

Overview of potential sewerage and sewage treatment impacts from strategic development proposals for Redditch.

Introduction

It is understood that Redditch Borough Council are currently preparing their Core Strategy to meet their long term development needs.

Following recent Government changes to the planning system through the Localism Act and the National Planning Policy Framework (NPPF) it is understood that Redditch Borough Council are now preparing a Local Plan rather than a Core Strategy. The new plan will be known as Local Plan No. 4.

This document is intended to provide an overview on how these developments could impact on the sewerage system across Redditch.

Background

Under Section 94 of the Water Industry Act 1991 sewerage undertakers have an obligation to provide drainage capacity to ensure no adverse effect on the environment or unduly increase flood risk from the sewerage system. Alongside this there is also a requirement to manage existing capacity and provide future capacity as required to minimise customers' bills.

In order to inform long term planning decisions sewerage undertakers are reliant on guidance from local planning authorities as to where, when and how much future development is being considered. This then gives the opportunity to work closely with the planning authority to ensure any capacity upgrades to the sewerage system and/or sewage treatment works can be effectively planned to avoid undue delay. Severn Trent therefore welcomes the opportunity to be involved in the planning process even though not a formal statutory consultee.

Foul Drainage

Apart from large developments, the additional foul flows from new development rarely result in significant problems to the sewerage system provided that storm water is managed in a sustainable manner.

Where development proposals are sufficiently site specific we will provide general overview comments on current capacity constraints, for example known flooding problems, any downstream pumping stations or sewerage constraints such as river, railway or canals crossings where provision of additional capacity may be restrictive.

Our initial comments are for general guidance and will only be based on notional desktop assessments without the benefit of specific hydraulic modelling. The intention of our assessments will be to identify any potential showstoppers where significant investment would be required to provide capacity for the level of development proposed.

Detailed hydraulic analysis would need to be undertaken once specific development proposals are available in order to identify the scope and extend of localised reinforcement works. Any capacity improvement work would be funded by Severn Trent Water.

Storm Water Drainage

The key issue to the effectual drainage of new development is the sustainable management of storm water. Historically capacity exceedance problems on sewerage systems (e.g. flooding, excessive operation of sewer overflows) have arisen due to the historical practice of discharging storm water to foul sewers. This problem has been exacerbated by the paving front gardens and other permeable areas thereby increasing the volume and speed of surface water in to public sewers (both foul and surface water sewers) which would not have been designed for such a scenario. We do not believe this is sustainable and whilst our ongoing investment programme seeks to address this historical legacy we would not expect future development to continue this practice. Where suitable surface water sewers or watercourses are not available to cater for new development we would only accept connection of surface water runoff discharging to the foul/combined sewer as a last resort.

Sewage Treatment Works

All discharges from sewage treatment works are regulated by the Environment Agency who issue bespoke discharge consents to ensure the volume and quality of the treated sewage effluent does not impact on the water quality of the receiving water body. Such consents specify dry weather volumetric limits together with water quality parameters such as biological oxygen demand and suspended solids limits and in some cases ammonia, nitrates and phosphorus limits. Some sewage works may also have consent limits which vary between summer and winter.

Whilst our sewage works performance is continually monitored its comparison against the relevant discharge consent criteria does not always reflect the amount of spare headroom at a treatment works. Due to efficiency reasons we will often operate our treatment works close to our discharge consent limits to optimise operational resources. Consequently where current performance is very close to its consent thresholds it does not always indicate that there is no spare capacity for future development.

Depending on the treatment processes at a particular site there may be scope to increase treatment capacity by changing our operational regime (e.g. increasing the aeration of activated sludge processes). In addition some of our sewage works have mothballed assets that are not required to meet the current consent requirements but can be brought back in to commission to provide additional treatment capacity.

We are also confined by the discharge consent issued by the Environment Agency. Where development results in dry weather flows exceeding the current discharge consent we will need to negotiate new consent parameters and provide additional treatment capacity as required. Where there could be potential issues with quality consenting we will identify these and initiate further discussions with the Environment Agency.

Overview of the Redditch drainage catchment

Due to topography Redditch is served by two sewerage catchments (See Appendix A).

The majority of Redditch is served by a gravity sewerage system which drains along the Arrow valley to a sewage treatment works at Spernal to the south east. Sections of the catchment in the Webheath area are connected to the Spernal catchment via pumping stations. Overall the catchment has good overall performance with a few localised capacity constraints but nothing significant for a catchment of this type.

The southern part of Redditch (Headless Cross, Hunts End and an area to the south of Webheath) drains south along a rural valley sewer that flows through Feckenham village before draining to Priest Bridge sewage treatment works. This system is known to have localised capacity issues in Feckenham.

Strategic Development Locations

As part of the “Redditch Borough Council and Bromsgrove District Council Outline Water Cycle Study – Final Report (May 2012)” Severn Trent Water were asked to comment on 35 potential development locations across Redditch. Whilst many of these were small infill developments the sites included three principle strategic development options to the northeast/west at Webheath (600 dwellings), Foxlydiate (230 dwellings) and (Brockhill (825 dwellings).

In addition it is understood that an alternative site(s) at Bordesley Park was considered as part of the WYG report, “Study Into The Future Growth Implications of Redditch (Second Stage Report) – January 2009”. This site was not assessed by Severn Trent in the Water Cycle Study.

As part of the Water Cycle Study consultation Severn Trent undertook desktop assessments to determine the potential impact on the sewerage system for each of the potential development sites. These assessments considered the size of the existing sewerage system in the immediate vicinity of each development, known reported sewer flooding issues and the potential implications on pumping stations/combined sewer overflows. Each site was assessed on a traffic light assessment to determine the potential implications but assessments were made without undertaking hydraulic sewer modelling.

The Water Cycle Study comments made for each site are summarised below:

Webheath (600 dwellings)

This site (ref ‘2010/12’) is located on the edge of the Priest Bridge and Redditch (Spernal) sewage treatment works catchments and so could potentially drain to either catchment depending on the sewer connection point. The ground contours indicate that most of the site will not be able to connect to the existing sewerage system without needing to be pumped and so this gives some flexibility over potential point of connection but either way the sewers in the immediate vicinity are only small diameter (150/225mm dia) and so are likely to require upsizing to provide additional capacity to accommodate pumped flows from 600 dwellings. Further hydraulic modelling will be required to assess the extent of any capacity improvements.

The potential impact of this development on the sewerage system was ‘Medium’.

Since these comments were made Severn Trent has received a sewer connection enquiry from a developer looking to develop the first part of this site. Under Section 106 of the Water Industry Act 1991 a developer has the right to connect to their preferred connection point on the existing sewerage system, irrespective of whether there is sufficient spare capacity. Should subsequent off-site improvements be required then these would be undertaken and funded by Severn Trent.

The developers preferred drainage choice is for the site to be pumped to the nearest adjacent sewer in Church Road which is upstream of an existing Severn Trent pumping station known as 'Church Road, Webheath'. To avoid 'double pumping' an option has been assessed to extend the connection point to a suitable location downstream of the Church Road pumping station where hydraulic modelling indicates that there is sufficient capacity. However this option will result in a further pumping station being built in the Webheath catchment which would be transferred to Severn Trent on adoption of the developments sewerage system.

As there are already three existing pumping stations in the immediate vicinity ongoing feasibility work is also looking at options to drain this development south by gravity, via Feckenham village to Priest Bridge sewage works (7.4km to the south). Whilst this would enable a more sustainable solution (reducing the number of pumping stations) initial feasibility indicates the required capacity upgrading to the sewerage system would be in excess of £2.5 million, compared to the pumped option of around £100,000. This would ultimately be funded by Severn Trent but at present a decision on which option to pursue has yet to be made.

Brockhill (825 dwellings)

These two sites ('2010/11' & '2010/13') are located upstream of small diameter sewerage systems and whilst there are no known sewer flooding problems downstream there is unlikely to be spare capacity to accommodate the additional foul flows from up to 825 new dwellings. Further hydraulic modelling will be required to confirm the extent of any capacity improvements once potential connection points have been identified.

The potential impact of this development on the sewerage system was 'Medium'.

Foxlydiate (230 dwellings)

This site (ref '2010/14') is located upstream of small diameter sewerage systems and whilst there are no known sewer flooding problems downstream it is envisaged that some localised capacity enhancements may be required to accommodate the additional foul flows from 230 new dwellings. Further hydraulic modelling will be required to confirm the extent of any capacity improvements once potential connection points have been identified.

The potential impact of this development on the sewerage system was 'Low'.

Bordesley Park (Not assessed as part of Water Cycle Study)

This site was assessed as part of the WYG report, "Study into the Future Growth Implications of Redditch (Second Stage Report) – January 2009". This site has not been previously assessed by Severn Trent.

Development in this area would be located upstream of a trunk sewer which would otherwise take the additional flows from Webheath, Foxlydiate and Brockhill strategic options. The size of the potential development in terms of dwellings is not known but expected to be around 2000-3000 dwellings based on the potential land allocation shown in the WYG report.

As this development is located close to the head of the trunk sewer that follows the Arrow valley down to Spernal sewage treatment works significant capacity issues are not envisaged although there are historic reports of external flooding from a 750mm trunk sewer in the vicinity of Dolphin Road/Arrow Valley Park. No pumping stations or sewer overflows would be affected by this development.

More detailed modelling work would be required to assess the extent of sewer capacity improvements should Bordesley Park be reconsidered for development. The development is also slightly remote from the existing sewerage system and therefore additional connection costs would be incurred by the developer as Severn Trent would only fund capacity improvements in the existing sewerage network.

Due to the potential number of properties in this locality the additional foul only flows are likely to have a 'Medium' impact on sewer capacity.

Summary

From a drainage perspective the potential development proposals to the north of Redditch are likely to have some impact on the sewerage system due to the fact that all sites are located on the opposite side of town in relation to the Sponal sewage treatment works.

As per our comments in the Water Cycle Study the proposals at Webheath and Brockhill are likely to have a greater impact on the sewerage system purely due to being located at the top of the sewerage system which consists of small diameter sewers. The Webheath site has the additional complication that it will need to be pumped as whilst a gravity solution draining to Priest Bridge would be more sustainable this option is likely to be unduly expensive.

8 November 2012
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Severn Trent Water - Waste Water Strategy

Sources:

Link to Redditch Borough Council website detailing 'Local Plan No. 4 (formerly known as the Core Strategy)'

<http://redditch.whub.org.uk/cms/environment-and-planning/planning-services/planning-policy/local-development-framework/core-strategy.aspx#RPDCS>

Overview of drainage catchments
(indicative only)

Legend:
 - Principle strategic options (pink circles)
 - Principle sewer routes (red dashed lines)

Key Locations and Features:
 - Foxlydiate
 - Brockhill
 - Redditch Station
 - Arrow Valley Park
 - Winyates
 - Mappleborough Green
 - Studley
 - Sambourne
 - Astwood Bank
 - Feckenham
 - Ham Green
 - Headless Cross
 - Hunt End
 - Crack Cross

Drainage Catchments and Sewerage Treatment Works (STW):
 - Priest Bridge STW catchment
 - Astwood Bank STW catchment
 - Sambourne pumped to Sernal catchment
 - Redditch (Sernal) STW
 - This part of Webheath pumped to Sernal catchment

Roads:
 - A449, A4189, B4107, B4497, B4491, B4092, B4090

Water Bodies:
 - Arrow Valley Park

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Appendix B – Bordesley Park Drainage Overview

