



## **NEIGHBOURHOOD PLAN: DRAINAGE ISSUES WITHIN THE PARISH**

**The Parish of Old Windsor, West Berkshire**

**For Old Windsor Parish Council**

**OCTOBER 2015**

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## Revision History

This document has the following history:

Version No.	Version Date	Summary of Changes	Changes marked
1.0	29/06/2015	Minor changes made	No
2.0	22/10/2015	Changes made following meeting with Thames Water on 17 <sup>th</sup> Sept 2015	Paras: 7.4-7.6, 8.1, 8.3-8.12, 10.3, 11.1-11.4 revised. Appendix A deleted

## Approvals

This document requires the following approvals:

Name	Title & Organisation
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## Distribution

This document has also been distributed to:

Name	Organisation
Councillor Jane Dawson	Old Windsor Parish Council

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## APPENDICES

None

## 1.0 CLIENT BRIEF

- 1.1** The Parish Council are preparing their statutory plan; the 'Old Windsor Neighbourhood Plan'. They have funding for a Planning Consultant and technical support. They have appointed a Planning Consultant who has started work: Chris Bowden (<http://www.navigusplanning.co.uk/>) but they now believe they need some technical assistance.
- 1.2** The Planner is preparing their Plan but is aware that much of the basic information is either not available, disputed or incorrect. This is because the Royal Borough of Windsor and Maidenhead are behind programme in preparing their Local Plan. The Borough has a Draft Local Plan out for Consultation (now closed) but it has not been approved by the Minister, and in any event is too high-level to resist current Planning Applications and it barely touches several important issues: Surface Water flooding, Foul Water drainage, traffic and industrial traffic for the Thames Water, Ham Island Sewage Treatment Works.
- 1.3** The Parish need technical support to review the information that is currently available, check its veracity and identify any gaps where additional information is required.
- 1.4** The Parish has detailed records of Approved Developments over a long period of time. They also have a rich, but anecdotal, evidence base about recent flooding and traffic incidents. These now need to be put into Technical Reports that can be submitted as evidence to both the Local Plan and objections to proposed developments. Additional surveys and evidence requirements may be identified.

## **2.0 INTRODUCTION**

- 2.1** Old Windsor Parish Council (OWPC) approached The Stilwell Partnership (TSP) in November 2014 to seek assistance with the preparation of a Neighbourhood Plan for their Parish.
- 2.2** A meeting was convened in early January, where several Parish Councillors and Flood Wardens met with Chris Bowden of Navigus Planning and Ian Jenkinson from TSP, to discuss a range of issues that need consideration when preparing a Neighbourhood Plan.
- 2.3** The foremost issue for the Parish is the preparation of a Draft Neighbourhood Plan that can be used for statutory and public consultation. This has to take in many issues across the Parish, not least drainage, but a draft can be prepared by Navigus without a detailed drainage section at this stage.
- 2.4** However, drainage is a key issue for the parish because there have been several instances of flooding in recent years. The flooding has several separate but linked aspects: watercourse and main river management, ground water levels, highway surface water and combined flows to the Windsor Sewage Treatment Works (STW) at Ham Island. This is an issue that TSP can address.
- 2.5** A third issue is traffic: local, through traffic to nearby visitor attractions and commercial traffic especially to Ham Island STW. Again the Draft Neighbourhood Plan can be prepared without a detailed traffic section at this stage and OWPC are dealing with the Ham Island commercial traffic direct with Thames Water (TW).
- 2.6** It was agreed that Navigus Planning will prepare the Draft Neighbourhood Plan which is unlikely to require any drainage or traffic information from TSP at this stage. TSP will deal with the drainage issues in two parts, as outlined in this report.

### 3.0 DRAINAGE

- 3.1** The drainage issues can be divided into two separate but linked parts: surface water and combined (foul) drainage. The Royal Borough of Windsor and Maidenhead (RBWM) have produced a Flood Risk Management Strategy Consultation Report that gives a high level overview of issues across the borough.
- 3.2** This strategy addresses the flood risk arising from river levels, rainfall and groundwater but does not address the consequences of combined sewage flows within the Parish. Our understanding is that RBWM has closed the consultation on the Flood Risk Management Strategy and will return to the question in early 2016. TSP has agreed to assist the Parish with their discussions with RBWM when the Strategic Flood Risk Management Strategy is reopened.
- 3.3** The combined (foul) drainage issues are the responsibility of Thames Water (TW). They collect combined flows from an area much larger than the Parish of Old Windsor; it includes the town and surrounds of Windsor. Thames Water brings the sewage to the Windsor Treatment Works at Ham Island.

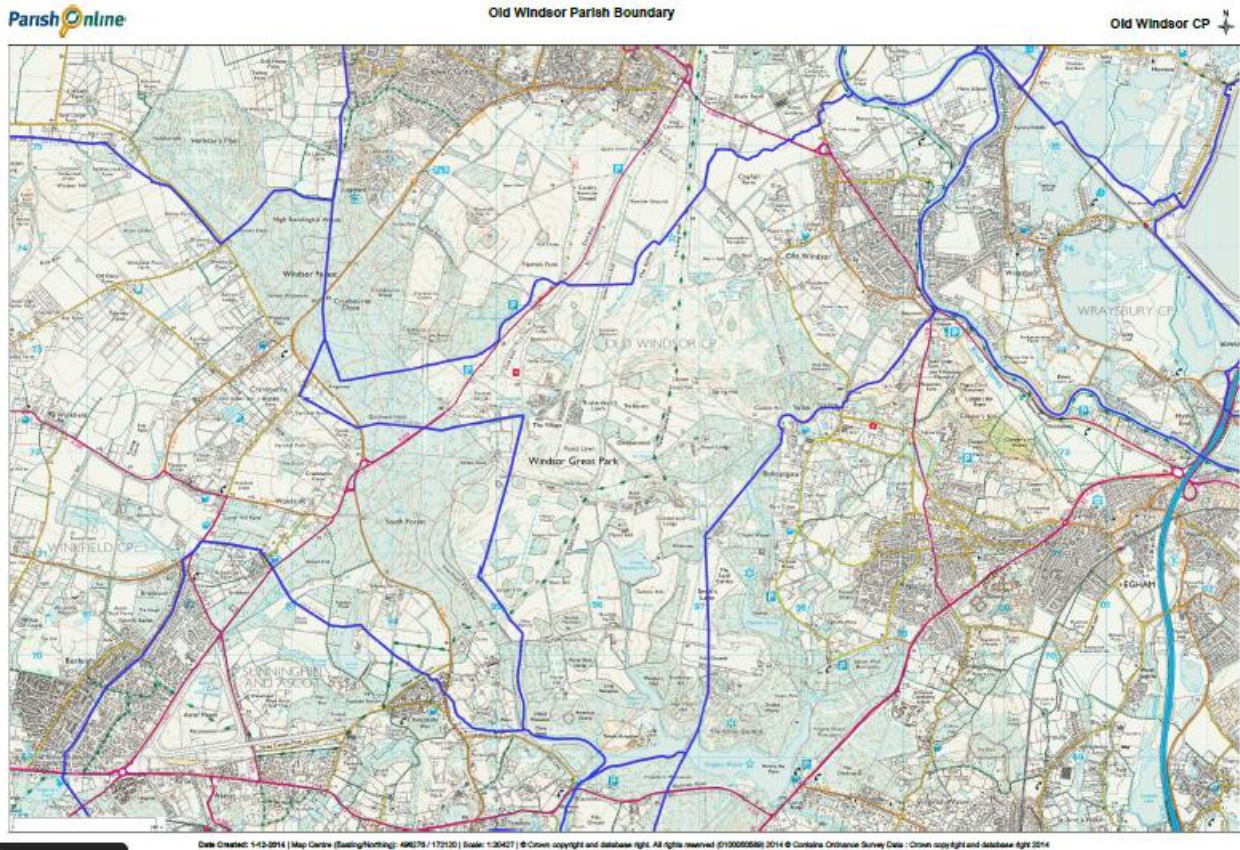


- 3.4** The Parish has held a number of meetings with TW but been unable to progress a meaningful dialogue about past operational problems or develop an understanding of the current and future capacity of the works. TSP has agreed to assist the Parish with these discussions.



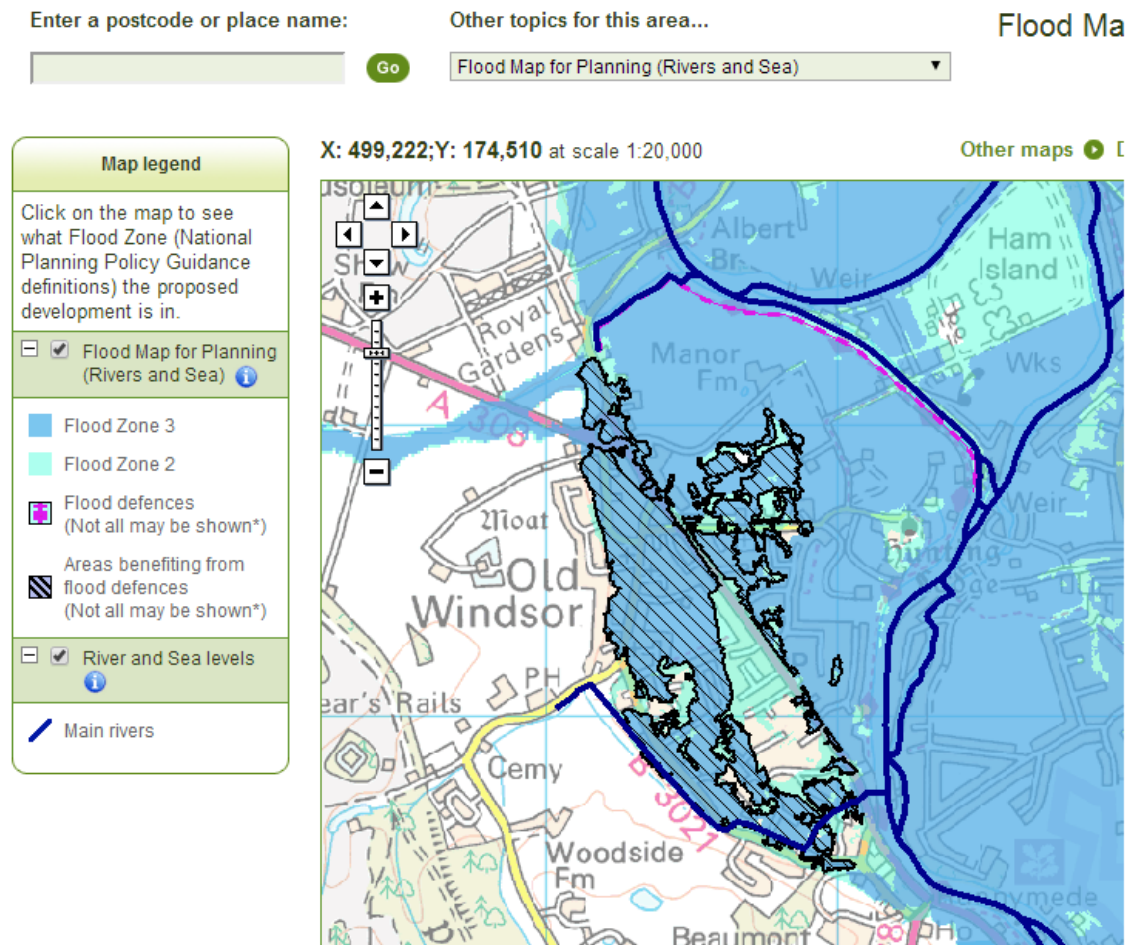
## 4.0 PARISH DESCRIPTION

4.1 The Parish of Old Windsor extends from the River Thames, over most of Windsor Great Park, and up to Virginia Water. The majority of its 5,000 residents live in approximately 2,000 properties alongside the river below the Great Park.



## 5.0 FLOOD RISK

5.1 The residential area is low lying with most of the area being defined by the Environment Agency as Fluvial Zone 2 (medium probability) and Zone 3 (high probability) flood zones.

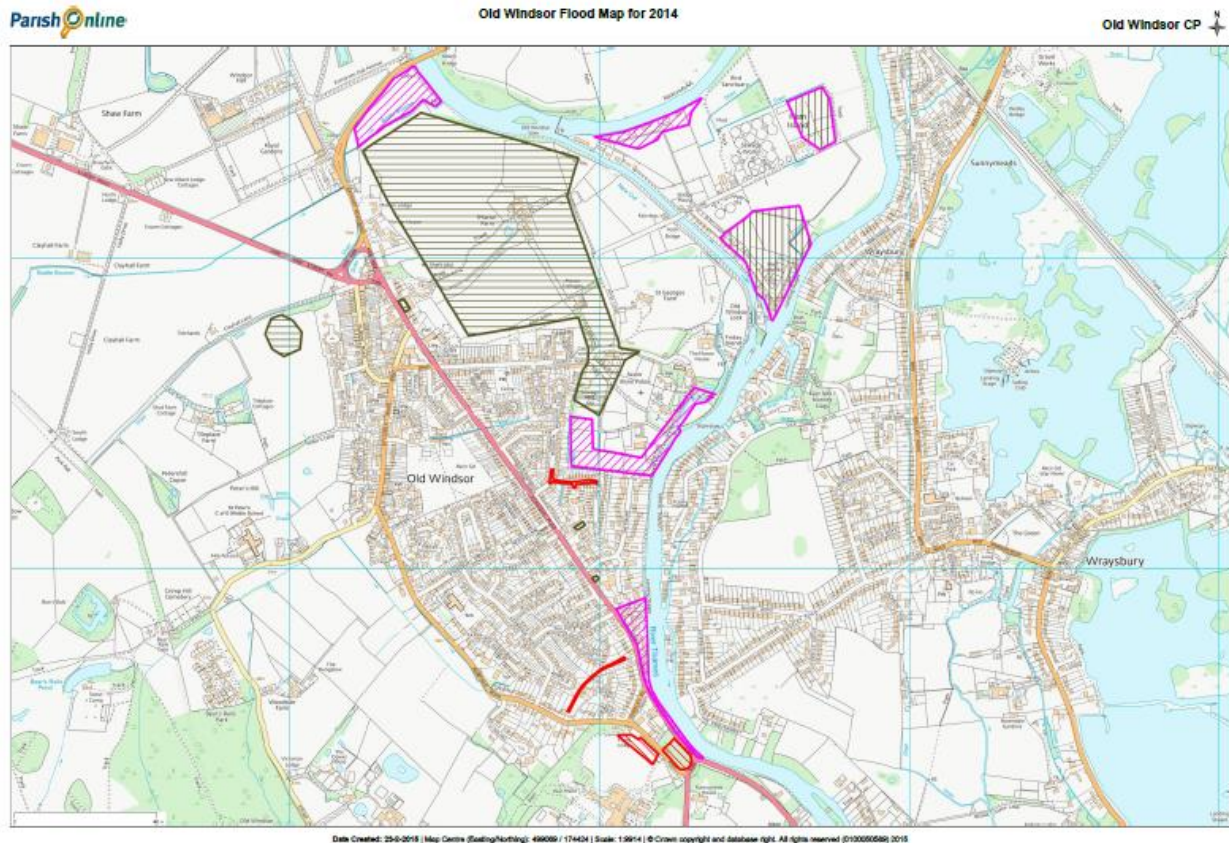


5.2 The 2011 Royal Borough of Windsor & Maidenhead Preliminary Flood Risk Assessment (1), prepared by WSP for RBWM, is a high-level report that covers the whole borough. It properly identifies the risks in general but does not separately identify the issues for the Parish.

5.3 The 2014 RBWM Local Risk Management Strategy is a comprehensive report that discusses the various causes of flooding, prevention strategies and their statutory responsibility as Lead Local Flood Authority, to cooperate and work with a range of other bodies, including Parish Councils, to prevent and manage flooding. It properly outlines a series of objectives that include the reduction of existing flood risk and ensuring that land use planning avoids, minimises and prevents an increase in flood risk.



- 5.4 It states that while "... Parish Councils have no formal duties in the management of flood risk, however they have an important role to play in establishing local groups, developing community flood plans and raising awareness of flooding and flood response with their communities."
- 5.5 In this respect OWPC produced a map showing areas that were flooded and carried out a watercourse survey (2) during 2014, to identify areas for maintenance and enforcement action.



## **6.0 HAM ISLAND AND THE WINDSOR SEWAGE TREATMENT WORKS**

- 6.1** OWPC has identified a specific problem at Ham Island. During the winter floods of 2013 and 2014 many residential properties were inundated by water from the River Thames to a considerable depth for a long period. This was extensively reported in the local media.
- 6.2** The flooding also appears to have affected the STW, although full details are not available within the public domain. It is believed that the storm lagoons were in operation and may have been full during this period. Some weeks after river levels had fallen, the storm lagoons still appeared to be full and were holding water for extended periods of time. This resulted in a strong odour being released for a long period of time into the summer (3).
- 6.3** Information about this whole period is not readily available and despite repeated enquiries, by residents and OWPC, little information has been released.

## 7.0 INVESTIGATION AND DESK TOP STUDY

7.1 At the meeting in early January, TSP advised Councillor Dawson that there were a series of questions that could be asked of TW that would help inform the situation. This would help in an understanding of the events at Ham Island, assist the drafting of the Neighbourhood Plan and help OWPC determine their response to Development Applications, both within their own parish and neighbouring parishes that drain into the Ham Island STW. TSP advised OWPC that this information should be freely available in the public domain, as it does not have any commercial or operational confidentiality.

7.2 These questions were posed to TW in early January:

For the whole of 2014, or whichever is the most recent year for which records are available, please supply:

1. A copy of the flow chart showing the daily volumes of effluent arriving at Windsor STW.
2. The number of occasions and dates when the flow was diverted to the storm overflow lagoons.
3. For each of the occasions when effluent was held in the storm lagoons, the date and time at which the lagoon commenced filling and the date and time at which it was fully drained back into the STW.
4. A copy of the flow chart showing the daily volume of treated effluent discharge to river.
5. A copy of the current discharge licence.
6. The number of occasions and dates when the storm flow exceeded the capacity of both the STW and the storm lagoons, plus your estimate of the volumes that were discharged, untreated, to river.
7. The daily rainfall recorded at the STW rain gauge.

7.3 A Borough Councillor posed similar questions:

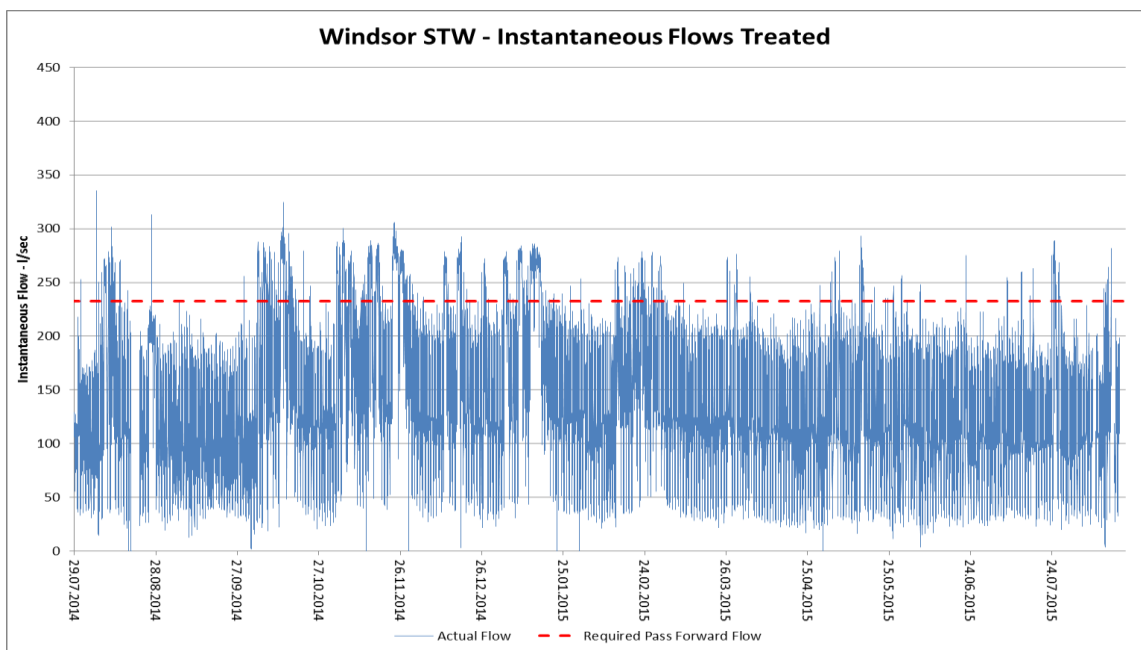
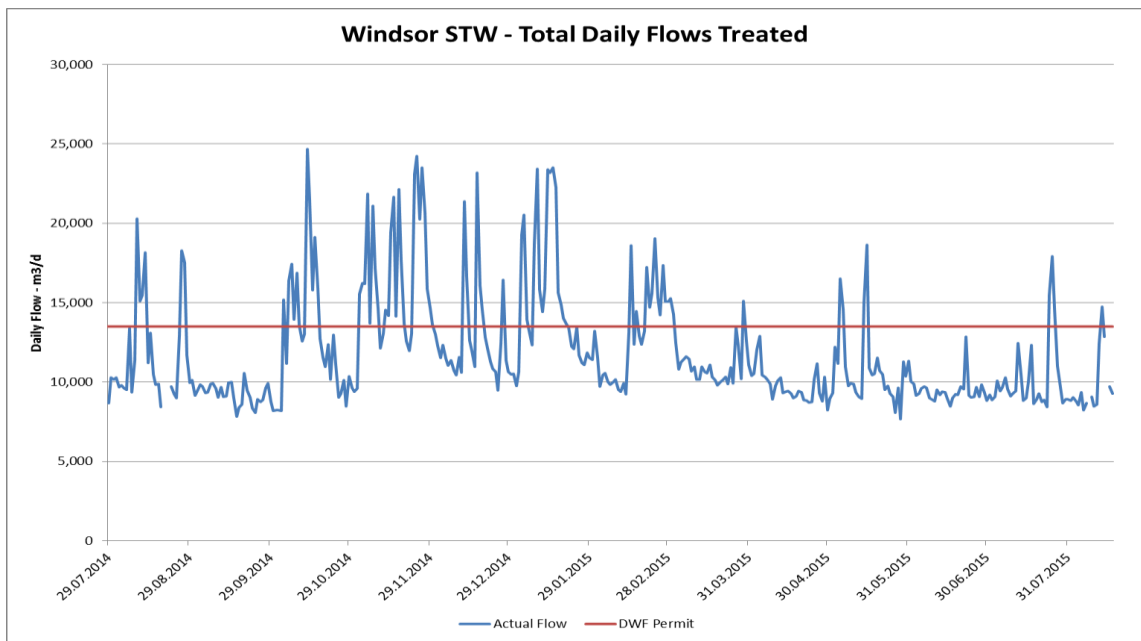
“Please could someone chase the EA as a matter of urgency for answers to:

- (i) Maximum daily input design capacity of Ham Island's STW combined foul and surface water
- (ii) Actual average daily input of last from 1st October 2013 to 1st June 2014, and
- (iii) Actual peak daily input of last for each of the 20 highest input days within last period - and on which dates those events occurred.”

7.4 Despite assurances that answers would be supplied these questions were not answered for more than six months until a draft of this report was issued by TSP. Following this, a meeting was convened in September between engineers from TSP and technical officers from Thames Water. This Report has been amended to reflect the discussion held at that meeting.

**7.5** Thames Water has now provided some information but state that they do not possess all of the data requested because they are not required to collect it. This has enabled some understanding of the capacity of Windsor STW to be developed but by no means a full picture.

**7.6** The information made available is the daily and instantaneous treated flow that is discharged to the Thames over a full year (July 2014 to July 2015). This, unfortunately, does not include the flow data for the winter floods of 2014. No data was collected at this time because of equipment failure. They have also supplied copies of the current Discharge Consent for the site. There are several consents that have been updated over time, the last modification is dated 2010.



## 8.0 INTERPRETATION OF SUPPLIED INFORMATION

- 8.1** The Discharge Consents show that the Windsor STW was originally limited to a discharge of treated sewage of 40,500 cubic metres per day (4, 5). This was later modified and expressed in terms of a Dry Weather Flow (DWF) 13,500 cubic metres per day (6, 7).
- 8.2** It should be noted that these two limits are consistent in that a STW is designed for a particular peak flow that is based upon a multiple of Dry Weather Flow. In this case it appears that the peak flow was set at DWFx3. It will be seen that  $13,500 \times 3 = 40,500$ , so the information is consistent.
- 8.3** The *Total Daily Flows Treated* chart shows the actual quantity of treated sewage discharged to the Thames as a blue line and the DWF as a red line. The Peak flow is not shown as it is above the highest value plotted on the vertical axis of the chart.
- 8.4** The *Instantaneous Flows Treated* chart shows the actual quantity of treated sewage discharged to the Thames as a blue line. The red dotted-line labelled as *Required Pass Forward Flow* is the maximum flow that the STW is designed to process.
- 8.5** At first sight these two charts appear to show spare capacity within the system. The daily flows are less than the maximum permitted and the instantaneous flows are mostly beneath the maximum that the STW is designed to process. But it should be noted that the instantaneous flows frequently exceed the stated maximum. If this occurs on an occasional basis, by a small margin, it can be accommodated but an inspection of the chart shows that the maximum is exceeded frequently and by a significant margin.
- 8.6** It should be noted that Steve Crabb, TW Regional Operations Manager, stated in an email to Ham Island residents that “*the works maximum flow capacity is 222 litres per second, if more than this is received it is diverted to the storm tanks.*” And, Jim Jenkins, TW North Waste Water Operations Manager, in another email stated that “*once the sewage works is receiving its maximum flow capacity we have no option but to pass the additional flows to the storm tanks x 2, then the land treatment area once these are full.*” .
- 8.7** Thames Water argues that the excess flow is minor and, because their effluent discharge meets the standards set in the Consents, there is no problem. However, it is not clear by what margin these standards are met nor the process issues that will arise with such frequent and significant overloading of the processing plant.



- 8.8** Further, what is not shown in either chart, nor does Thames Water collect the information, is the quantity of raw sewage arriving at the STW. Raw sewage flow that is in excess of the plant capacity is diverted through a 6mm screen (to remove large pieces of solid matter) into holding areas. This consists of two storm tanks and a lagoon. The storm tanks are drained, when flow diminishes, back into the STW for treatment. When the storm tanks are full the flow is put into the lagoons where it is left to dissipate. This is a traditional method of disposal that is now discouraged, unless it is a properly designed and engineered wet-land treatment system.
- 8.9** At the September meeting Thames Water stated that they will be ending the lagoon storage and will put all of the excess sewage from the storm tanks directly into the Thames, through a new discharge pipe. They do not consider that this will cause any problems because the screened sewage will be diluted by storm water and the Thames, at that point, is a large river. However they do not know the quantity or composition of the sewage in either the storm tanks or Lagoons but they have agreed to try and obtain this data.
- 8.10** It should be noted that the two storm tanks have a combined volume of 4335 cubic metres which is less than 1/3<sup>rd</sup> of the daily consented dry weather flow, 1/10<sup>th</sup> of the maximum consented discharge. By any measure this is a tiny margin for storm flows in such a large catchment area, especially as inclement weather typically causes high flows within the sewerage network for extended periods of time, typically many days. This implies that a significant volume of screened but untreated sewage will now be discharged directly into the Thames. It would be very helpful to have more information to carry out further analysis and assess the effects.
- 8.11** Looking at the current discharge into the Thames the most recent report on water quality (8) shows that river water quality is generally 'good' albeit not 'high' in the vicinity of Windsor STW. It is likely that any untreated discharge will need to be very carefully assessed and managed to ensure that standards do not fall.
- 8.12** From the foregoing, it appears that the current arrangements within the STW are already at full operational capacity and are frequently taken beyond maximum capacity. The proposal that the storm overflow from the Storm Tanks, instead of being passed to the (admittedly unsatisfactory) Lagoons, will be discharged direct to the Thames as screened (but untreated) sewage, is a definite reduction in the standards and treatment capacity of the whole works.

## 9.0 ADDITIONAL INFORMATION

9.1 It is noted that the draft Borough Local Plan had identified two sites for major development within Old Windsor: Area North of Church Road and Area North of Crimp Hill. These sites are no longer being pursued and have been deleted from the Plan but the narrative to these sites, at paragraphs 520 & 545 respectively, is still relevant. It states:

“Thames Water has concerns regarding Waste Water Services in relation to this area. Specifically, the sewerage network capacity in this area at present is considered unlikely to be able to support the demand anticipated from development. Drainage Infrastructure is likely to be required to ensure sufficient capacity is brought forward ahead of the development. In the first instance a drainage strategy would be required from the developer to determine the exact impact on existing infrastructure and the significance of the infrastructure to support development. It should be noted that in the event of an upgrade to assets being required, up to three years lead in time could be necessary for the delivery of the infrastructure.”

## 10.0 DISCUSSION

10.1 It would help the analysis if Thames Water were more open with their technical information but, despite numerous promises, little has been provided. As such, from the foregoing, it appears that the Windsor STW is operating at full capacity for much of the time, has limited capacity for storm flows and does not have the storage capacity to deal with any excess flow for an extended period of time.

10.2 The proposal to send screened, but untreated, storm overflow direct to the Thames is a retrograde step.

10.3 Until such time as TW can prove that they have plans and capability to increase treatment and storage capacity at Windsor STW there should be no new flows allowed into the catchment.

## **11.0 RECOMMENDATIONS**

- 11.1** The purpose of this report was to inform the OWPC Draft Neighbourhood Plan and help them in their consultations for Development Applications in Old Windsor and neighbouring parishes that drain into the Windsor STW.
- 11.2** From the limited information provided it must be concluded that Windsor STW is operating at full capacity for much of the time, has limited capacity for storm flows and does not have the storage capacity to deal with any excess flow for an extended period of time
- 11.3** In the absence of better information, it must be concluded that flows to Windsor STW should not be allowed to increase until such time as Thames Water fully detail the capacity and constraints of the Sewage Treatment Works.
- 11.4** Without this information the only conclusion that can be drawn is for the Parish Council to request that the RBWM restrict all development that contributes an increased combined sewage flow to the Windsor STW.

## 12.0 REFERENCES

1. Royal Borough of Windsor & Maidenhead Strategic Flood Risk Assessment  
[http://www3.rbwm.gov.uk/info/200414/local\\_development\\_framework/488/strategic\\_flood\\_risk\\_assessment](http://www3.rbwm.gov.uk/info/200414/local_development_framework/488/strategic_flood_risk_assessment)
2. Water Course Survey ( 29/10/2014) Old Windsor Parish Council
3. National Incident Reporting System (17 June 2014) Incident Number 01246338
4. Notice of Modification of Consent to Discharge (29 Sept 2004) Environment Agency. TW Reference CNTD.0055\_29Sep2004
5. Consent to Discharge Sewage Effluent from Windsor Sewage Treatment Works (14 Nov 2005) Environment Agency. TW Reference CNTD.0055\_14Nov2005-1
6. Notice of Modification of Consent to Discharge (28 Jan 2009) Environment Agency. TW Reference CNTD.0055\_28Jan2009 OSM
7. Modification of Consent to Discharge (1 April 2010) Environment Agency. TW Reference CNTD.0055\_01Apr2010 DWF
8. Lower Thames Operating Agreement: Stage 2 - Completion of AMP5 Investigations (16 Sept 2013) Thames Water Utilities Ltd