Surface Water Flooding Scrutiny Task Group - Final Report

TG No. 39

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INTRODUCTION

It is my pleasure to introduce this report which is a comprehensive investigation into the causes of surface water flooding in Richmond upon Thames Borough. Whilst in the short-term flooding is unlikely to be completely eradicated, this report makes a number of recommendations to help minimise its occurrence.

This report is the culmination of a significant amount of hard work by both the Task Group and Council Officers. A special mention should go to Andrew Darvill (Assistant Director of Environment), Mike Long (Borough Contingencies Manager), Carl Morlese (Assistant Head of Streetscene) and Helen Cornforth (Environmental Policy Manager). They attended nearly every meeting of the Task Group and their advice and expertise was invaluable. I would also like to thank Justine Glynn from the Environment Agency and representatives from Thames Water for providing evidence to the Task Group.

Cllr Zoë McLeod
Chair of the Surface Water Flooding Scrutiny Task Group

EXECUTIVE SUMMARY AND RECOMMENDATIONS

1. The Task Group was established in June 2007. Its terms of reference were to: assess the risks and causes of surface water flooding; review current mitigation measures; review how well all relevant agencies worked together and consider what lessons could be learned from the floods in the summer of 2007.

2. Responsibility for surface water flooding is split between different agencies. The two most important are the Council, who have responsibility for the gully network, and Thames Water, who have responsibility for the sewers. The sewer network in the Borough is mostly Victorian and struggles to cope with the demands placed on it. Climate change and population growth have placed a great strain on the system and will continue to do so.

3. Many of the Borough's sewers discharge into the river when they reach capacity. This can include discharging foul water. When sewers' outlet pipes become submerged during high tide, sewage can overflow onto streets and houses. Most potential solutions to this problem are expensive. Therefore, the Task Group recommended that the feasibility of installing more affordable solutions, such as larger diameter sewers or small holding tanks, be investigated (***Recommendation 1***).

4. One cause of flooding is blockages in gullies or sewers. These can be caused by a build-up of silt and leaves, or by people pouring inappropriate materials such as cooking fat and builders' washings down drains. Thames Water undertakes regular cleaning of its sewers but the Council was not aware of its cleaning schedules. The Task Group therefore recommended that these be provided to the Council (***Recommendation 2***).

5. Although there was anecdotal evidence that gullies were being blocked by inappropriate material, the Task Group felt that it would be beneficial to keep records of the type of blockage, to help identify patterns and target enforcement (***Recommendation 3***). The Task Group also recommended that a publicity campaign be undertaken to raise awareness of the problem and that the fat

collection service be extended to weekends, to provide a sustainable alternative for businesses to dispose of cooking oil (***Recommendations 4 & 5***).

6. The Council aims to clean all gullies on a two-year cycle. However, it currently only manages to clean 85-90% of gullies within this timescale. One reason for this is that parked cars can block access to the gullies, forcing the Council's team to delay cleaning. The Task Group recommended that the Council should cone off roads on the evening prior to scheduled cleaning and that each side of a road should be cleaned on alternate evenings (***Recommendation 8***). It recommended that deep cleaning of roads be scheduled for the same time, to avoid inconveniencing residents further (***Recommendation 7***). It also recommended that gullies which were known to flood regularly be painted yellow, as a warning to residents (***Recommendation 6***).

7. The Task Group discovered that the Council would only attempt to clean blocked gullies, which had been reported by residents, on two occasions. If it was unable to gain access to the gully on both visits, it would add the gully to a waiting list for road closures but take no further action. The Task Group felt this was unacceptable and recommended that cleaning vehicles continue to return to the site (***Recommendation 9***).

8. The Task Group also heard evidence that access to another gully cleaning vehicle was necessary. It recommended that a second vehicle be bought or, if this was not financially viable, that extra provision be put in place by another means (***Recommendation 10***).

9. The Council's records did not make clear whether blocked gullies had caused any of the flooding in July 2007. The Task Group therefore recommended that the list of roads known to have flooded in 2007 be compared with the reports of blocked gullies at that time. Any roads which suffered from both blocked gullies and flooding should be inspected as a priority (***Recommendation 11***).

10. It was clear to the Task Group that the relationship between Thames Water and the Council needed to improve. It recommended that regular strategic and operational meetings take place and that the Council's representative on Drain London should be involved in them (***Recommendation 12 & 13***). The Task Group also recommended that information on historical flooding records, sewer bottlenecks, and planned improvement schemes be shared between Thames Water and the Council (***Recommendations 14-16***). It further recommended that

Thames Water provide the Council with extra copies of the sewer map (***Recommendation 17***).

11. The Task Group found that members of the public were often confused about whether to report flooding to the Council or Thames Water. The Council often received reports of flooding from residents. However, Thames Water would only record a report of flooding from the Council as one incident, regardless of the number of people it was representing. The Task Group recommended that a system be worked out between the Council and Thames water to allow the Council to report multiple incidents of flooding; that the Council should follow-up on all reports of flooding it makes to Thames Water; that Thames Water should allow residents to report flooding on behalf of their neighbour; and that the Council should advise all residents to ring Thames Water as well as the Council until the recommendations above are implemented (***Recommendations 18-20***).

12. The Task Group had some concerns that no one body specifically regulated the way in which Thames Water managed its sewers. The Task Group recommended that the Council push for more effective regulation of Thames Water through the Local Government Association (***Recommendation 21***).

13. The Task Group's investigation revealed that the Council needed to improve the information it held on surface water flooding. It recommended: that any roads known to have flooded are mapped; that reports from the public of weaknesses with the sewer system are recorded; and that relevant officers within the Council meet regularly before meeting with Thames Water to discuss any issues of concern (***Recommendations 22-24***).

14. The Task Group made several recommendations on the design of paved gardens. These were that a publicity campaign be undertaken to promote the use of permeable surfaces and that residents should be advised to design paved gardens so that they drain to landscaped areas (***Recommendation 25***). The Task Group also recommended: that the Council use permeable surfaces when building or resurfacing Council car parks; that car parks be designed to drain to landscaped areas; and that water holding facilities are installed in any new car parks (***Recommendation 26***).

15. The Council currently has a sustainable construction checklist, which requires developments over a certain size to meet minimum standards of sustainability. The Task Group recommended that this document be amended to require

developers to meet a minimum level for sustainable urban drainage and water conservation (***Recommendation 27***). It also recommended that the Council look to develop joint incentive schemes with Thames Water for the reuse of grey water (***Recommendation 28***). It further recommended that the Council provide advice to residents about sustainable drainage and water conservation and make these facilities available to residents at discounted rates (***Recommendation 29***).

16. The Task Group recommended that the Local Development Framework (LDF) contains policies that promote the provision and retention of small areas of green space within town centres, which would, amongst other benefits, provide areas for water run-off to drain to (***Recommendation 30***).

17. Because the Council was developing policies for the LDF at the time of this investigation, the Task Group agreed to provide comments on proposed policies for all types of flooding. It felt that consideration should be given to restricting permitted development rights in the functional flood plain and for basement developments across flood zone 3 (***Recommendations 31 & 32***).

18. Finally, some members of the Council's Planning Committee felt that the Environment Agency did not object to enough applications on the grounds of flood risk. It therefore recommended that the Environment Agency review its responses to planning applications (***Recommendation 33***).

PART I – ROLE AND FUNCTION OF THE TASK GROUP

BACKGROUND TO THE TASK GROUP

19. In June 2007, the Environment and Sustainability Overview and Scrutiny Committee suggested reviewing flood risk, as one of its topics for the municipal year. After the flooding experienced on 20 July 2007, the Task Group decided to focus its review on surface water flooding. This review was chosen because of evidence that the Victorian sewer system was coming under increasing pressure from growing populations and increasingly heavy downpours. Surface water flooding was also the type of flooding which least was known about.

20. At its first meeting on 26 September 2007, the Task Group set itself the following Terms of Reference:

- "To assess the current risks and causes of surface water and sewer flooding, assess the risk over the next ten years, review the effectiveness of current mitigation measures and highlight areas where improvements could be made."
- To review how coordinated all relevant agencies are in their attempts to prevent surface water and sewer flooding and to highlight areas where improvements could be made.
- To consider what lessons can be learned from the surface water/sewer flooding experienced both locally and nationally during Summer 2007.

21. At its meeting on 30 November 2007, the Task Group also agreed to spend a meeting looking at options relating to all types of flooding for the Local Development Framework.

TASK GROUP MEMBERSHIP

Cllr Zoe McLeod – Chair

Cllr Martin Seymour

Cllr James Mumford

Professor Paul Leonard

Peter Dolan

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PART II – FINDINGS

INTRODUCTION

22. The first section of the report sets out which bodies have responsibility for the relevant infrastructure. The report then sets out the causes of surface water flooding, before discussing the relationship between all the relevant agencies and suggesting measures that could help mitigate the risk of surface water flooding in the Borough.

RESPONSIBILITY FOR SURFACE WATER FLOODING

23. As with other boroughs, there is no single organisation with overall responsibility for surface water flooding in Richmond upon Thames. The following three groups have responsibility for different aspects of the sewer and drainage system:

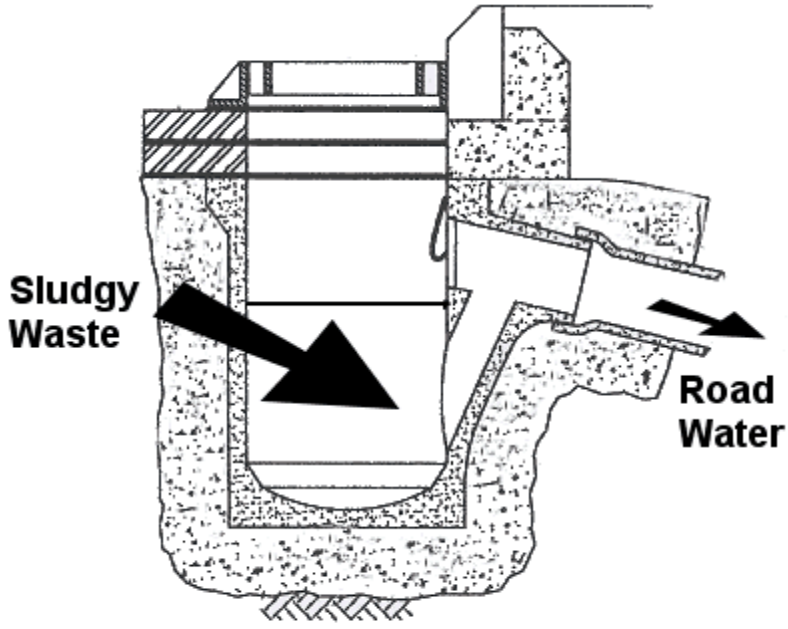
- The Highway Authority
- Thames Water
- Private Landowners

Remains of the flash flood water in Amyand Park Road by Baylis Mews, 20 July 2007 at 14:45.

The Highway Authority – Responsibility for Road Drainage

24. The Highway Authority is responsible for ensuring that the roads it controls are adequately drained. Highway Authority is the name given to the body that is responsible for maintaining any given road. In most cases this is the Council, although some roads are the responsibility of Transport for London (TfL) or the Highways Agency[1]. Drainage of private roads is the responsibility of the landowner.

25. Highway surface water is normally directed towards road drains (gullies). These have a visible cast iron grating which sits above the gully chamber (where any silt or blockages are likely to accumulate). Gullies are normally connected to the public sewer system by small diameter pipes. The Highway Authority is responsible for the entire gully, until the point it meets the public sewer. In a limited number of cases, gullies drain to purpose built soakaways – drainage pits that allow rainwater to permeate the surrounding sub-soil.



Detail of Roadside Gully

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[1] The Highways Agency is an Executive Agency of the Department for Transport and is responsible for operating, maintaining and improving the strategic road network in England.

Public Sewers – Thames Water

26. Thames Water is responsible for the public sewer system. It has a general duty to "provide, improve and extend the public sewer system to ensure that its areas are, and continue to be, effectually drained."[2]

27. The majority of sewers in Richmond upon Thames are combined sewers, handling both foul water (the discharge from any sanitary fixture or appliance) and storm water (rainfall run-off). There are also some separate sewers, which separate foul and storm water. Where this is the case, the sewer containing storm water discharges to a river outlet, which is normally the River Thames. All other types of water are sent for treatment at one of the following facilities:

- Sewage from the Twickenham side of the River Thames is sent to Mogden Sewage Treatment Works.
- Sewage from part of Richmond and from Kew is sent to Kew Pumping Station and then across the river to Mogden Sewage Treatment Works.
- Sewage from the remaining part of Richmond and from Ham is sent to Hogsmill Sewage Treatment Works.

28. Mogden Sewage Treatment Works is located in Isleworth and receives sewage from other boroughs as far away as Harrow. Hogsmill Sewage Treatment Works is located to the east of Surbiton.

Private Drains and Sewers

29. There are also sewers and drains that are in private ownership. These are the responsibility of the landowner. Most drain into the public sewer system, although private owners can connect foul water to septic tanks or channel storm water into soakaways.

[2] Under section 94 of the Water Industries Act 1991.

Flash flood water that flowed from a roof and driveway into a private drain that leads to the sewer, 20 July 2007 at 11:46

THE CAUSES

Capacity of the Sewer System and Gullies

30. The sewer network in Richmond upon Thames is mostly Victorian and struggles to meet the demands placed on it. Between 1971 and 2001, the number of dwellings in the Borough grew by 12,871 to 78,411.[3] This places significant extra pressure on the sewer system and, given government and regional targets for housing, this pressure is only set to increase.

[3] Figures taken from the Office of National Statistics

31. Climate change is going to put the Borough's drainage infrastructure under even more strain. The risk of extremely heavy rainfall events is growing and the Environment Agency stated that peak flow rates could increase by up to 20%.

32. Thames Water informed the Task Group that the sewer system is designed to handle only 1 in 10 or 1 in 15 year events (events of such scale that they would only occur, on average, once every 10 or 15 years). Given the effect of climate change, what were once 1 in 10 year events could become more frequent and it is quite possible that several extreme events could occur in rapid succession.

33. Thames Water described the rainfall experienced in July 2007 as a 1 in 100 year event. However, officers at the Council said that this was an assessment of rainfall for the whole of the south of England; the level of rain in Richmond upon Thames had not been this severe and is therefore likely to repeat more frequently.

Stair-rod rain at the height of the flash flood, 20 July 2007 at 11:44

34. The old-fashioned combined sewer systems discharge into the River Thames when they reach capacity, which can happen during heavy rainfall. This means that untreated sewage overflows into the River Thames. Sewage destined for Mogden is known to do this on a frequent basis. The separate storm water sewers also discharge rainwater into the river.

35. The Task Group was told that river outlet pipes could submerge at high tide. When this happens, water is unable to escape into the river and flows back along the sewer. Once the storage capacity of the sewer itself is exceeded, the water will overflow onto streets and houses. If this is a combined sewer, then the discharge will include untreated sewage.

36. Potential solutions include installing large holding tanks or pumping systems which would be for Thames Water to implement. Thames Water and Council officers state that such schemes could be prohibitively expensive. The Task Group feels that some holding tanks and larger diameter sewers could be installed in high-risk spots to mitigate this. It therefore recommends that the Council identify problematic areas and investigate the feasibility of such schemes on high-risk sites.

Recommendation 1: That the Council and Thames Water be recommended to investigate the feasibility of installing larger diameter sewers or small holding tanks in high-risk areas.

37. Encouragingly, a project has begun to significantly increase the capacity of the Mogden Sewage Works by treating more sewage. This will reduce the volume of sewage being sent to storm drains and is due to finish by the end of 2009.

38. Thames Water was concerned about the recent frequency of extreme events. However, it told the Task Group that no funding was available in its current business plans to further enhance sewer capacity in Richmond upon Thames. Thames Water stated that climate change would lead to downpours becoming increasingly localised; one part of the Borough might be very badly affected whereas another part could remain untouched. It felt that this made it difficult to devise appropriate solutions to weaknesses in the sewage infrastructure. It also said that it would not be economically viable to build sewers that could cope with every extreme.

39. There are plans by the Thames Tideway Strategy to build a new sewage tunnel[4], which would run from Hammersmith to East London, but this is fifteen years away from completion. The tunnel will be designed to take overflows from the sewage network during storm periods. However, the tunnel will not run as far as Richmond upon Thames. Whilst the Task Group has heard the view that this tunnel will help the Borough, both Thames Water and the Council's Borough Contingencies Manager did not think this was likely.

40. In addition to the more general capacity problems, Thames Water accepted that there are also hotspots and constrictions in the sewer network. These cause problems in localised areas on a reasonably frequent basis.

41. Road gullies also struggle to cope with the demands placed on them. According to the minutes of the London Multi-Agency Regional Flooding Debrief held on 20 September 2007, most local authority drainage systems are also built to cope with 1 in 10 year events. The Drain London project has recently started, which involves all relevant authorities across London. Its terms of reference include a review of the surface water drainage network and funding for improvements may become available through this project.[5] The lead officers for this project are Alex Nickson and Kevin Reid at the Greater London Authority.

Blocked Gullies and Sewers

42. Blockages in the sewer system or in gullies can also lead to surface water flooding. The main natural causes of blockages are build-ups of silt or fallen leaves collecting in gullies. Thames Water told the Task Group that it undertakes regular cleaning of its sewers and agreed to provide the Council with its cleaning schedules. These had not been provided at the time of writing and so this is recommended below. The Council aims to clean every gully within a two-year cycle and sends out extra patrols in autumn to bag up leaves.

Recommendation 2: *That Thames Water provides the Council with the sewer cleaning schedules for Richmond upon Thames by August 2008.*

[4] This tunnel will run from Hammersmith in the west, largely under the river, to Crossness Sewage Treatment Works (STW) where a dedicated plant to handle storm flows will be built.

[5] Taken from London Multi-Agency Regional Flooding Debrief 0 20 September 2007.

Surface water flooding at the junction of Amyand Park Road and Strafford Road caused by leaves partially blocking a drain, 25 December 2007.

43. Apart from leaves, a significant cause of blockages is cooking fat and builders' washings being poured down drains. Thames Water and the Council stated that this could cause serious problems but most of the evidence the Task Group received was anecdotal. The Task Group recommends that every time

inappropriate material is removed from drains, a record be made of the date and time, the location and the type of substance removed. This will help the Council to spot patterns and target enforcement where necessary.

44. The Task Group also recommends that Thames Water and the Council undertake joint publicity and education campaigns, urging residents to report anyone pouring inappropriate materials into the sewer system.

45. The Task Group would also like to see traders given an opportunity to dispose of their waste in a responsible and environmentally friendly manner. A fat collection service is currently offered to some businesses, with the oil being turned into bio-diesel. However, this has limited capacity and does not operate at weekends. The Task Group therefore recommends that investigations are held into extending this service and that all traders be encouraged to use it.

Recommendation 3: *That an electronic record is made of the date and time, the location and the type of substance removed from gullies, to help identify patterns and target enforcement. This information should be mapped.*

Recommendation 4: *That the Council and Thames Water begin a joint publicity campaign, urging residents to report anyone pouring inappropriate materials into the sewer system. At the very least, this should include an article in Arcadia and information on the Council's website.*

Recommendation 5: *That the Council investigate extending the fat collection service to weekends and encourages all traders to use it.*

46. The Council's Assistant Head of Streetscene stated that a biannual gully cleaning cycle was typical for a London Borough. He also said that known problem areas were cleaned more regularly. However, he said that only 85-90% of gullies are actually cleaned within this period and expressed a desire to clean more frequently. The Council has only one gully-cleaning machine, which is often forced to stop regular maintenance to attend to blocked gullies reported by residents.

47. Parked cars can block access to gullies, which poses significant operational problems for the Council's gully cleaning crews. Some arrangements have been

put in place for parking to be suspended or for roads to be closed where there are known difficulties, but this has had limited success.

48. The Task Group suggests that all gullies, which are known to flood regularly, be painted yellow as a warning to local residents. This scheme should be publicised, to encourage local residents to check these gullies regularly and raise awareness of the problems caused by parking directly over them. This should help the Council find out sooner when problem gullies become blocked and could also help improve access for cleaning vehicles. This is especially important as these gullies are likely to need cleaning on a much more frequent basis.

49. The Task Group feels that the cleaning of gullies could also fit into a wider scheme to deep clean roads. This would require roads to be closed for a day but would be an excellent opportunity to undertake gully cleaning on a clear road. The Task Group therefore recommends that gully cleaning and deep street cleaning be scheduled together.

50. Given the access problems mentioned above, the Task Group also recommends that roads are coned off the evening before work is scheduled to commence, to prevent parked cars from blocking access to gullies. Different sides of a road should be closed on alternate days to minimise the disruption to local residents.

Recommendation 6a: *That gullies which are known to flood regularly be painted yellow, as a warning to the public.*

Recommendation 6b: *That this scheme is publicised. Local residents should be encouraged to check these gullies regularly, report any blockages and avoid parking directly over the gully.*

Recommendation 7: *That deep cleaning of roads be scheduled for the same time as any road closures for gully maintenance.*

Recommendation 8a: *That the Council be recommended to cone off roads where gully cleaning is scheduled on the evening before work commences.*

Recommendation 8b: *That the Council be recommended to close different sides of a road on alternate days when undertaking gully cleaning.*

51. Parked cars not only block routine cleaning but also pose problems for vehicles responding to blocked gullies reported by residents. If the Council's contractors are unable to clean a gully on two separate occasions, the customer's request, or "case", is closed. This means that no attempt is then made to clean the gully. Instead, the road is added to the schedule for priority road closures, leaving the gully blocked until this can occur. The Task Group feels that this is not acceptable and recommends that cases only be closed once a gully has been cleaned.

Recommendation 9: *That no gully cleaning case is closed until the gully has been cleared/repaired.*

52. Because of the issues above, the Task Group feels it is vital that the Council obtains an extra gully-cleaning vehicle to help it complete its cleaning cycle within the two-year period. Ideally, the Task Group would like the Council to buy a second gully machine. If this is not financially viable, then there are other cheaper options. One is to pay for the gully vehicle to operate on a few weekends every year. Staff costs would be twice the usual rate but there would be no extra cost for the vehicle. Another option would be to hire a second gully vehicle for a short period during the school summer holidays. This would be the best time to undertake routine maintenance because the roads are at their quietest. According to figures made available to the Task Group, vehicle hire and staffing for six weeks would cost no more than £11,400.

Recommendation 10a: *That the Council buys a second gully cleaning vehicle.*

Recommendation 10b: *That if a second gully vehicle is not purchased, the Council arranges for extra gully cleaning to take place.*

53. The extent to which blocked gullies were responsible for any of the flooding experienced in July 2007 is not known, because the Council has not compared the list of roads that suffered from flooding with reports of blocked gullies. The Task Group therefore recommends that this be done. If any of the blocked gullies

are found to have been in roads that were flooded, these should be recorded and inspected as a priority.

Recommendation 11a: *That the list of roads where blocked gullies were reported in July 2007 and the list of roads flooded in July 2007 (both from the Council's and Thames Water's records) are compared and analysed within six months.*

Recommendation 11b: *That any roads identified as having suffered from both blocked gullies and flooding are recorded and inspected as a priority.*

THE RELATIONSHIP BETWEEN THAMES WATER AND THE COUNCIL

Improving the Relationship

54. Until this Task Group was set up, the channels of communication between Thames Water and the Council were very poor. Neither organisation knew whom to contact in the other organisation. Discussions over key operational issues were also not occurring. Given the overlapping responsibilities of the two organisations, the Task Group feels it is vital that regular meetings take place between key officers. The Environment and Sustainability Overview and Scrutiny Committee should monitor progress at these meetings.

55. Thames Water agrees that regular meetings would be beneficial; it suggested that strategic meetings take place on an annual basis and that operational meetings be held on a quarterly basis. Since the Task Group's meeting with Thames Water in November 2007, further meetings have taken place between the two organisations. The Task Group is encouraged by this and recommends that these meetings continue in the formalised manner suggested by Thames Water. The Task Group also recommends that representatives from the Environment Agency are involved in these meetings as they can provide valuable advice, particularly on issues such as the relationship between surface and fluvial flooding and sustainable drainage. It further recommends that the Council's representative on the Drain London project be involved in these meetings, so that relevant information arising from the project can be considered.

Recommendation 12: *That a high level strategic meeting be held at least annually between Thames Water, the Council and the Environment Agency and that this is held more often if required.*

Recommendation 13a: *That Thames Water, the Council and the Environment Agency hold quarterly operational meetings, at which relevant employees from all organisations attend as required.*

Recommendation 13b: *That the Council's representative on the Drain London project be involved in the above meetings.*

Sharing Information

56. The Council has not had access to important information held by Thames Water, such as: historic flood records; whether there were any bottlenecks in the sewers and where they were located; and what, if any, improvement schemes Thames Water had planned for the Borough.
57. Thames Water state that they cannot tell the Council which individual addresses have suffered from flooding in the past, because of data protection issues. However, they have undertaken to provide information on which roads have suffered from flooding, as long as this is kept confidential. Thames Water have also undertaken to provide the other information set out in paragraph 38. This information had not been provided at the time of writing, so to formalise this, the Task Group has recommended the provision of the information.
58. The Council only has access to one CD containing a sewer map, which causes significant practical difficulties for officers. The Task Group has therefore recommended that Thames Water make further CDs available.

Recommendation 14: *That Thames Water provides the Council with its flood history records, which should detail which roads have suffered from surface water flooding, by the end of August 2008.*

Recommendation 15: *That Thames Water provides the Council with information on known bottlenecks affecting the Richmond upon Thames sewer network by the end of August 2008.*

Recommendation 16: *That Thames Water provides the Council with information on any improvement schemes planned for Richmond upon Thames in relation to Surface Water Flooding.*

Recommendation 17: *That Thames Water provides the Council with further maps of the sewer system by the end of August 2008.*

Recording Flooding Incidents

59. Members of the public are often confused about who is responsible when water floods homes from drains or sewers. The Council often receives calls from residents reporting incidents of flooding. However, Thames Water treats a phone call from the Council as only one incident of flooding, even when the Council reports multiple complaints. Because Thames Water assigns priority for repairs and investment according to the number of incidents it has logged, the Council currently has to ask residents to phone Thames Water directly.
60. The Task Group feels that the Council should be able to report multiple flooding incidents on residents' behalf. Thames Water told the Task Group that such an arrangement would need further consideration. Therefore, the Task Group recommends that the Council and Thames Water hold further discussions with a view to setting up such a system within six months. If this system is put in place, the Council should take responsibility for following up on any calls it logs with Thames Water, and this is also recommended below.
61. The Task Group is also concerned that Thames Water does not allow residents to report multiple flooding incidents in one phone call. The Task Group believes that this is unnecessary and unreasonably burdensome for residents. It has therefore recommended that Thames Water amend this policy and allow residents to report multiple incidents of flooding to them.
62. The Task Group is aware that the recommendations outlined above may take time to achieve, even if Thames Water accepts them. Therefore, it recommends that until these arrangements have been implemented, the Council issues clear

advice on its website and to all callers that people must report each separate incident of flooding to the Council and Thames Water.

Recommendation 18a: *That Thames Water and the Council agree a system, within six months, that allows the Council to report multiple incidents of flooding to Thames Water on behalf of its residents.*

Recommendation 18b: *That the Council follow-up on all incidents it reports to Thames Water to ensure that they are adequately dealt with.*

Recommendation 19: *That Thames Water allow residents to report multiple incidents of flooding in one phone call and accurately record this in their records, within six months.*

Recommendation 20: *That until recommendations 16 and 17 are implemented, the Council issues clear advice on its website and to all callers to report any flooding and all subsequent incidents to both Thames Water and the Council.*

Thames Water's Regulators

63. The Task Group had some concerns about the manner in which Thames Water was regulated. It is regulated by three different bodies which cover different aspects of its operations. These are:

- The Drinking Water Inspectorate, which governs drinking water quality.
- The Environment Agency, which regulates the abstraction of water from rivers and boreholes for drinking water supply and also regulated the quality of effluent that is returned from sewage treatment works to the watercourses.
- Ofwat –the economic regulator, which represents the customers and regulates price, targets and levels of capital investment.

64. However, there is no body that specifically regulates the way in which Thames Water manages its sewers. The Task Group therefore recommends that the Council work with other authorities through the Local Government Association to push for more effective regulation of sewage authorities.

Recommendation 21: *That the Council be recommended to work with other authorities through the Local Government Association to push for more effective regulation of sewage authorities.*

IMPROVING THE COUNCIL'S INFORMATION

65. The Task Group's investigation has highlighted a lack of information on surface water flood risk within the Council. The Task Group feels very strongly that the Council needs to map all of the information it is able to gather on areas of high surface water flood risk. This would allow the organisation to gather information on weaknesses in drainage and sewer infrastructure. The Council could then identify patterns and, along with Thames Water and the Environment Agency, prioritise areas for improvement. The Task Group therefore recommends that the Council map the roads it knows were affected by flooding in July 2007, along with information of flood and blockage history provided by Thames Water.

Recommendation 22: *That the Council map the roads it knows were affected by flooding in July 2007, along with information of flood and blockage history provided by Thames Water, within six months.*

66. The Contact Centre advises anyone reporting blocked gullies that there are underlying problems with the sewer and drainage system, which is often the cause of overflowing drains rather than blockages. Unless residents report that the problem is definitely a blockage, then their calls are not logged. The Task Group feels that this is a waste of valuable information, because the Council has very limited knowledge regarding which parts of the drainage and sewer infrastructure are susceptible to surface water flooding. It therefore recommends that the Contact Centre records these cases, as part of a separate list, so that the information can be added to the mapping recommended above.

Recommendation 23: *That all calls to the Council from residents who report blocked gullies/surface water in their road are recorded and classified as either blocked gullies for immediate action, or as evidence of areas where the infrastructure cannot cope. The records should be mapped and reviewed regularly.*

67. Council officers need to review the mapped information regularly. This should be done in advance of meetings with Thames Water and the Environment Agency, so that any concerns can be shared with these bodies. The Task Group therefore recommends that all relevant Council officers meet before the quarterly operational meetings with Thames Water. This would also provide officers with an opportunity to discuss other flooding issues.

Recommendation 24: *That relevant Council officers meet regularly before the operational meetings with Thames Water, to highlight issues and share information.*

REDUCING WATER RUN-OFF

68. Given the capacity problems faced by the sewer system, it is important that wherever possible, the demand placed on it by water running off hard surfaces is reduced.

Paved Gardens

69. Impermeable paving in gardens can place a significant amount of extra pressure on the sewer system. When the sewers were originally built, the gardens would have absorbed the majority of rainwater that landed on them. Increased hard surfacing has led to significantly more water being trapped and gathering on the surface. The extra water is directed into drains, placing extra strain on the sewer network. The Environment Agency states that the cumulative effect of this can be very significant.

70. Most households can pave over their gardens using permitted development rights, although this is restricted in some specified locations (where planning permission would be required). The Government has recently proposed removing the right to pave gardens under permitted development. Currently however, the Council's only control in the majority of cases is the charge it levies for lowering

the kerb. The Council currently offers a discount for this charge if residents agree to use permeable materials to resurface their garden. The Task Group would like to see this scheme publicised further.

71. It would also like to see residents encouraged to design their gardens in a way that optimises drainage and reduces water run-off. The Environment Agency stated that, as well as being permeable, paved gardens should ideally be designed so that they drained to flower beds or other landscaped space. This reduces further the amount of water channelled into the sewer system. The Task Group therefore recommends that all applicants for dropped kerbs are advised to implement this.

Gravel and flowerbeds allow rainwater to drain into the ground rather than entering the sewer system.

Recommendation 25a: *That the Council undertake a publicity campaign, promoting the use of permeable surfaces for paved front and back gardens.*

Recommendation 25b: *That the Council encourage residents to ensure that paved areas in front gardens drain to flowerbeds or other open areas.*

Council-Owned Car Parks

72. Car parks often cover large areas of land with hard surfacing, leading to significant amounts of water run-off. This normally drains into the sewer network. The Environment Agency told the Task Group that it is comparatively easy to ensure that parking areas are built with permeable surfaces. However, the Council does not currently require permeable surfaces when it resurfaces its car parks or builds new ones. The Task Group feels it is very important that the Council is seen to be taking a lead on the sustainable use of water, especially when it is promoting this for residents. It is therefore vital that all new car parks, and newly resurfaced car parks, are built with permeable surfaces to reduce water run-off and that they are designed in such a way that any run-off drains to open land or landscaped areas.

73. The Environment Agency also told the Task Group that large areas of paving could be designed with a storage area for surface water built in. The Task Group feels that this would be an excellent way of reducing pressure on the sewer network from the Council's own facilities.

Recommendation 26a: *That all new Council car parks, newly resurfaced car parks and other large paved areas be built with permeable surfaces to reduce water run-off.*

Recommendation 26b: *That all new Council car parks, where possible, are built with water storage facilities.*

Recommendation 26c: *That all new Council Car Parks, and newly resurfaced car parks, are designed so that any water run-off drains to landscaped areas.*

Sustainable Drainage/Water Conservation

74. The Environment Agency told the Task Group that Sustainable Urban Drainage Systems (SUDS)[6] are an effective method of mitigating the lack of capacity in the sewer system. They work by managing water run-off from impermeable areas,

[6] More information can on SUDS can be found at http://www.environment-agency.gov.uk/business/444304/502508/464710/

an example being holding back water in ponds or pipes. The Environment Agency recommends that all new development sites have the same rate of water run-off as Greenfield sites. It requires SUDS to be used in all sites over one hectare in the flood risk zone, but encourages its use in all other situations.

75. Given the problems with capacity in the Borough's sewers, it is vital that new development does not increase the burden. Therefore, the Council should promote the use of SUDS wherever possible. SUDS are one of the options contained in the Council's Sustainable Construction Checklist; a document requiring developments over a certain size to achieve a sufficient level of sustainability.

76. Because the sustainability of a scheme is assessed by an overall scoring system, a developer can satisfy the checklist's requirements without including anything on sustainable urban drainage and water conservation. The Task Group suggests that the checklist is split into sections, with developers required to reach a minimum score for sustainable drainage as well as an overall score for sustainability. It would ensure that sustainable drainage is included when a dwelling is built, which is the cheapest and easiest time to install the system.

77. The Task Group felt that improved water conservation would also have an impact on reducing flood risk, because it would reduce the demands placed on sewers. The Task Group would like more to be done to encourage the reuse of grey water, as this would benefit both the Council and Thames Water. It therefore suggests that both organisations discuss the possibility of a joint incentive scheme for residents who reuse their grey water.

78. Although water butts have only limited storage capacity, the Task Group believes they still have a role to play in reducing flood risk. This is because they ultimately reduce water usage. It therefore recommends that the Council provide general advice to residents encouraging the use of water butts and sustainable drainage, and that it makes a bid to the Climate Change Fund to provide water butts and grey water harvesting to residents at discounted rates. The Task Group also feels that the Council should set a good example to residents by following its own policy initiatives. It therefore recommends that the Council install water butts and grey water recycling schemes on its own property.

Recommendation 27: *That the Sustainable Construction Checklist require minimum standards of sustainable drainage and water conservation.*

Recommendation 28: *That Thames Water and the Council investigate the possibility of a joint incentive scheme for the reuse of grey water and report back in six months time.*

Recommendation 29: *That the Council provides general advice on sustainable drainage and water butts and makes a bid to the Climate Change Fund to allow the Council to provide water butts and grey water harvesting at a discounted rate to local residents.*

Open Spaces

79. The flooding in July 2007 was worse in the town centres than other areas of the Borough. The Task Group believes that this was because of the high levels of hard surfacing in these locations. The Task Group feels that some open space is required in town centre locations, which would not only improve the areas' amenity but could also help reduce rates of surface water run-off by providing areas where water could drain without having to run into the sewer network.

Recommendation 30: *That the Local Development Framework Development Plan Documents include a policy promoting the provision and retention of small areas of green space within town centres, which, among other benefits, should be designed to reduce rates of surface water run off.*

OTHER PLANNING POLICIES

80. Because the Council is currently developing the Local Development Framework, the Task Group felt it would be beneficial to hold a meeting that would look at options for planning policies that would help to mitigate the risk of all types of flooding. The Task Group held discussions with planning officers and with the Environment Agency and has developed the following suggestions as a result.

Removing Permitted Development (PD) Rights from Areas of High Flood Risk

81. Most landowners have the right to undertake certain works on their property under permitted development. However, the Task Group felt that it would be beneficial to remove permitted development rights for households living in the functional flood plain. This includes areas at greatest risk of river flooding, such as Eel Pie Island.

82. Removing permitted development rights would not amount to a blanket ban on development. However, it would give the Council greater control over what is built in areas with the highest flood risk. This control is important, because landowners can make significant alterations to their property under permitted development, such as outbuildings and small extensions, which could increase flood risk in the area.

Recommendation 31: *That consideration be given to restricting Permitted Development Rights for new and possibly existing development in the functional flood plain, with the aim of bringing any development which could either be at risk or worsen flood risk elsewhere, under planning control.*

Basement Development

83. The Environment Agency told the Task Group that basements, which are entirely below ground, are highly vulnerable to flooding. Such flooding can have particularly serious consequences; during the 1950s, people drowned because of an inundation of floodwater into their basements. The Environment Agency felt that any basement in zone 3 of the flood plain was potentially at risk (a map of the flood plain can be found at Appendix A). In 2004, there were 33,637 properties in the Borough within flood zone 3.

84. Basement developments in the flood plain may be acceptable if they are properly designed. For example, the Environment Agency stated that split-level basements were less of a risk. However, a significant proportion of basement development is carried out under permitted development, which means that the

Council has no control over what is built. Where such developments are subject to the planning process, the Council currently puts a standard condition on all permissions preventing the basement's use as sleeping accommodation but this is very difficult to enforce.

85. A large number of properties in flood zone 3 already have basements and there are increasing numbers of applications for basement conversions and development. Given that basement development can pose a significant flood risk, particularly in areas that already have basement development, the Task Group feels that permitted development rights for this type of development should be restricted across zone 3. This might place extra demands on the Development Control Department, but it would give the Council some degree of control over development that may pose a danger to the surrounding area.

Stilts

86. It is possible to place buildings on stilts in areas of the highest flood risk, to mitigate the damage caused by any flooding. The Group feels that developments that require stilts are likely to be in such high-risk areas that they should not be built at all. It can however see the benefits of stilts, if the development will replace a property that has already been built in a high-risk location. The Council cannot prevent redevelopment of these sites if the proposal poses no worse flood risk than the original building. In these circumstances, the Group feels that the use of stilts would be beneficial, because it would amount to an improvement on the current situation.

Recommendation 32: *That the Local Development Framework Development Plan Documents include a policy on development in areas of flood risk which covers matters such as basements and buildings on stilts in the flood plain.*

Environment Agency's Role

87. Some members of the Council's Planning Committee feel that the Environment Agency does not object to enough applications on the grounds of flood risk,

particularly for basement development. This means that the Council is unable to prevent development that might pose a significant flood risk. The Task Group would therefore like to see the Environment Agency review its responses to recent planning applications in light of this view.

Recommendation 33: *That the Environment Agency reviews its responses to planning applications, to consider whether it should have raised objections in more cases.*

CONCLUSION

88. The floods in July 2007 showed that surface water flooding can pose a significant threat to the Borough. The Borough's ageing infrastructure is already unable to cope with the demands placed on it and this looks set to worsen with the predicted increase in extreme weather events as a result of climate change.

89. It is clear from the Task Group's investigations that there are weaknesses in the way that all agencies respond to this risk. More work is needed to improve the sewer and drainage systems. More work is needed to implement good practice. Most importantly, all agencies need to engage in dialogue and share information on the extent of surface water flood risk.

90. Although the Council cannot operate in isolation, it can play a lead role in bringing agencies together. The Council can also take lead responsibility for educating local residents, by providing information and incentives for residents to make sustainable choices.

91. The Council must make improvements to its own operations. The gully cleaning service needs greater capacity, information on flood risk needs to be recorded more systematically and the Council needs to set an example by implementing good practice with regard to sustainable drainage and water conservation.

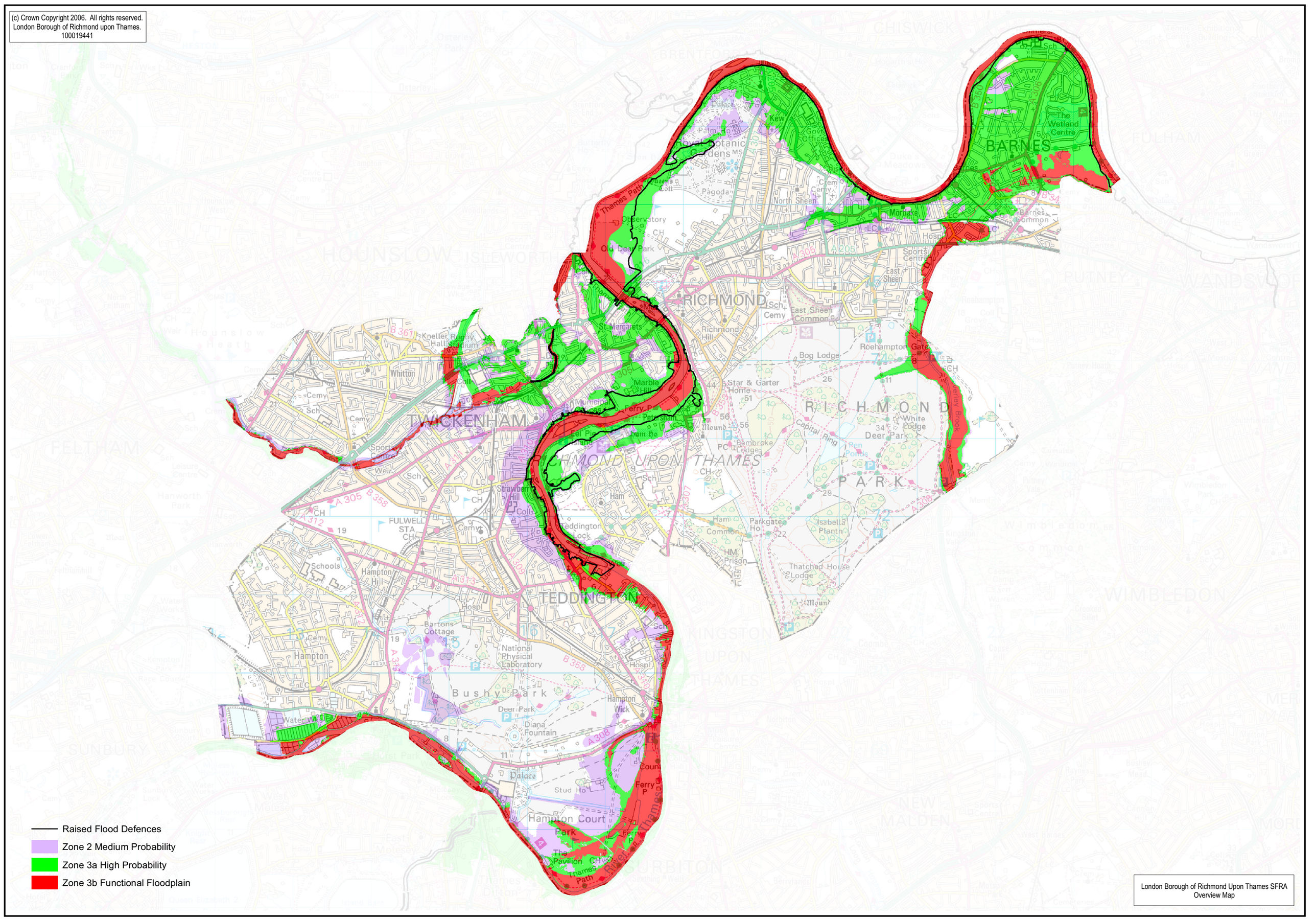
TABLE OF RECOMMENDATIONS

Rec. No.	Recommendation	For action by:
1	***That the Council and Thames Water be recommended to investigate the feasibility of installing larger diameter sewers or small holding tanks in high-risk areas.***	**LBRuT/Thames Water**
2	***That Thames Water provides the Council with the sewer cleaning schedules for Richmond upon Thames by August 2008.***	**Thames Water**
3	***That an electronic record is made of the date and time, the location and the type of substance removed from gullies, to help identify patterns and target enforcement. This information should be mapped.***	**LBRuT**
4	***That the Council and Thames Water begin a joint publicity campaign, urging residents to report anyone pouring inappropriate materials into the sewer system. At the very least, this should include an article in Arcadia and information on the Council's website.***	**LBRuT/Thames Water**
5	***That the Council investigate extending the fat collection service to weekends and encourages all traders to use it.***	**LBRuT**
6a	***That gullies which are known to flood regularly be painted yellow, as a warning to the public.***	**LBRuT**
6b	***That this scheme is publicised. Local residents should be encouraged to check these gullies regularly, report any blockages and avoid parking directly over the gully.***	**LBRuT**
7	***That deep cleaning of roads be scheduled for the same time as any road closures for gully maintenance.***	**LBRuT**
8a	***That the Council be recommended to cone off roads where gully cleaning is scheduled on the evening before work commences.***	**LBRuT**
8b	***That the Council be recommended to close different sides of a road on alternate days when undertaking gully cleaning.***	**LBRuT**
9	***That no gully cleaning case is closed until the gully has been cleared/repaired.***	**LBRuT**
10a	***That the Council buys a second gully cleaning vehicle.***	**LBRuT**
10b	***That if a second gully vehicle is not purchased, the Council arranges for extra gully cleaning to take place.***	**LBRuT**
11a	***That the list of roads where blocked gullies were reported in July 2007 and the list of roads flooded in July 2007 (both from the Council's and Thames Water's records) are compared and analysed within six months.***	**LBRuT**

Rec. No.	Recommendation	For action by:
11b	*That any roads identified as having suffered from both blocked gullies and flooding are recorded and inspected as a priority*	LBRuT
12	*That a high level strategic meeting be held at least annually between Thames Water, the Council and the Environment Agency and that this is held more often if required.*	LBRuT/Thames Water/EA
13a	*That Thames Water, the Council and the Environment Agency hold quarterly operational meetings, at which relevant employees from all organisations attend as required.*	LBRuT/Thames Water/EA
13b	*That the Council's representative on the Drain London project be involved in the above meetings.*	LBRuT
14	*That Thames Water provides the Council with its flood history records, which should detail which roads have suffered from surface water flooding, by the end of August 2008.*	Thames Water
15	*That Thames Water provides the Council with information on known bottlenecks affecting the Richmond upon Thames sewer network by the end of August 2008.*	Thames Water
16	*That Thames Water provides the Council with information on any improvement schemes planned for Richmond upon Thames in relation to Surface Water Flooding.*	Thames Water
17	*That Thames Water provides the Council with further maps of the sewer system by the end of August 2008.*	Thames Water
18a	*That Thames Water and the Council agree a system, within six months, that allows the Council to report multiple incidents of flooding to Thames Water on behalf of its residents.*	LBRuT/Thames Water
18b	*That the Council follow-up on all incidents it reports to Thames Water to ensure that they are adequately dealt with.*	LBRuT
19	*That Thames Water allow residents to report multiple incidents of flooding in one phone call and accurately record this in their records, within six months.*	Thames Water
20	*That until recommendations 16 and 17 are implemented, the Council issues clear advice on its website and to all callers to report any flooding and all subsequent incidents to both Thames Water and the Council.*	LBRuT
21	*That the Council be recommended to work with other authorities through the Local Government Association to push for more effective regulation of sewage authorities.*	LBRuT
22	*That the Council map the roads it knows were affected by flooding in July 2007, along with information of flood and blockage history provided by Thames Water, within six months.*	LBRuT

Rec. No.	Recommendation	For action by:
23	*That all calls to the Council from residents who report blocked gullies/surface water in their road are recorded and classified as either blocked gullies for immediate action, or as evidence of areas where the infrastructure cannot cope. The records should be mapped and reviewed regularly.*	LBRuT
24	*That relevant Council officers meet regularly before the operational meetings with Thames Water, to highlight issues and share information.*	LBRuT
25a	*That the Council undertake a publicity campaign, promoting the use of permeable surfaces for paved front and back gardens.*	LBRuT
25b	*That the Council encourage residents to ensure that paved areas in front gardens drain to flowerbeds or other open areas.*	LBRuT
26a	*That all new Council car parks, newly resurfaced car parks and other large paved areas be built with permeable surfaces to reduce water run-off.*	LBRuT
26b	*That all new Council car parks, where possible, are built with water storage facilities.*	LBRuT
26c	*That all new Council car parks, and newly resurfaced car parks, are designed so that any water run-off drains to landscaped areas.*	LBRuT
27	*That the Sustainable Construction Checklist require minimum standards of sustainable drainage and water conservation.*	LBRuT
28	*That Thames Water and the Council investigate the possibility of a joint incentive scheme for the reuse of grey water and report back in six months time.*	LBRuT/Thames Water
29	*That the Council provides general advice on sustainable drainage and water butts and makes a bid to the Climate Change Fund to allow the Council to provide water butts and grey water harvesting at a discounted rate to local residents.*	LBRuT
30	*That the Local Development Framework Development Plan Documents include a policy promoting the provision and retention of small areas of green space within town centres, which, among other benefits, should be designed to reduce rates of surface water run off.*	LBRuT
31	*That consideration be given to restricting Permitted Development Rights for new and possibly existing development in the functional flood plain, with the aim of bringing any development which could either be at risk or worsen flood risk elsewhere, under planning control.*	LBRuT
32	*That the Local Development Framework Development Plan Documents includes a policy on development in areas of flood risk which covers matters such as basements and buildings on stilts in the flood plain.*	LBRuT

Rec. No.	Recommendation	For action by:
33	***That the Environment Agency reviews its responses to planning applications, to consider whether it should have raised objections in more cases.***	**EA**



Raised Flood Defences
Zone 2 Medium Probability
Zone 3a High Probability
Zone 3b Functional Floodplain

London Borough of Richmond Upon Thames SFRA
Overview Map