

Report of a visit to Wantage Sewage Treatment Works

23rd June 2008.

Present:

Dave Cook – Thames Water

Neil Whittington – Regional Sewage Operations Manager

Stuart Burnley- Regional Process Manager

Iain Brown – Oxfordshire County Councillor

Stewart Scott – The Hanneys Flood Group

Catchment

Thames Water operates 350 Sewage Treatment Works. Although most work in similar ways, the details for each plant does vary.

The Wantage Sewage Treatment works serves the following communities :

- East & West Hanney
- Grove
- Wantage
- Denchworth
- East Challow
- East & West Hendred
- Kingston Lillse
- Childrey
- Letcombe Regis

Sewage is pumped to the Treatment works by a number of pumping stations. These are fitted with sensors so if a pump does not operate a signal is sent to a 24hour control room. The control room then passes the problem to a network of local technicians who will respond.

If residents notice any problems at a pumping station they can call the customer centre on 0845 9200 800. The customer centre will record the call and can check if the system has identified a fault. Dave Cook understands that residents have stated that the system does not seem to record all calls made and he will investigate.

Inlet Plant

The pumping stations pump sewage to the Inlet building.

Sewage enters the inlet well passes first through a very rough filter to remove large objects. It is then lifted up by three large archimedes screws to the inlet screen. The inlet screen removes objects larger than 6mm. The filtered sewage then enters a settling tank where grit settles out.



Figure 1 Inlet well and 3 archmides screws

It then is passed to one of the three primary sedimentation tanks. The sediment is scraped from the bottom and then removed for pressing. The pressed sediment (cake) contains about 30% water and is taken by lorry offsite. It is mixed with hydrated lime to ensure a balanced ph and then can be used as fertiliser for non food crops.



Figure 2 Grit settling tank



Figure 3 A Primary Sedementation Tank

The sewage is then sent to one of 12 rotating biological filters. These contain porous rocks which contain bacteria that feed on the sewage. This then produces a liquid with very fine solids. The bacteria growth is temperature dependant and if the water temperature is very low the bacteria growth is reduced. The majority of sewage pipes feeding the Wantage works are below ground and so the sewage tends to maintain a high temperature even in very cold weather.



Figure 4 – A Biological filter

The sewage is then sent to one of 4 final sedimentation tanks.

It is then discharged to the letcombe brook via the outfall.

Capacity

The Wantage Sewage Treatment Works has a capacity for a population equivalent of 25,900. The population equivalent is based upon the actual population and an allowance for local industry.

The works has sufficient filtration capacity for a larger population but the Inlet works is at maximum capacity. The sewage Treatment works management are bidding for money from the Thames Water Asset Management Programme 5 (AMP5) for an upgrade to the inlet works to cope with possible future house building programme in the area. AMP5 starts in April 2011. These works are as follows;

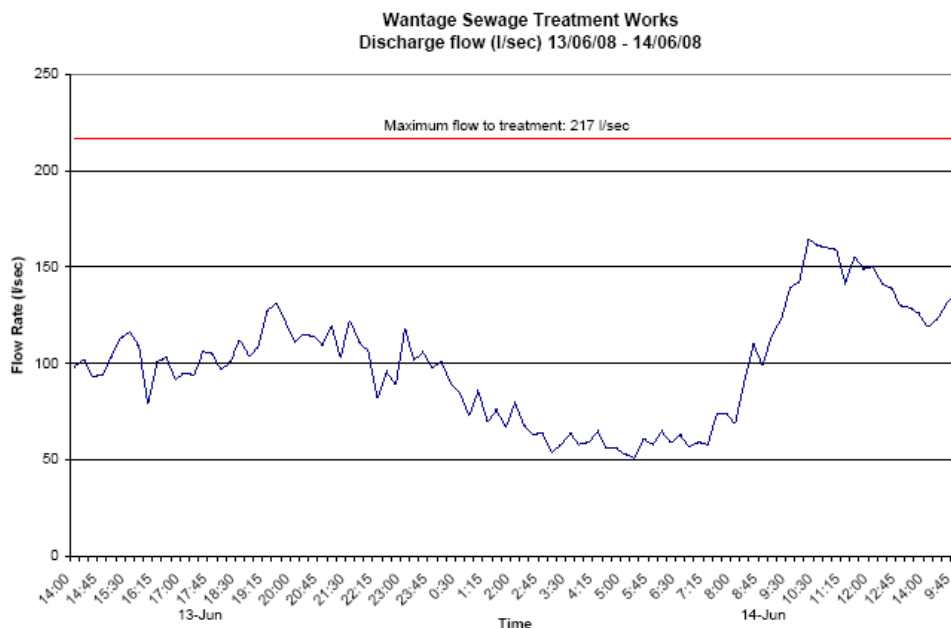
- New inlet pumping station
- New storm separation
- New 6mm 2D screening plant
- Modify existing storm separation and control

Flow rate

The works has a consent to discharge 217 litres per second. During heavy rain large quantities of sewage and storm water and pumped to the inlet works. If this exceeds the capacity of the plant then excess sewage is pumped into a large storm water storage tank after the 6mm mesh screen. The storage tank can hold a maximum of 2 hours capacity. Once this is full the excess is discharged to the Letcombe brook after only receiving the 6mm screening.

The flow rate of water through the filtration plant which is discharged to the brook is continually measured and recorded. The flow rate varies during the day with typically higher levels mid morning and late evening. Figure 1 shows a typical day.

On the day of the visit the flow rate was 115 litres / second when we inspected the flow gauge, earlier it was up to 145 litres / second.



Water Quality

Water quality is tested by the plant operators each day. They measure the following

- Phosphate

- Ammonia
- Suspended Solids

The results are sent by Text message to a central control station for analysis. If these are outside the required level actions are triggered.

At least once a month an external Thames Water person measures the Ammonia, Phosphate, Suspended solids and the Biological Oxygen Demand.

The Environment Agency also carry out tests twice per month on the discharge and also tests on the Letcombe Brook 12 times per year.

Should the plant exceed the limits twice in any 12 month period it is classed as a failing plant and has a category 2 incident. A further failure is a category 1 incident and will lead to prosecution. Last year every Sewage Treatment works operated by Thames Water was 100% compliant. At Wantage there has been no category 2 incidents.

Future Trends

There is a growing market for selling cleaning products that can be disposed down the toilet. These objects must be pumped to the sewage works, filtered out, cleaned and then sent to land fill. This trend will put an additional burden on the sewage companies which may result in higher customer charges in future.

Appendix 1 Process Flow Diagram

