Water Quality and Strategic Growth for Chichester District
Background Paper
November 2012

Written on behalf of the Chichester Water Quality Group

The water quality problems affecting development in and around Chichester city are twofold. Firstly there is insufficient capacity within the existing environmental permits to accommodate future development needs. Secondly, the catchment suffers from high levels of groundwater infiltration into the sewer network. This has led to long periods of continuous operation of the storm overflow at Chichester (Apuldram) Wastewater Treatment Works. The following provides an update on the work of key stakeholders to try and find solutions to these problems and facilitate delivery of Chichester District's Local Plan.

1. Key stakeholders – roles and responsibilities

Chichester District Council

The District Council has a number of responsibilities including Environmental Health and Protection, Housing and Planning. The Council is the Local Planning Authority for areas outside of the South Downs National Park and a key duty is to produce a Local Plan, which sets the strategic objectives as to how the area will develop over the next 15-20 years.

Southern Water

Southern Water is the statutory sewerage undertaker in Chichester District. The company is responsible for collecting, conveying and treating wastewater. It has a statutory duty to serve new development, and to meet strict environmental standards set by the Environment Agency. Southern Water plans investment in five year periods through Ofwat's price review process. The company looks to Chichester's Local Plan to inform its investment planning, and to support proposals to Ofwat.

Environment Agency

The Environment Agency is a Government agency responsible for protecting and improving the environment, and promoting sustainable development. We discharge these duties through a range of activities. In particular we regulate discharges into the environment in accordance with relevant legislation, and provide advice and guidance as a statutory consultee within the planning system.

Natural England

Natural England is the government's advisor on the natural environment. They provide practical advice, grounded in science, on how best to safeguard England's natural wealth for the benefit of everyone. Their remit is to ensure sustainable stewardship of the land and sea so that people and nature can thrive. It is their responsibility to see that England's rich natural environment can adapt and survive intact for future generations to enjoy.

Chichester Harbour Conservancy

Chichester Harbour Conservancy is a Trust Port established by the Chichester Harbour Conservancy Act 1971. Its duty is the conservancy, maintenance, and

improvement of the harbour and the Amenity area for recreation and leisure, nature conservation and natural beauty. The Conservancy also acts as the Joint Advisory Committee (JAC) for the Area of Outstanding Natural Beauty (AONB). Chichester Harbour Conservancy is a unique organisation in England. It is the only public body that is both a Statutory Harbour Authority and a JAC for an AONB.

2. The Story So Far

The Wastewater Treatments Works (WwTW) within the District are significantly constrained in providing the further capacity needed for future development. This is due to the wide scale nature of the European designations that require statutory environmental water quality standards to be met. The main Wastewater Treatment Works serving Chichester discharges into the internationally designated receiving waters of Chichester Harbour.

European Designations

The European Union Habitats Directive protects certain species of plants and animals which are particularly vulnerable. The Directive provides for the designation of sites for particular protection. Any activity likely to have a significant (adverse) impact on these sites is subject to assessment and may be restricted.

Following the Inspector's comments in 2007 on Chichester's Core Strategy, in particular with regard to the wastewater treatment constraints, there has been regular dialogue between the key stakeholders including Chichester District Council, Environment Agency, Natural England, Southern Water and Chichester Harbour Conservancy.

In 2009 both the Environment Agency and Southern Water produced individual documents detailing their positions regarding the key WwTWs in the District.

The Environment Agency provided details of the current environmental permits (consents), the current flow measurements and through modelling provided details about the environmental capacity of the WwTW when operating at Best Available Technology. The work concluded that the WwTW in the south of the District did not have the volumetric capacity to accommodate the housing requirements of the South East Plan and that some WwTW could not be upgraded further due to environmental constraints.

Southern Water set out the consent headroom for each WwTW in terms of housing numbers and outlined possible options for providing the necessary wastewater treatment capacity to meet demand.

Following these pieces of work the Council commissioned a more detailed study by consultants titled "Strategic Growth Study – Wastewater Treatment Options for Chichester District". The aim of the study was to consider alternative opportunities within or close to the District to increase the treatment capacity. The Council's preferred strategy would be for most development to be focused in and around Chichester city.

Two possible solutions were identified – a Long Sea Outfall and upgrades to Tangmere WwTW. The Long Sea Outfall option was sidelined due to the significant costs (estimated at approx £35-40 million) and the view from Southern Water that Ofwat would not fund this for the expected level of growth in the District. The recommendation was therefore to investigate the potential for an upgrade to Tangmere WwTW to enable future strategic growth of the District.

3. Chichester Water Quality Group

Following the recommendations of the Council's Wastewater Treatment Study, a stakeholder group was formed to provide evidence to inform the Council's Local Plan.

The Group agreed Terms of Reference which set out the objectives. These are to:

- Influence the development of Chichester District's Local Plan to ensure long term transparent decision making for development;
- Ensure development does not compromise water quality standards; and
- Protect and where possible enhance Chichester Harbour.

To guide and steer the joint work of the group an Action Plan was drawn up and agreed by all parties. This set out different phases of work, including further investigation of options and the key stages needed to identify and deliver a technically feasible solution. Lead organisations were identified for each action and where possible approximate deadlines were set. This Action Plan is reviewed on a regular basis by the group to highlight whether any additional actions are required or where the initial deadlines were too optimistic.

To focus the group's attention the actions were identified by WwTW catchment. The following provides an update on the current status of actions for each of these.

3.1 Chichester (Apuldram) WwTW

There are two issues that affect these works:

- Environmental permit

Due to the sensitive nature of the Harbour the current environmental permit limit at Chichester (Apuldram) WwTW is finite. The discharge is already treated to exceptionally tight nitrogen levels, established under the Habitats Review of Consents process.

Environmental Permits

Under the Environmental Permitting Regulations 2010 any persons wishing to discharge polluting substances into the environment are required to apply for an environment permit. For wastewater treatment these permits restrict the quality of the discharge. Depending on the location, the permit will control different elements. Coastal discharges are limited by nitrogen (for example Apuldram) and inland are limited by phosphorous (for example Tangmere).

Best Available Technology (BAT) is a term applied when regulating the discharge of polluting substances. It is the most advanced technology that is economically viable.

- Infiltration

The Chichester catchment is affected by high levels of groundwater infiltration into the sewer network. When groundwater levels are high water leaks into the sewer system it causes the Chichester (Apuldram) works to operate its storm overflow. The purpose of the sewerage system and the treatment works is to convey and treat foul and combined flows, not groundwater flows that should be dealt with by land drainage. The flows

into the WwTW are therefore greater than its capacity to treat fully. The groundwater becomes mixed with foul water and partially treated sewage, diluted with groundwater is pumped into Chichester Harbour through screens which remove solid matter.

Current Headroom
From recent monitoring the remaining headroom in the environmental permit (point 1 above) would allow approximately 700 more dwellings to be built over and above existing commitments. However, due to the infiltration (point 2 above) the Environment Agency has advised that this headroom is not used up until a solution is found. This is in line with the Environment Agency Position Statement – "Wastewater Treatment 2010" and its addendum of September 2011.

This means that for the purposes of the Local Plan Chichester (Apuldram) WwTW cannot be relied upon for the required wastewater infrastructure to accommodate growth.

Storm overflow and mitigation
Southern Water is undertaking an infiltration study to identify where the hotspots for groundwater infiltration are within the sewer network. Unfortunately due to the dry winters of 2010/11 and 2011/12 the outputs of this work have been delayed.

When the study is completed Southern Water should be able to identify interventions to reduce infiltration into the public sewerage system. From past experience infiltration is extremely difficult to fix, a long term solution is not guaranteed and could be potentially very expensive. This is because leaks into the public sewerage system are fixed through sealing or other intervention; infiltration may increase from private laterals further upstream or downstream.

Southern Water is not responsible for leaks from sewers within private properties that are not classified as public sewers and have no powers to enforce action from private owners.

A long term issue with the operation of the storm overflow is the impact that it is having on the water quality in the Harbour, in particular in relation to shellfish waters. The Chichester Water Quality Group is looking at the feasibility of implementing measures at Chichester (Apuldram) WwTW to mitigate this impact.

The continuous discharge of treated effluent from the WwTW is already subject to Ultra Violet (UV) treatment (to ensure compliance with the Shellfish Directive), however, the Environment Agency are now assessing the feasibility of installing UV treatment on the storm overflow to reduce bacteria levels entering the harbour. Treatment of storm discharges in this way is extremely rare with very few storm overflows currently receiving UV treatment across the country. A dose rate for the ultraviolet rays and costings for installation needs to be finalised before approaching Ofwat for funding. There is no guarantee this would be successful as it is only a temporary measure. If funded the earliest it would be installed is winter 2013.

Whilst installation of UV treatment will not solve the infiltration problem or increase the available headroom for development it will help mitigate the impact of current and

committed development on Chichester Harbour. This will be a direct result of the partnership approach advocated by the Chichester Water Quality Group. The UV treatment will not address the nutrients that are discharged in to the Harbour when the storm overflow is operational.

Potential Headroom

The Group is considering if it would be possible to remove the Environment Agency's current position statement (see above) once the UV treatment is installed. This would mean that the remaining permitted headroom at Chichester (Apuldram) WwTW of approximately 700 homes could be released. Before this decision is made an environmental assessment is needed to fully understand the impact this would have on the nitrogen levels in the Harbour. Initial assessment suggests this will be negligible as it is most common for the storm overflow to operate in winter months when the effect of nitrogen levels on the algae is limited. However, from June to August 2012 the storm overflow has been operating almost continuously. It is these spring/summer storm discharges that are likely to have more of an impact on algae growth. Further assessment is underway and the results will be shared.

It should be noted that if the headroom under the current environmental permit is released and used there is no environmental capacity for additional development to connect to Apuldram WwTW and therefore there will be an effective cap on growth.

3.2 Tangmere

An upgrade to Tangmere WwTW was identified as a preferred solution from the Wastewater Treatment Study to accommodate growth.

Current Headroom

Tangmere only has permitted capacity for approximately 500 more dwellings, however, the WwTW are not currently built to accommodate this. Where developments are permitted within this headroom Southern Water will work to provide the necessary connections.

To meet strategic growth for the District the consented capacity needs to be increased. A new consent would need to meet requirements under the Water Framework Directive (WFD). This is to ensure no deterioration in the water quality of the Aldingbourne Rife (where the Tangmere WwTW discharges to), and where possible that quality is improved over time.

Water Framework Directive

The EU Water Framework Directive was enacted into the UK in 2003. It establishes a legal framework for the protection, improvement and sustainable use of water bodies. The Directive applies to all water bodies, including surface, coastal waters and groundwater. There are two main objectives which should not be compromised: 1. No deterioration in current status; and 2. Achieve "good status" in all water bodies.

Current position

The Environment Agency and Southern Water have been working on the financial and environmental viability of the WwTW upgrade using potential growth scenarios from Chichester District Council. The concentration of phosphorous in the WwTW discharge was the key factor to be considered. Strict environmental permit limits were recommended by the Environment Agency. Southern Water undertook costing works to understand the necessary technologies needed to meet these requirements.

In February 2012 the Group was presented with the initial results of this work which demonstrated for the first time that an upgrade at Tangmere was financially, environmentally and technically feasible.

The upgrade is still subject to actually getting Ofwat approval through Southern Water's business planning and their submission to Ofwat of their Periodic Review in 2014 (PR14). Southern Water confirmed that the initial upgrade to Tangmere could be put forward for funding as a "supply demand (growth) scheme" in PR14. To achieve this, a level of planning certainty from Chichester District Council is required. This would be through an advanced consultation stage of a Local Plan document or an adopted Local Plan.

The further back in the adoption process the Local Plan is, the less certainty there is for Ofwat to agree the upgrade and funding. It is anticipated that if Ofwat funds the scheme the upgraded WwTW could be operational from 2019 at the earliest.

Representatives from the Environment Agency have had initial conversations with Ofwat and other key government departments regarding this situation. Initial feedback has been positive. We will continue this dialogue throughout the process.

3.3 Lavant

Recommendations from the Council's "Strategic Growth Study" viewed that Lavant was less favourable than Tangmere due to the range of construction issues, the possibility the works may receive a future Nitrogen standard which also limit any increase to the permitted flow and the fact that the effluent ultimately discharges in to Chichester Harbour.

Since this study it has become evident that this catchment also suffers from infiltration similarly to Chichester (Apuldram). This indicates that transfer of new development flows to this catchment is less sustainable than the Tangmere option and therefore provides greater support to directing strategic growth away from this catchment.

4. Non-mains drainage

Non-mains drainage refers to a range of privately owned and operated wastewater treatment solutions including private treatment plants and individual septic tanks. Government guidance identifies that the presumption must always be to discharge into the public (mains) sewer.

The Council's "Strategic Growth Study" concluded that "it would not be possible to recommend locally distributed treatment as a solution since these schemes have not generally been shown to operate effectively… it was agreed at the stakeholder meeting on 4th November 2009 that this option would not form part of a suitable solution and therefore would not be pursued."

This position has been supported at a recent examination by Planning Inspector Michael Moore looking at Wealden District Council's Core Strategy.
With regard to package treatment plants he concluded that "they should not be seen as a long term planned approach for the Core Strategy".

This is the approach that has been taken in discussions with interested parties regarding strategic growth options.

5. Further Information

The Council's "Strategic Growth Study – Wastewater Treatment Options for Chichester District" MWH 2010 - http://www.chichester.gov.uk/index.cfm?articleid=15865

Council website relating to the Environment Agency's Position Statement - http://www.chichester.gov.uk/index.cfm?articleid=5079