



Sewer Flooding Alleviation in the Counters Creek Catchment

Royal Borough of Kensington and Chelsea

Thursday, 9 June 2011 at 7.00 for 7.30pm

The Council Chamber, Kensington Town Hall, Hornton Street, W8 7NX

Agenda for this meeting



- Summary of progress since the meeting in November 2010
- Questionnaires and surveys of at-risk properties
- Short term mitigation measures (the FLIPs programme)
- Independent Advisory Group meetings
- Sustainable urban drainage (SUDS) studies being undertaken or planned
- The development of long term solutions
- Programme
- Questions?

Summary of progress since the public meeting last November



- By the end of May 2011 we have installed and commissioned 110 FLIPs units.
- Additional door-to-door questionnaires and surveys of basements of at-risk properties have been completed.
- Evidence compiled of previously unreported basement sewer flooding incidents, data collected and analysed.
- The questionnaire and additional flooding cases information is being used to verify the hydraulic modelling and confirm its accuracy. The hydraulic model is being independently audited.
- The third meeting by the Independent Advisory Group, with Ofwat representatives attending, was held on 9 March 2011 to review our proposals of long term solutions which includes sustainable drainage systems (SUDS) as well as improved conveyance systems.
- Evidence of flooding and confidence in the hydraulic modelling will enable us to present a robust case for the long term solutions to Ofwat.

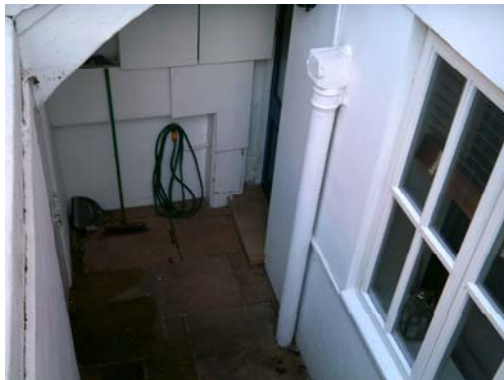


Additional basement surveys and data collection

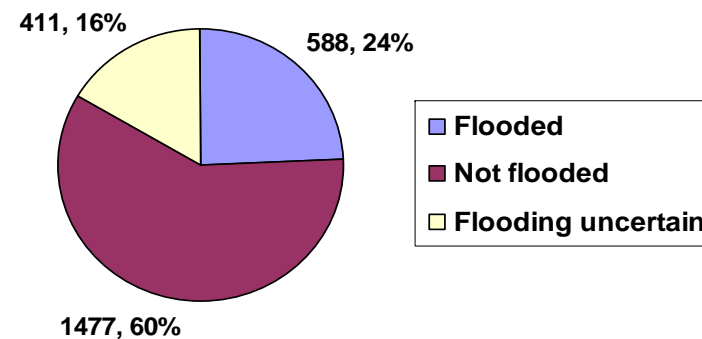
- Up to 6 teams worked 6 days a week from 13 December 2010 until 2 April 2011 on door to door questionnaires and basement surveys.
- Residents of basement properties deemed to be at risk of flooding were assisted with completing the questionnaires or, if not at home, questionnaires were left at the address for completion and posting to us.
- Where permission given basements were surveyed to obtain key dimensions and most importantly the floor level of the basement.
- Police and other relevant organisations informed of areas of working and great care was taken to prevent any opportunistic crime. No incidents connected to the survey were reported.

Summary of basement surveys and data collection

- Basement properties surveyed **2476** **100%**
- Properties with flooding history **588** **24%**
- An additional 475 basements which had been flooded but where this had not been previously reported were recorded and added to the database.



Sewer flooding information received (2,476 properties)



- Total properties now on our flooding database are:
1461 (from the pre-2009 records) + 475 (these surveys) = **1936**



Short term mitigation measures (the FLIPs programme) - 1

- FLIP stands for 'flooding local improvement projects'. A FLIP is essentially a mini pumping station concealed within a manhole chamber, protecting one or more properties from flooding. Waste water from the property is pumped to levels above the maximum water level in the main trunk sewer at times of heavy storm rainfall. A FLIP device prevents raw sewage from backing up from the main sewer and flooding basements.
- Thames Water are aiming to protect 634 properties which are most at risk of flooding using FLIP devices.
- The contract to install the FLIPs devices will take about two years to complete and is currently scheduled to finish by the end of spring 2012.



Short term mitigation measures (the FLIPs programme) - 2

Progress at end of May (remaining on programme):

- Number of properties surveyed – 386
- CCTV surveys of sewer laterals completed - 336
- Number of Customer Agreements received – 187
- Number of Customer Agreements outstanding – 52
- Number of FLIPs installed and commissioned - 110
- Number of FLIPs currently being installed - 9

Number of installations planned per month 30 to 45
(depending on public holidays, customer availability)

Independent Advisory Group



- Professor Bob Andoh
Director of Innovation, Hydro International
Visiting Professor, Liverpool John Moores University
IWEX 2003 Innovation Award Winner
- Professor David Balmforth
Executive Technical Director, MWH
Visiting Professor Imperial College
Vice President, Institution of Civil Engineers
- Professor Adrian Saul
Professor, University of Sheffield
Leading academic in Flood Risk Management Research Consortium



What we are doing



Answering the key question:

Is Thames Water's proposal to construct a series of new storm relief tunnels in the Counters Creek area the most cost effective and sustainable long-term solution, or are there other more sustainable alternatives that should be developed and appraised?

Sustainable Urban Drainage (SUDS) Retrofit Measures - 1



Sustainable urban drainage systems (SUDS) are used to reduce the amount and intensity of rainwater entering the sewerage network through temporary storage, infiltration into the ground and uptake by trees and plants. It is possible for 15% or more of rainwater to be diverted by these methods. Using SUDS as part of the scheme has the potential to reduce the size of the engineering works for any conveyance solutions.

Examples of sustainable drainage include:

- Detention basins (for large roof drainage)
- Green roofs (on large flat-roofed buildings)



Off-line local detention basin (Orleans, France)



Green roofs to attenuate and absorb rainfall

Sustainable Urban Drainage (SUDS) Retrofit Measures - 2



- Divert downpipes (with/without soakaways)



Downspout connected to pervious area in Seattle, USA

- Dual-use water butts (residential)



Slimline RWH tanks in an access pathway to a property in Melbourne

Sustainable Urban Drainage (SUDS) Retrofit Measures - 3



- Pocket street infiltration

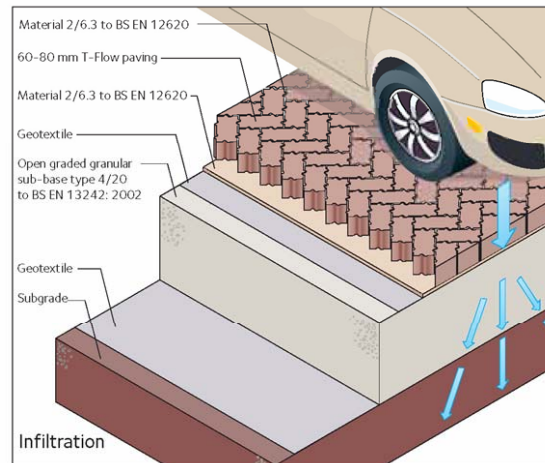


Pocket street rain garden
in Auckland, New Zealand

- Revert driveways and front gardens to permeable surfaces



Typical SUDS permeable paving systems



Arrows denote water movement

Sustainable Urban Drainage (SUDS) Retrofit Measures - 4



Further examples of sustainable drainage:

- Divert impermeable surfaces to adjacent permeable surfaces
- Permeable paving
(roads, car parks, hardstandings)



Conveyance swale
Dundee, Scotland



Permeable block paving
(from Interpave website)

Commitment to Sustainable Urban Drainage (SUDS)

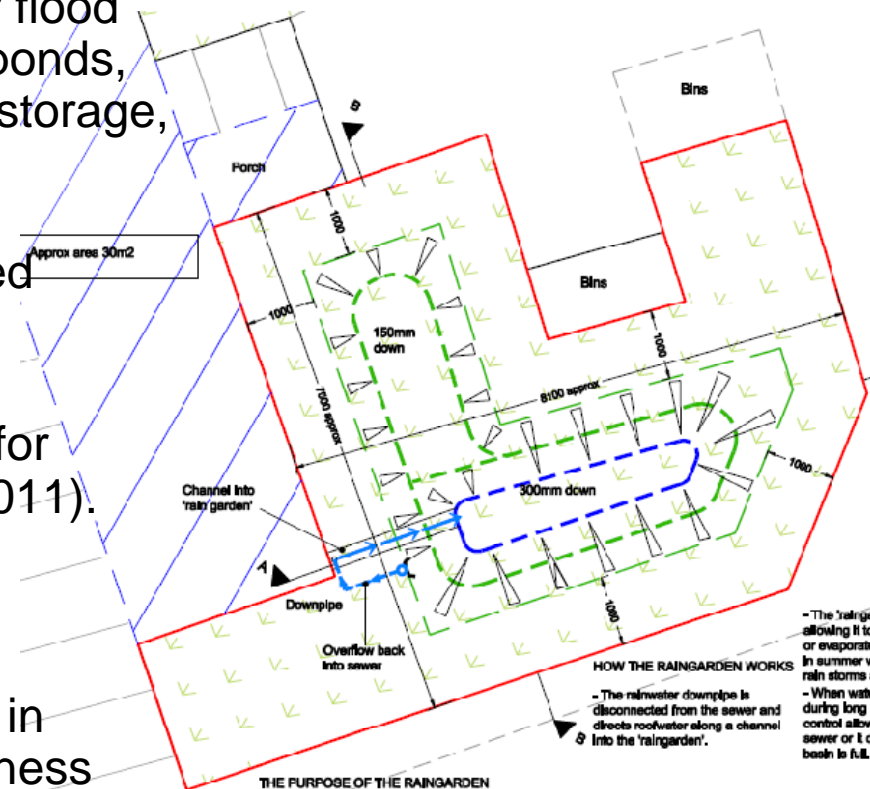


Thames Water commitment to SUDS:

- Brown's Road, Surbiton, storm water flood alleviation scheme (rehabilitation of ponds, wetland planting, 800m³ stormwater storage, environmental enhancement).
- LB Islington rain water garden (started March 2011).
- Involvement in the CIRIA* guidance for retrofit SUDS (to be published late 2011).

Pilot studies planned:

- Pilot studies and monitoring planned in LBHF and RBKC to assess effectiveness and costs of selected retrofit SUDS.



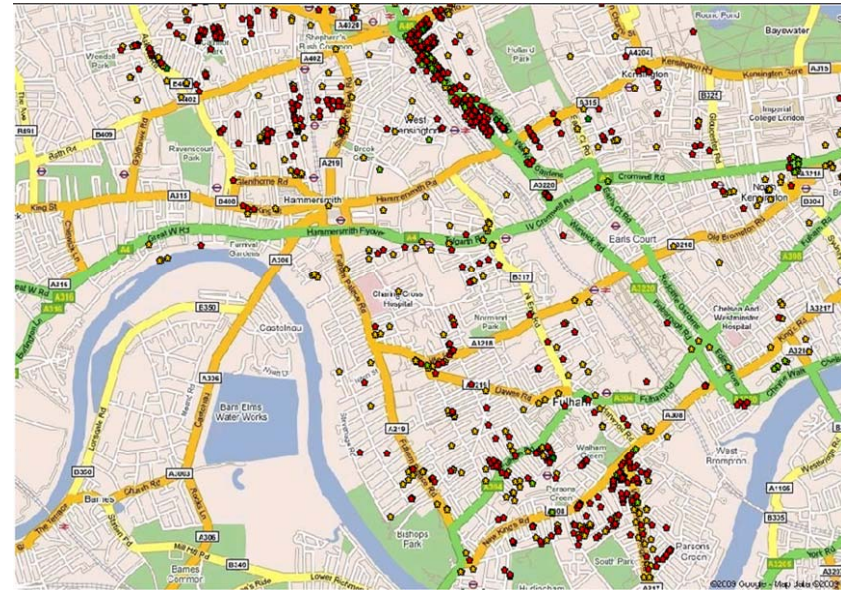
(Background shows plan of LB Islington rain water garden)

* CIRIA is the construction industry research and information association

Long term solutions – actions since last meeting

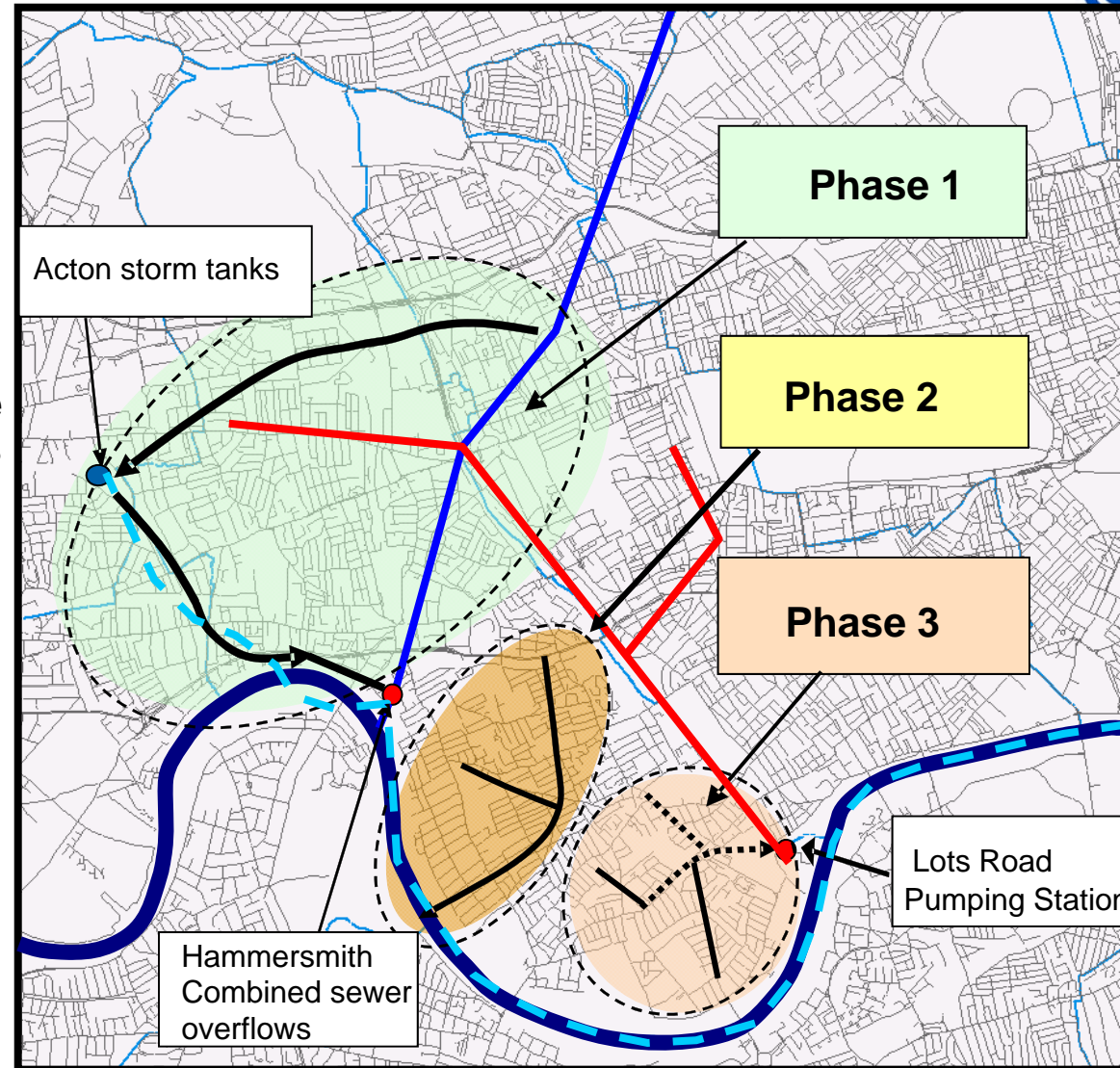


- Sewer flooding and basement level surveys - DONE
- Weir board level surveys to validate sewer models and flow monitoring - DONE
- Rainfall data and RADAR analysis to determine peak flows and design storms – IN PROGRESS
- Develop sustainable options (SUDS) to optimise any new storm relief sewer sizes – IN PROGRESS
- Hydraulic sewer network modelling to confirm the effectiveness of various SUDS and engineering options – IN PROGRESS
- Relief sewer route confirmation and options for suitable construction sites for the engineering – IN PROGRESS
- Environmental and planning consultants appointed - DONE.



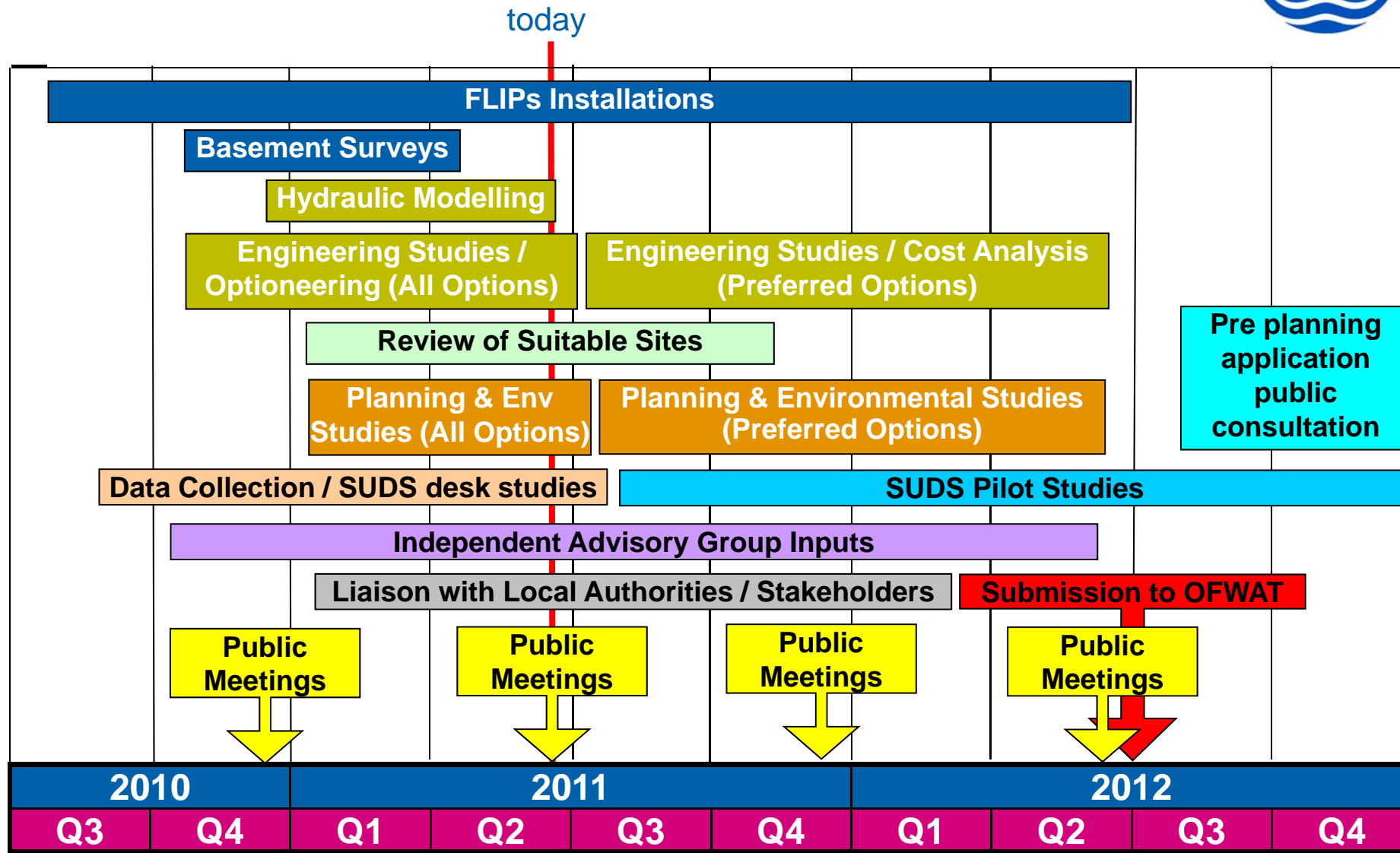
New storm relief sewers

- Current proposal from 2009 study
- Local solutions to a local problem
- Thames Tunnel is an independent scheme with different drivers
- All options being considered with or without connections to the Thames Tunnel
- Studies ongoing to find the most cost effective scheme with combinations of SUDS and new sewers



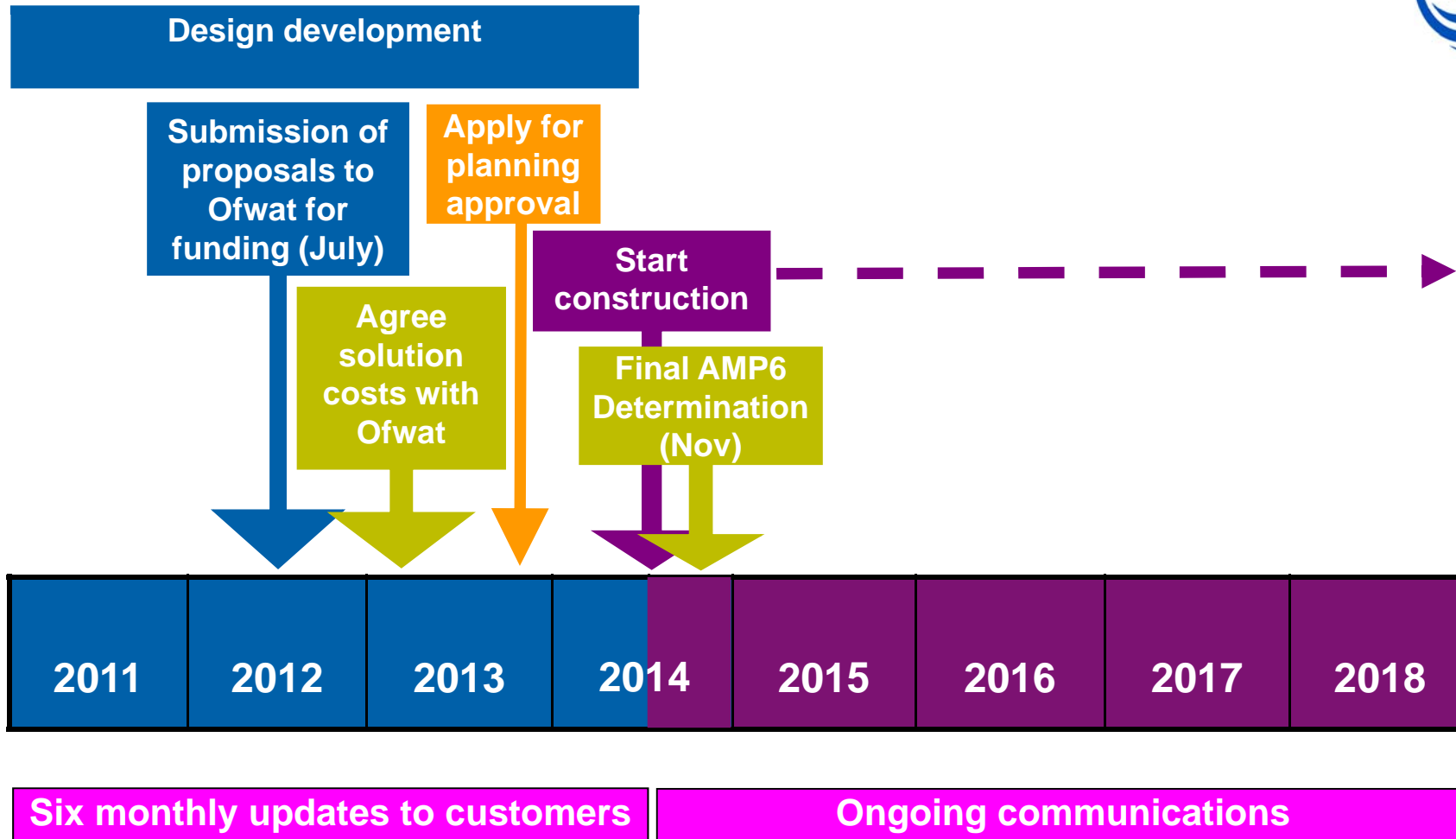
Key:	— Counters Creek sewer	— NWSR sewer	- - - Indicative route of Thames Tunnel
	— Proposed new sewers Upgraded sewers	

Programme to end of 2012





Long term programme



- Planning and development
- Construction

Next Public Meetings on the Counters Creek sewer flooding alleviation scheme



We are planning to hold the next public meetings on:

- Monday 14 November 2011 at Hammersmith Town Hall

and

- Thursday 17 November 2011 at Kensington Town Hall



Questions ?

