

APPENDICES

Appendix A – Howdon WwTW Position Statement

This position statement is based upon the AECOM work currently being undertaken on behalf of Newcastle City Council and Gateshead Metropolitan Borough Council.

Introduction

North Tyneside Council (NTC) have aspirations for significant growth across the authority area, however the NTC Outline Water Cycle Study (WCS) identified that Howdon Wastewater Treatment Works (WwTW) presents a potential constraint to growth. Analysis of the annual average dry weather flows (DWF) into Howdon WwTW indicate that an action plan is required to ensure that the contribution from surface water sources is managed to reduce the DWF and free up hydraulic capacity to accommodate all of the planned growth across North Tyneside and that of neighbouring council areas which drain to Howdon WwTW.

While hydraulic capacity needs managing, Howdon WwTW has ample biological treatment capacity for the wastewaters from North Tyneside, as well as neighbouring councils, for the period of housing growth covered by the WCS.

The volume of surface water arriving at Howdon WwTW is recognised by the key partners working on the WCS (NTC, Northumbrian Water (NWL) and the Environment Agency (EA)) to be an issue and managing it is seen as almost certainly the most sustainable solution.

As such the North Tyneside Surface Water Management Plan (SWMP) has endeavoured to provide some background to this potential constraint and outline the steps that the key partners and other organisations such as developers are taking, and can take in the future, to ensure that Howdon WwTW remains within its volumetric discharge consents and does not constrain future development.

These measures will help to ensure that the levels of predicted growth can be accommodated and that the growth is sustainable.

Howdon Sewage Treatment Works

Howdon WwTW treats wastewater and surface water from the Local Authority areas of North Tyneside, Newcastle, Gateshead, South Tyneside and parts of south Northumberland (see Figure 1 below). Across these five Local Authority areas Howdon WwTW serves a domestic population of around 830,000 people and trade effluent flows increase the population equivalent to around 960,000.

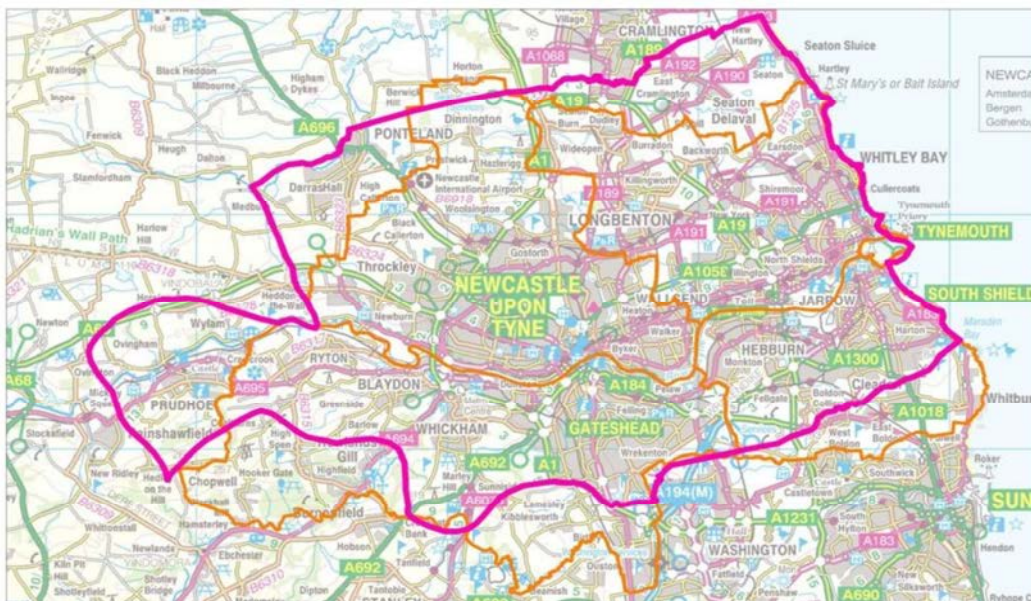


Figure 1: Howdon WwTW Catchment Area

Howdon WwTW was commissioned in the 1980s with the intention that it would predominantly deal with foul sewage flows. However, the bulk of Howdon's catchment area is served by combined sewers which transport both foul flows and surface water to the WwTW.

The North Tyneside area falls within NWL's Wastewater System 5 – Tyneside which drains to Howdon WwTW. The bounds of System 5 broadly align with the Tyne river basin catchment. It consists of 58 drainage areas which have 4,661km of public sewer:

- 2,538 km Combined network;
- 915 km Foul network;
- 1,208 km Surface water network;
- 264 Combined Sewer Overflows (CSO);
- 175 Sewage Pumping stations.

The majority of separate foul and surface water sewers have been constructed to serve new development since the late 1960's but often, in the absence of a local watercourse, the surface water ultimately connects into the combined sewerage system.

The fact that the housing estates themselves are served by separate systems does however offer an opportunity to create strategic schemes to disconnect these surface water flows from several housing development sites and direct them to watercourses, the river or, within the coastal areas of North and South Tyneside, the sea.

Howdon WwTW is consented by the EA both in terms of treatment performance standards (i.e. the quality of effluent that is discharged into the River Tyne), which it complies extremely well with, and volumetric flows received at the works. Since the installation of MCerts flow monitoring devices at Howdon WwTW in 2005, NWL have been able to develop a better understanding of the daily flow into the WwTW and the annual DWF.

Using flow data from 2006 to 2010, the average volumetric headroom figure (spare capacity) for Howdon WwTW is equivalent to an additional 27,000 houses. However, if data for 2008 were to be used on its own, the headroom is reduced to 13,000 houses. The EA currently accepts that 2008 was a particularly wet summer and can be discounted; however further wet years could lead to a review of their position and a tightening of the available headroom figures.

Assuming the current EA position does not change, and no action is taken to remove surface water, this would indicate that there is sufficient volumetric headroom at Howdon WwTW for around seven to twelve years housing supply. This is dependent on the rate of house building across the five Local Authority areas but is also influenced by the weather as the volume of rain falling over the catchment area influences how much surface water gets into the sewers and arrives at the WwTW.

Given the relatively small data set of flow measurement upon which to predict long term trends and the unpredictability of housing delivery both temporally and spatially there is a significant degree of uncertainty associated with the number of additional houses that Howdon WwTW can accommodate.

Based upon the housing projections within the Core Strategies there would currently be in the order of seven to twelve years headroom unless surface water is removed from the network., Based on current housing figures and without addressing the surface water issue Howdon WwTW could be approaching its volumetric compliance consent between 2018 and 2023. The planning horizon for North Tyneside and that of neighbouring local planning authorities is up to 2030,

NWL is working with the five affected councils and the EA to develop a consistent joint approach to creating volumetric headroom at Howdon.

The Council's SWMP present an excellent opportunity to demonstrate this joint working strategy to ensure that the development aspirations of the five Local Authorities served by Howdon WwTW can be delivered in a manner which is both timely and sustainable for all parties.

Resolving the surface water issue within System 5

As demonstrated above, there is a potential risk to the overall housing delivery of the five councils due to the presence of surface water within the sewerage system which drains to Howdon WwTW.

NWL recognised the need to better understand the full scale of the issue as the first years of MCerts flow data became available and sought funding from OFWAT to carry out a study (*The Tyneside Sustainable Sewerage Study*) during the current Asset Management Plan (AMP5 from 2010 – 2015)

This study which has prioritised some pilot drainage areas across each of the councils' areas will seek to identify the tools and techniques which can be applied to reduce the surface water impact on the Tyneside System and Howdon WwTW. The study will also be used to promote schemes for future AMPs.

NWL currently has no plans to invest in hydraulic capacity at Howdon WwTW in AMP5 as there is still capacity available to facilitate growth. It will review this position as part of its future business planning and any identified needs will be investigated, justified and proposed accordingly. In parallel with this, NWL has stated that they intend to free up capacity within the system by removing or reducing the volume of surface water that is entering the combined sewer systems and consequently arriving at the WwTW. By removing surface water the foul water flows from new developments can be accommodated at the works (the volume of surface water greatly exceeds the volume of foul flows during wet weather). In order for this to be successful a co-ordinated approach is required between NWL, the EA and the five Local Authorities. The rest of this document sets out the co-ordinated approach that is to be adopted to deliver a pro-active policy of surface water management.

Northumbrian Water

During AMP5 NWL intend to complete a major piece of work which relates to Howdon WwTW and the wider sewerage system. This is the Tyneside Sustainable Sewerage Study.

The purpose of the study is to gather the evidence base concerning the surface water issue, which will help to support the business case to obtain funding to do something about it. The project will also develop a series of tools and techniques that the water company can implement to actively remove, or reduce, surface water from combined sewer systems

Excess surface water within the Tyneside sewerage system can generally be from four sources:

Inflow – Point flow connection to the network that is designed and meant to be there.

Ingress – Point flow connection to the network that is not designed or meant to be there.

Infiltration – Flows entering the system through the fabric of the assets.

Inundation - Flood waters coming in to the system.

Whilst the removal of some of the surface water may require investment by NWL, it is possible that the redevelopment of brownfield sites may offer significant opportunities to separate surface water flows from the combined sewerage system.

As well as this study, NWL have launched the Howdon WwTW AMP - The long-term (25 year) plan for the management of the network and treatment capacity in the Tyneside catchment designed to facilitate a number of needs including

- Identifying and prioritising the removal of excess surface water from the system;
- Accommodating future growth for the Howdon catchment;
- Managing long-term compliance for Howdon and the network assets;
- Addressing environmental protection;
- Identifying and managing future flood risk;

- Ensuring operational efficiency;
- Identifying long-term investment needs; and
- Enabling future planning.

Environment Agency

As regulator, the EA will review and ensure that Howdon WwTW continues to comply with its consent standards.

North Tyneside Council (Gateshead Council & Newcastle City Council, South Tyneside and Northumberland)

All five Local Authorities affected by the issue at Howdon WwTW need to take unilateral action to ensure that the issue at Howdon WwTW is holistically addressed through policies of surface water reduction and separation.

The Local Authorities will adopt policies of surface water reduction and separation for new developments. All brownfield development sites occurring in areas served by combined sewer systems present the opportunity to separate the combined flows so that only foul flows enter the combined sewers and surface water is removed from the system. At the very least the Local Authorities will be expecting developers to reduce the volume of surface water entering the combined sewer system. The policies, to be incorporated into supplementary planning documents, will encourage the developer to remove as much surface water from the combined sewer systems as possible, managing the water on site, disposing of it to a watercourse or only as a last resort utilising public surface water sewers or the combined system.

Appendix B – EA Flood Zones Map

Appendix C – Flooding Hotspots and Associated CDA

(Figure 10-1 from the North Tyneside SWMP)

Appendix D – Groundwater Flooding Data