, i.e. by mid-2017.
- Initial on-site works could therefore commence in mid to late 2017 after allowing a few months for enabling works etc.
- Initial occupations (excluding show homes) may commence at the end of 2017 or early 2018 i.e. by the end of the first full year from when the development commences.
- Development will continue over a 6 to 7 year period with sales/occupations at around 40 dwellings per annum.
- Site completion estimated in 2023/2024

The above timescales afford sufficient time for the Sewerage Undertaker carry out the relatively modest offsite public sewer reinforcement works it has identified to improve its sewerage network (if required), to accommodate the foul flows from this development.

It would be inappropriate to prevent this development from proceeding on the grounds of sewerage capacity or indeed to apply any restrictive planning condition which conflicts with the tests in para. 206 of the NPPF and explained in the PPG.

A detailed analysis of the duties and responsibilities of sewerage undertakers under the water industry statutory framework and the interaction with the planning regime is set out in the Analysis and this report. The effect of these duties and responsibilities on whether it is necessary or reasonable to impose planning conditions in relation to foul drainage is also examined. As outlined, a sewerage undertaker will typically submit representations to local planning authorities requesting that planning conditions which ULS has demonstrated are unnecessary and/or unreasonable are imposed. In a recent Planning Appeal (Appeal Decision APP/Y2810/A/14/2228921), the Planning Inspector considered both positions on this matter, having received the ULS analysis and also representations from a sewerage undertaker requesting that a foul drainage planning condition was imposed. The Inspector stated that a condition relating to the completion of off-site public sewer improvement works would be unreasonable based on the timescales for implementation of the development i.e. that it would be at least 2 years before any houses would be occupied. The Inspector considered that these timescales gave the sewerage undertaker adequate time to implement any necessary improvement measures to the public sewerage network pursuant to the statutory framework that applies to the water industry. Although the planning authority concerned has subsequently challenged the decision of the Inspector, the subject of the challenge is in respect of planning policy and is not related to foul drainage.

In the circumstances surrounding the timescales associated with this development site (as was the case with the Appeal site referred to above where no foul drainage condition was imposed), it is clear that a foul drainage planning condition would fail when set against the tests in para. 206 of the NPPF and explained in the PPG. There is sufficient time for the sewerage undertaker to carry out the necessary measures needed (if any) to accommodate the foul flows from the development in the public sewerage system.

In summary, it has been clearly demonstrated that there is a solution to accommodate the foul flows from the development and sufficient time available for it to be implemented.

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Utility Law Solutions

ULS is owned and operated by Philip Day and Alex Day and was incorporated in 2007. Since its inception, ULS has provided advice and assistance to developers, landowners and other bodies operating in the house building sector on issues relating to foul drainage, sewage treatment and associated infrastructure matters.

Prior to the formation of ULS Philip Day and Alex Day were both employed in the Water & Sewerage Industry by Severn Trent Water, being one of the largest sewerage undertakers in the UK. Philip and Alex therefore have first-hand knowledge of the operation of sewerage undertakers and how they interact with developers and others in the house building industry.

Before leaving Severn Trent Water to set up Utility Law Solutions, Philip was their Principal Legal Advisor for Asset Management matters. In this role Philip's responsibilities were wide ranging and included the provision of legal advice and support to the business in relation to all asset management issues arising out of the company activities in sewage treatment, water supply and networks (water main and sewerage systems). During his time with Severn Trent Water, Philip was inter alia directly responsible for all legal aspects relating to:-

- Advice on the effects of the Water Industry Act 1991 and related legislation
- Obligations of sewerage undertakers in relation to the section 94 duty
- Formulation of policies and procedures in relation to the connection of infrastructure to new developments including resolution of development related problems/disputes
- Sustainable Drainage Systems (SuDS) - Member of the National SuDS Working Group providing legal support which culminated in the Interim Code of Practice for Sustainable Drainage Systems
- Sewers for Adoption – Provision of legal support for Sewers for Adoption 5 and 6, including creating a new national agreement
- Development through Water UK involvement, of water company positions in relation to Private Sewers legislation, New Roads and Street Works and Traffic Management Acts, Environmental Liability Directive, Section 101A (rural sewers) applications and processes and Environmental Information Regulations

Alex was employed by Severn Trent Water in its Developer Services and New Connections department with duties including assessing and communicating the impact of new developments on existing sewerage networks and evaluating sewer designs proposed by developers in accordance with industry standards. Alex worked in close collaboration with the Asset Protection and the Legal departments in Severn Trent providing an important link for his own team to ensure that all activities relating to new development complied with both statutory provisions and protected the technical requirements of the company. Alex also spent 4 years prior to joining ULS working as a consultant to developers providing advice on matters including the impact of proposed developments on sewerage networks and acting as an agent in communicating with sewerage undertakers.

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Appendix 1

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SEWER IMPACT STUDY

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SMG 1809

**PROPOSED CONNECTION AT
LAND OFF SALT WAY, BANBURY**

FOUL SYSTEM

V2.0 June 2015

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- B Plan Showing Local Sewers
- C Connections and Improvements – Option

1.0 Introduction

The following report was commissioned by Thames Water's Developer Services to investigate the capacity within the existing foul network and to ascertain the impact of a proposed new connection on the foul network at land off Salt Way, Banbury.

The scope of the study is to undertake a preliminary desktop study based upon an existing verified hydraulic model.

The scope of the study includes:

- Check the current performance of the existing network during both dry and wet weather events.
- Add development flows to the model and check the impact of additional flow to the sewer network during both dry and wet weather events.
- Suggest possible options to allow flows to be accepted into the existing network with no detriment to existing levels of service. It should be noted that these options are indicative and are likely to be subject to change based on site conditions, other utilities and requirements of third parties. However, the options indicate the feasibility of connecting the site to the sewerage system and the ability of the sewerage system to accept the development.

2.0 Background

The proposed new development is on a Greenfield site and the Developer proposes to accommodate 250 new residential properties. The development area is situated in the southern extent of the town of Banbury, Oxfordshire.

The development area is bounded by Salt Way (track) to the north, White Post Road to the east and Wykham Lane to the south.

The foul flow from the development area has been calculated, using the latest Thames Water guidelines, as a pumped flow of 11.46l/s.

The preferred connection point was determined by the Developer as manholes SP46380304 and SP46380201, located to the east of the development site. For the purpose of the study, development flows have been connected to manhole SP46380304.

A plan showing the location of the development and connection point is provided in Appendix A.

3.0 Existing Sewerage System and Treatment Works

The area in the vicinity of the development site is served by a separate foul and surface water sewer network.

From the development site, flows would gravitate in a south-easterly direction towards Adderbury Sewage Pumping Station (SPS).

Flows ultimately arrive at Banbury Sewage Treatment Works (STW), which is located approximately 4.8km to the north-east of the development site.

Flows travel through sewers ranging from 150mm diameter to 450mm diameter from the development area towards Banbury STW.

The local foul sewers are shown in the plan provided in Appendix B.

4.0 Thames Water Drainage Requirements

It is necessary to provide separate foul and surface water drainage systems and to ensure that each system is connected to an appropriate drainage system.

As the Developer proposes to connect only foul flows into the existing network, this report only covers the impact of the foul sewage flows from the proposed development on the existing foul sewer networks adjacent to and downstream of the proposed development. Surface water flows from the proposed development are not considered in this report and should not be connected to the foul sewer network.

Additional development flows should not cause new or additional flood risk to the existing system in either dry or wet weather.

5.0 Sewer Impact Assessment

Assessment of the hydraulic loading of the foul network was carried out by means of an existing verified hydraulic model.

The proposed new development area and connection point details were added to the model and the assessment completed to identify the impact of the proposed new development.

The analysis of the catchment indicates that the foul network is responsive to rainfall, with flooding being a risk in the catchment for extreme events.

The impact of the proposed foul connection was assessed based on the design flows detailed in Section 2.0.

5.1 Foul Sewers

5.1.1 Assessment of Existing Catchment

The hydraulic model indicates that the existing foul network does not have available capacity downstream of the proposed connection manhole. The hydraulic model has been used to assess wet weather scenarios of various durations. During these wet weather events, the hydraulic model predicts network surcharge and flooding to occur.

5.1.2 Assessment of Development Catchment

An analysis has been completed to assess the impact of connecting the flows from the development into the public sewer. An allowance of 11.46l/s pumped flow was used to represent the development.

Table 1: Proposed Development Connection Details

Connection	Manhole	Diameter of Outgoing Sewer
Development Site	SP46380304	150mm

5.1.3 Foul System Improvement Works

The hydraulic model indicates that the foul network does not have available capacity downstream of the proposed connection manhole to accept the proposed development flows. On inclusion of the additional flows from the development site, an increase in the predicted volume of flooding and surcharge on the downstream sewer network is predicted to occur.

One indicative option has been developed to prevent the detrimental impact on the existing system, and allow the development site to connect to the existing sewer network. This option has been developed during a preliminary desktop investigation, using the hydraulic model only. The solution identified is intended to indicate the likely extent and magnitude and the network enhancement required to mitigate the predicted detriment and thus inform negotiations between the Developer and Thames Water over the feasibility and likely cost of the connection. A detailed design is required to confirm the size, location and performance of the indicative option before proceeding with any construction.

Option – Pipe Upsizing/On-line Storage/Off-line Storage (See Appendix C for Plan)

- Connect development flows to manhole SP46380304.
- Upsize the existing 150mm diameter pipe to 225mm diameter between manholes SP46380304 and SP46380201 (White Post Road) for a length of 71m.
- Provide approximately 16m³ off-line storage connecting to manhole SP46380102 (White Post Road). For modelling purposes, this has been provided using a 450mm diameter pipe for a length of 100m. The off-line storage tank fills from the downstream end during wet weather events as flow backs up in the sewer network. The storage would empty by gravity once there is available capacity in the receiving sewer network.
- Provide approximately 78m³ on-line storage between manholes SP46374101 and SP46366901 (located in Third Party land). For modelling purposes, this has been provided using a 600mm diameter pipe for a length of 274m.
- Control the pass-forward flow at the downstream end of the on-line storage pipe to a peak of 50l/s.

6.0 Risks and Issues

Current understanding of the hydrology of urban environments recognises that the effective pervious area (the pervious proportion of the catchment that produces surface runoff and generates flow in the sewer) is likely to exhibit a dynamic nature in relation to increasing volumes of rainfall, i.e. the more rainfall the greater the resulting effective pervious area is likely to be.

Whilst the hydrological models deployed attempt to simulate this dynamic behaviour, there is a risk that the model, when extrapolated to storm events, will not accurately predict the flows in the

system. Therefore, any potential error is multiplied when the system is tested against a large design storm.

The proposed development site is located within the Environment Agency's Risk of Flooding from Surface Water area, and the drainage of the site is therefore at risk of surface water ingress. The Developer should undertake necessary measures to ensure that the foul sewers are adequately protected against surface water ingress.

7.0 Conclusions

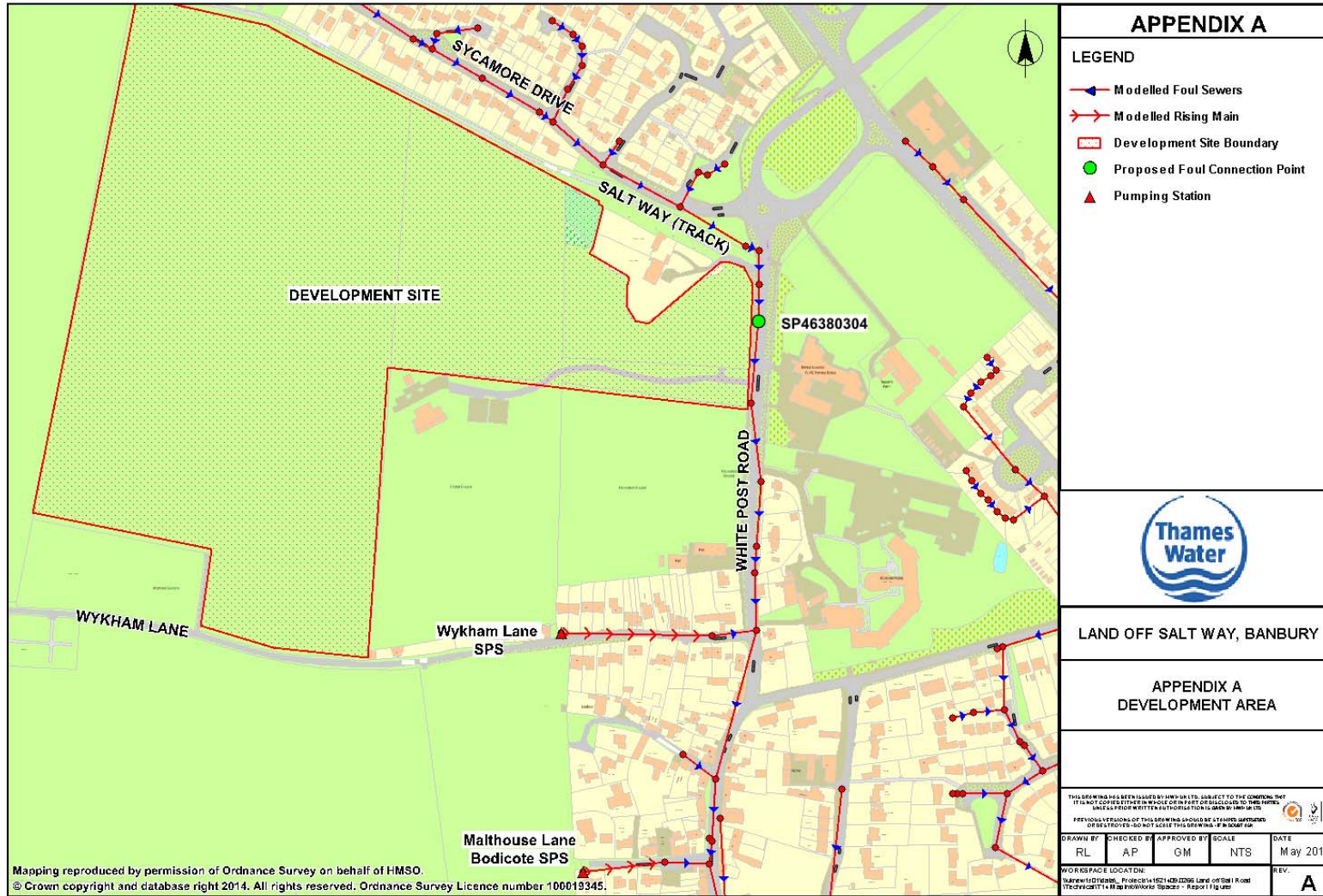
The desktop study has successfully investigated and identified the implications of the proposed new development on a Greenfield site at land off Salt Way, Banbury to the foul network.

The hydraulic model indicates that the foul sewer network does not have available capacity downstream of the proposed connection manhole to accept the proposed development flows, which cause an increased volume of flooding and surcharge on the downstream sewer network.

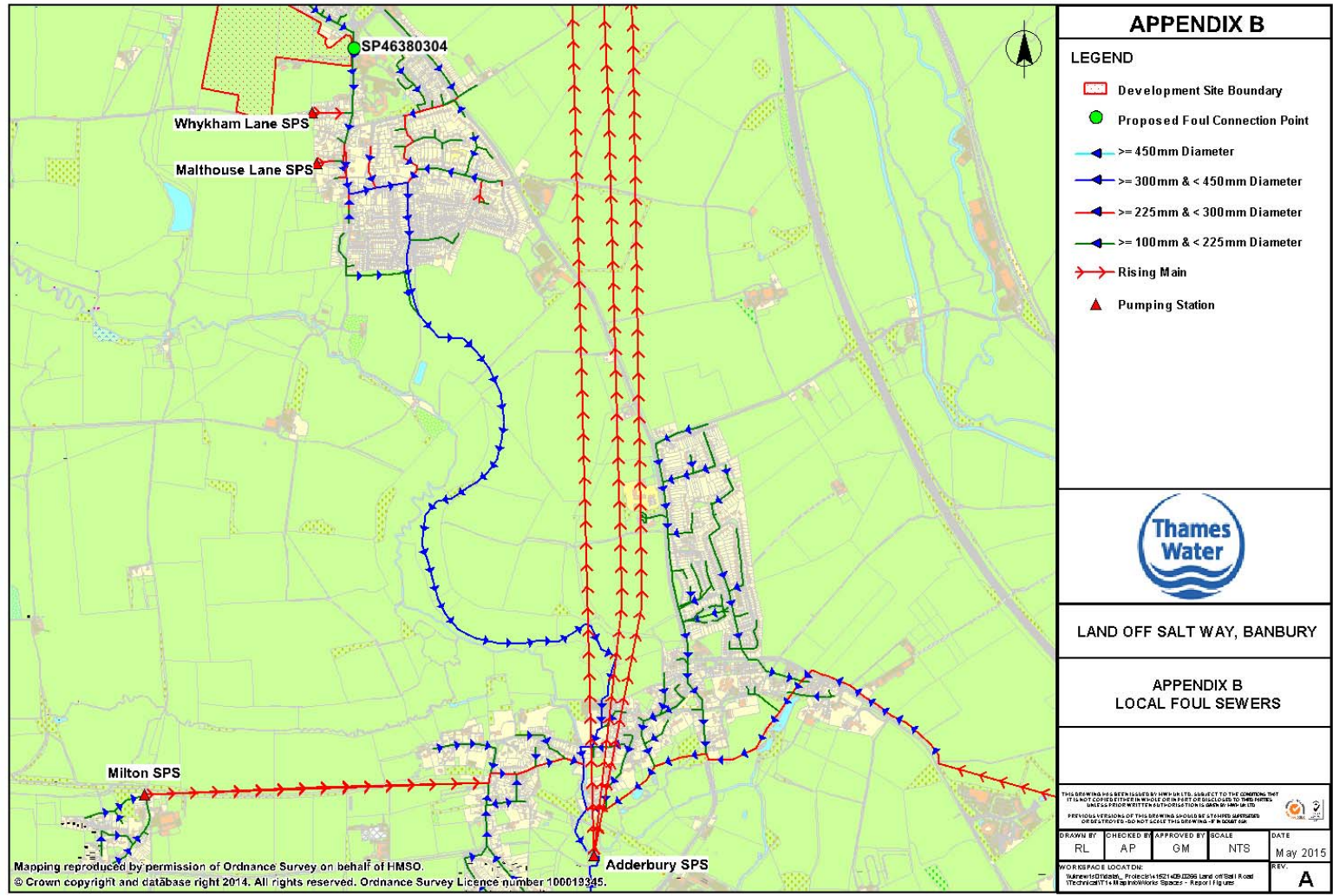
Improvements to the existing foul network are required to enable the proposed connection to the sewer network, without causing any detriment to the level of service provided. The proposed indicative option resolves the modelled increase in flooding and surcharge on the sewer network.

The issues highlighted and discussed throughout this report are recommendations to Thames Water Utilities and may be altered/added to based upon local operational knowledge of the system.

Appendix A – Site Plan



Appendix B – Local Sewers



Appendix C – Connections and Improvements – Option

