

FLOOD INVESTIGATION REPORT

Contact officer: Vicky Boorman
Telephone: Ext. 7920

REASON FOR ITEM

At its meeting on 26 March 2014, the Committee asked that an update on the Council's response to flooding in the Borough be provided in due course. The attached report sets out this information.

OPTIONS OPEN TO THE COMMITTEE

- To note and comment on the Flood Investigation Report.

INFORMATION

Further information is contained within the report below.

FLOOD INVESTIGATION REPORT

December 2013 - June 2014

The report is produced to fulfil Lead Local Flood Authority requirements to investigate significant flooding under Section 19 of the Flood and Water Management Act 2010 which states:

"On becoming aware of a flood in its area, a lead local flood authority must, to the extent that it considers it necessary or appropriate, investigate -

Which risk management authorities have relevant flood risk management functions, and

Whether each of those risk management authorities has exercised, or is proposing to exercise, those functions in response to flood.

Where an authority carries out an investigation under subsection 1) it must -

- (a) Publish the results of its investigations; and
- (b) Notify any relevant risk management authorities".



HILLINGDON
LONDON

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1 Summary

Flood Risk in Hillingdon

Hillingdon Council is susceptible to a number of different sources of flooding. Within its boundaries lie the River Colne and River Crane catchments as well as the River Pinn and Yeading Brooks in addition to numerous ordinary watercourses. The Council has also identified large areas as being at risk from surface water according to recently released Environment Agency 'Risk of flooding from Surface water'¹ maps (which can be found on their website). Flooding could affect over 5,000 people in the borough. Further information on these risks can be found in Hillingdon's Strategic Flood Risk Assessment and Surface Water Management Plan available on the Council's Website².

Causes of flooding

It is considered that there has been the highest rainfall on record over recent months across the country. From a rain gauge operated by the Council's Green Spaces team at Haste Hill Golf Club, Hillingdon received 157mm in January and 40mm between February 1st - 14th. This was consistent across the borough as can be seen from data obtained from a weather station at Heathrow where Table 1 shows data from December to February.

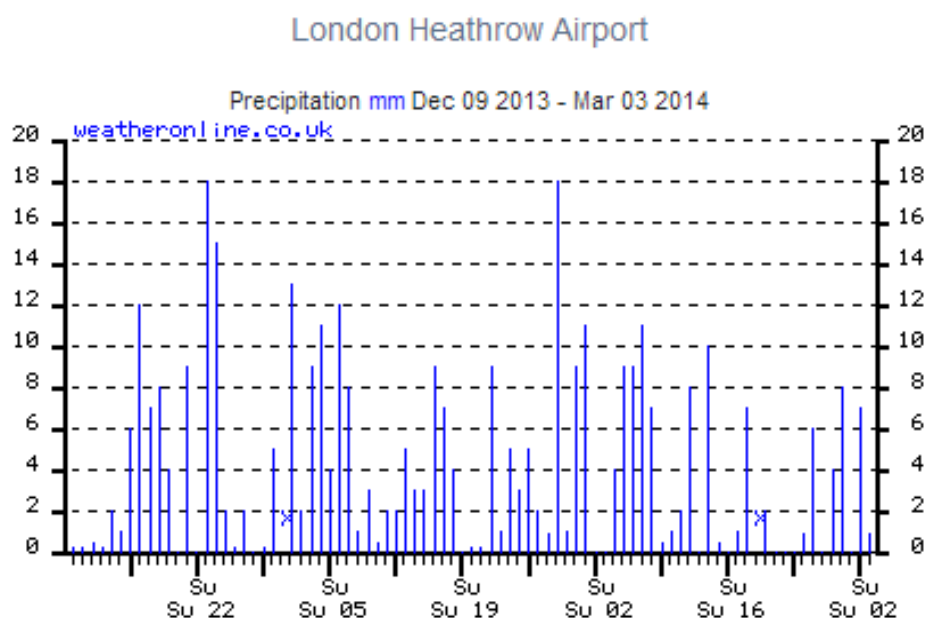


Table 1 Rainfall from Dec 09 to March 3rd from 'Weather Online'³

Although this is considered unprecedented weather, the Council needs to ensure that flood events are investigated to ensure any contributing factors are being managed appropriately.

Flooding impact

Evidence has been collected from the numerous calls, emails and letters that the Council has received over this period.

This is the largest flood event Hillingdon has experienced for a number of years. Given the enquiries from members and other bodies in the response to this flooding, an investigation

¹ <http://watermaps.environment-agency.gov.uk/wiyby/wiyby.aspx?topic=ufmfsw#x=357683&y=355134&scale=2>

² <http://www.hillingdon.gov.uk/24117>

³ <http://www.weatheronline.co.uk/weather/maps/city>

should be undertaken. This action is recommended by the Surface Water Management Plan Appendix C Actions. In addition it is appropriate under Section 19 of the Flood and Water Management Act 2010.

Lead Local Flood Authority response

Hillingdon has a clear process in place through the Civil Protection Service in which adverse weather warnings are disseminated within the Council so that officers in different services can take the appropriate action. In an emergency, Hillingdon has a number of officers on standby, ready to respond.

During this period, officers liaised with the Environment Agency and monitored closely the weather forecast and the impact of rainfall on rivers in order to determine the appropriate action to take. An internal cross-departmental meeting was held to ensure the response was co-ordinated.

The Council Highways service in particular attended sites on numerous occasions over this period during the night and at weekends as requested by residents. They delivered over 1,000 sandbags to residents, as well as continuing to visit structures on rivers across the borough to remove debris and thus reduce the likelihood of blockages.

Hillingdon also experienced a significantly higher call volume to the Customer Contact Centre relating to flooding issues from residents. Over 100 enquiries required specialist advice from the Flood and Water Management Officer. This included clarification on the responsibility for alleviating the flooding; and advice on what action to take. 20% of all enquiries were from Councillors.

During this period, the Council website was updated to provide information on the action to take if in an area at risk of flooding.

Other Risk Management Authorities (RMA) responses

The Environment Agency opened its incident room in anticipation of the forecast adverse weather and responded to a number of queries from residents. They provided the Council with clear updates on what was happening so the Council could plan work. Their operations teams also visited known hotspots to clear debris and trees to reduce the likelihood of blockage. A number of flood data recorders were also deployed to collect information on the flood levels, extents and impacts of flooding.

2 **Areas affected in Hillingdon**


Summary of Impact

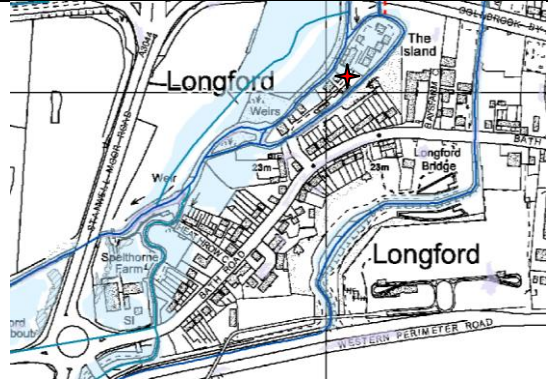

In Hillingdon approximately 29 residential properties, gardens and some garages have been affected by flooding, with a few businesses, educational institutions also reported affected. Only one educational institution was severely affected internally. In addition Breakspear Road South a key highway route have been affected. The Council is aware of others that have been affected but not reported directly to the Council.

The following areas listed are the key affected sites that have been reported to the Council. There may be other areas that the Council are not aware of.

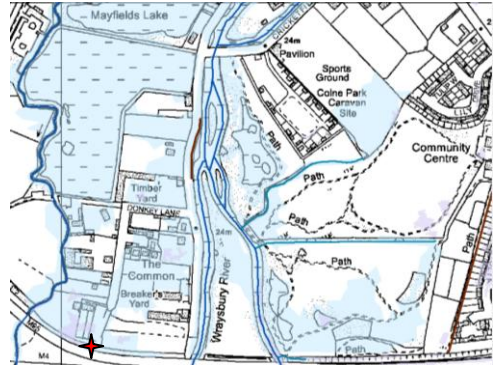

The Council have requested the Environment Agency Flood Investigation report which covers Hillingdon, but at this time it has not been finalised and so was not provided to the Council and has therefore not informed this report.

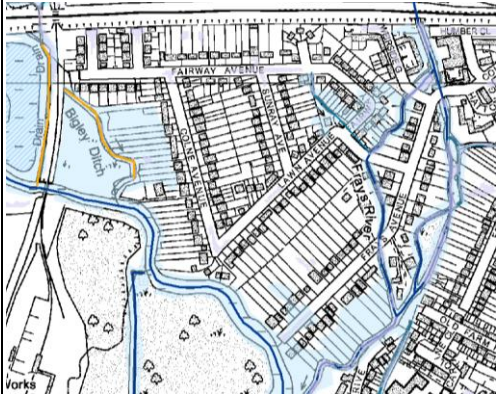
The flooding reports were from across the whole borough and from different sources, and therefore it is important that each site is identified and examined. Not all have been able to be verified.



Area affected	a) Spout Lane north, Heathrow TW19 6BW	
Date of flooding	07/02/2014	
Grid Reference	504540 175254 or TQ0475SE	
Land ownership	Residents or 'Riparian' owners	
Map of Area		
Location of flooding marked as a red star		
		Riparian Ownership - highlighted blue Highways Agency - highlighted orange Council Highways - highlighted green.
Duration of flooding	Approx 2 days	
Source of flooding	Ordinary Watercourse	
Cause/Pathway	Ordinary watercourses flowed on to Highway	
Impact of flooding	Water over the access to one residential property and one business. Potentially 26 Houses and business including 3 Electricity Substations could have issues with flooded access.	
Evidence	Anecdotal evidence from resident	
History of flooding	2013 previous reports of the access road being flooded	
Summary	All ditches in this area are part of the catchment of the River Colne which then flows in to the River Thames. The River Thames in February 2014 was particularly high and this resulted in high water levels on the River Colne. A flood warning was issued for the 'River Colne & Frays River at West Drayton and Stanwell Moor' mainly affecting the area south of Airport Way. However smaller ditches in this area then couldn't flow away and water spilled on to adjacent land. It is important that these ditches are cleared to ensure flow is maintained where possible. Only 11 of the 26 buildings are within the flood warning area.	
Action recommended for Residents and or Businesses	The Council recommends that residents work together to produce a Community Flood Plan. Support will be offered in starting this, and in identifying and signposting any appropriate grants and appropriate property level protection. Residents also have 'riparian' responsibilities for the watercourses crossing their land.	
Action by the Highways Agency	Clear ditches that they are responsible for.	
Action by the Council	Clear ditches within adopted land, to assist highways drainage.	



Area affected	b) The Island, off Bath Road Longford	
Date of flooding	07/02/2014	
Grid Reference	505064 177077 or TQ0577SW	
Land ownership	Residents or 'Riparian' owners.	
Map of Area	Photo	
Location of flooding marked as a red star	February 2014 (Taken by LBH)	
		
Duration of flooding	Approx 2 days	
Source of flooding	Main River - River Colne	
Cause/Pathway	River levels rising and water flowing onto back gardens.	
Impact of flooding	1 property reported concerns, though potentially 23 properties on the island could have been affected.	
Evidence	Anecdotal evidence from Highways officers and residents, including photos.	
History of flooding	Flood Alerts issued 3 times in January 2014. Environment Agency Flood Alert issued from 29 th January. Flood warning issued from 7 th to 16 th Feb 2014.	
Summary	River levels rose quickly. Residents contacted the Council and sand bags were provided on this occasion. However these are unlikely to have prevented inundation of this area, had river levels risen any higher. The Longford Flood Alleviation Scheme, an overflow channel constructed on Council owned land appeared to function well.	
Action recommended for Residents	The Council recommends that residents work together to produce a Community Flood Plan. Support will be offered in starting this, and identifying and signposting any appropriate grants and appropriate property level protection.	
Action by the Environment Agency	The site lies midway between a numbers of Environment Agency gauges which makes it difficult to monitor river levels at this location, particularly as the river has a number of different channels. This is also not 'real time' data. Feedback has been provided by the Council to the Environment Agency who have committed to reviewing their monitoring locations.	

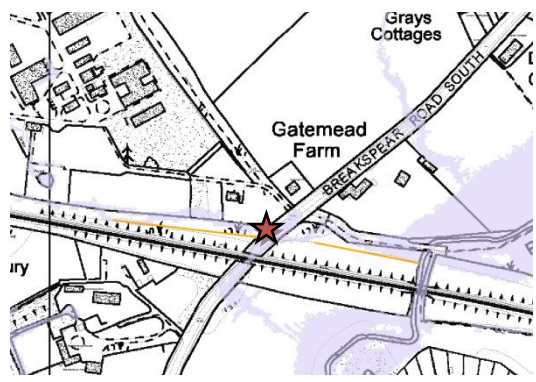

⁴ This and all the following assessments are based on the best available flood risk information from the Environment Agency Flood Map. In each map, blue shows the risk from the rivers, and pink highlights the risk from surface water.

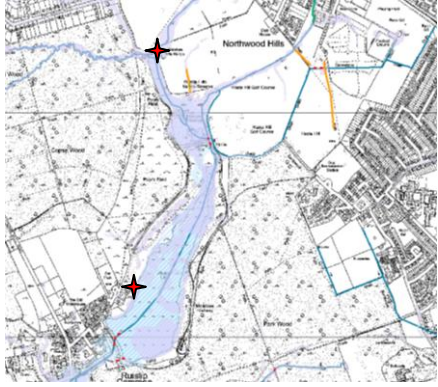

Area affected	c) The Common, West Drayton	
Date of flooding	07/02/2014	
Grid Reference	505102178621 or TQ0578NW	
Land ownership	Residents or 'Riparian' owners, and private roads	
Map of Area	Photo	
Location of flooding marked as a red star	February 2014 (Taken by resident)	
		
Duration of flooding	Approx 2 days	
Source of flooding	Main River - River Colne and Wraybury River	
Cause/Pathway	As water levels rose in both rivers, water flowed across back gardens and into the main access road to the Island	
Impact of flooding	3 residents reported water surrounding their properties and accesses to a depth of approx 30cm. Potentially 38 properties, and 12 businesses, could have been cut off by flooding.	
Evidence	Anecdotal evidence from Council Highways Team and residents.	
History of flooding	2013	
Summary	Residents contacted the Council and sand bags were provided on this occasion. A number of properties utilised their own pumps as water came up under floor boards to keep it from affecting contents. Residents raised concerns about the timing of the Environment Agency Flood Warning, and had queries about what action the Council would take.	
Action Residents and or Businesses	Residents to report incidents and extent of flooding to the Council so this can inform future plans to reduce flood risk. The Council recommends that residents work together to produce a Community Flood Plan. Support will be offered in starting this, and in identifying and signposting to appropriate grants and protection.	
Action by the Environment Agency	The river flows in a number of channels, and these residents lie midway between Environment Agency gauges making it difficult to monitor river levels. This is also not 'real time' data. Feedback has been provided to the Environment Agency who have committed to reviewing their monitoring and issuing of warnings in this area. In 2010 a prefeasibility and scoping for the Arklyn Kennels Flood Defence Scheme was undertaken. Work was not progressed as a result of the findings of the study. However due to the continuing issues at this site the Council have asked the Environment Agency to investigate funding a property level protection scheme.	

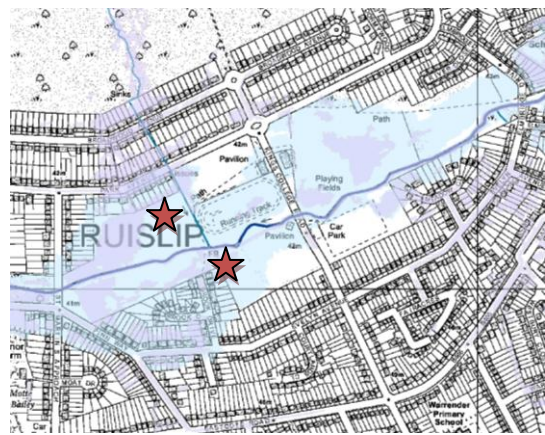

Area affected	d) Fairway Avenue and surrounding area.	
Date of flooding	07/02/2014	
Grid Reference	505497 179934 or TQ0579NW	
Land ownership	Private land owners and Council maintained roads.	
Map of Area	Photo	
Location of flooding marked as a red star		
		
Duration of flooding	Approx 2-3 days	
Source of flooding	Main Rivers and ordinary watercourses - Frays River and Bigley Ditch	
Cause/Pathway	River levels were high in the Frays River and water flowed into back gardens. Drains also not able to flow into the river causing ponding on road.	
Impact of flooding	Reports of flooding of 2 properties back gardens, and access road.	
Evidence	Anecdotal evidence from Council Highways Team and residents	
History of flooding	None Council are aware of.	
Summary	Following request by residents, and as river levels were rising and inundation imminent, sand bags provided by the Council to the most vulnerable residents.	
Action Residents and or Businesses	<p>The Council recommends that residents work together to produce a Community Flood Plan. Support will be offered in starting this, and in identifying and signposting to any appropriate grants and property level protection.</p> <p>It is clear that a large number of properties have hard surfaced drives which run into the road, exacerbating highways flooding. Promotion of the SWMP Action plan for residents - reducing flood risk by replacing hard surfaces with permeable paving.</p> <p>Private owners of ditches to acknowledge their 'Riparian' responsibilities to clear them, and maintain their capacity.</p>	
Action by the Council	To publish the investigation which would provide residents with clarity on what the Council are doing to manage flood risk, which organisation is responsible for different elements of flooding and if and when support will be provided.	


Area affected	e)) St Johns Road and surrounding area.	
Date of flooding	07/02/2014	
Grid Reference	504503 183299 or TQ0483SE	
Land ownership	Residents and College	
Map of Area	Photo	
Location of flooding marked as a red star	(From LBH)	
		
Duration of flooding	Approx 2-3 days	
Source of flooding	Main River - River Colne and Ordinary watercourse.	
Cause/Pathway	River levels rising, water flowing into residents garden and on to highway and entrance to College.	
Impact of flooding	1 garden of residential property and internal flooding to an Educational Institution.	
Evidence	Anecdotal evidence from Highways officers and residents	
History of flooding	2013	
Summary	The Canal and River Trust opened all sluices fully to discharge water. This flows along the watercourse to the River Colne. The River Colne was very high and water from the ordinary watercourse could not flow away. Following a request from a resident, sandbags were provided by the Council, and advice given to the College.	
Action Residents and or Businesses	The Council recommends the resident and College produce a Flood Plan. Support will be offered in starting this, and identifying and signposting to grants and appropriate property level protection.	
Action by the Environment Agency	The site lies midway between Environment Agency gauges which makes it difficult to monitor river levels at this location particularly as the river has a number of different channels. This is also not 'real time' data. Feedback provided to the Environment Agency by the Council. The Environment Agency have committed to reviewing their monitoring and issuing of warnings in this area.	

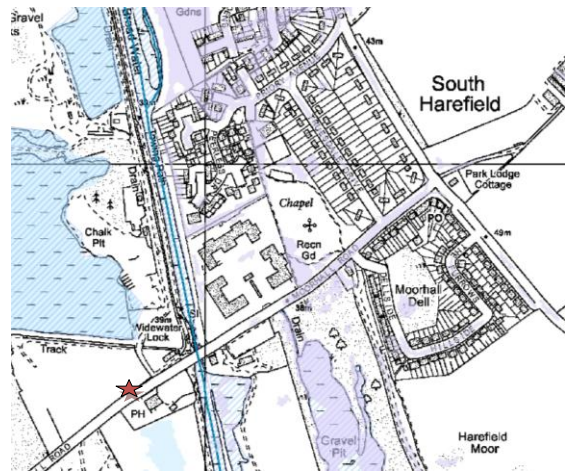
Area affected	f) Charville Lane, Ullswater Close, Kendall Close and Langdale Drive	
Date of flooding	24/12/13, 1/01/14, and 07/02/2014	
Grid Reference	509302 183279 or TQ0983SW	
Land ownership	Residents, Private Landowner and Council	
Map of Area	Photo	
Location of flooding marked as a red star	December 2013 (From LBH)	
		
Duration of flooding	Approx 24 hours	
Source of flooding	Multiple - Main River - Yeading Brook, Ordinary Watercourse and surface water sewer	
Cause/Pathway	River levels rising coming into back garden and Highway.	
Impact of flooding	6 reports of flooded access roads and front and back gardens and garages flooded on Ullswater, and Kendal Close, also road flooded on Langdale Drive. 2 reported properties surrounded by water on Charville Lane. However approx 40 given sand bags.	
Evidence	Anecdotal evidence and photos from Highways officers and residents	
History of flooding	2013 and previous.	
Summary	River levels high causing water to flow up Thames Water sewers, onto Highway, front drives and garages.	
Action Residents and or Businesses	The Council recommends the residents work together to produce a Community Flood Plan, support will be offered in starting this, and identifying and signposting to any grants and appropriate property level protection which may be available.	
Action by the Environment Agency	Investigation into issuing a specific surface water alert for this area. Feedback provided to the Environment Agency by the Council who have given a commitment to reviewing their monitoring and issuing of warnings in this area.	
Action Thames Water	Confirm ownership and maintenance of culvert, jetting of manhole and clearance of culvert and trash screens to the rear of Kendal and Ullswater Close.	
Action by the Council	Continue to ensure the Risk Management Authorities undertake the actions identified above. Continue to clear the ditch on Council owned land and clear the screens until Thames Water clarify their ownership and responsibility.	

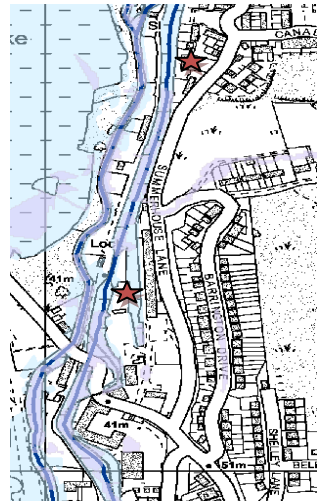

Area affected	g) Breakspear Road South, Ruislip	
Date of flooding	01/02/2014	
Grid Reference	507194 187196 or TQ0787SW	
Land ownership	Network Rail.	
Map of Area	Photo	
Location of flooding marked as a red star	December 2012 (From LBH)	
		
Duration of flooding	Approx 24 hours.	
Source of flooding	Surface water	
Cause/Pathway	Run off from surrounding fields entering ordinary watercourses on Network Rail land, These also take flow from highways ditches, but cannot discharge to the River Pinn when it is high, so back up.	
Impact of flooding	Flooded Category C Highway underneath Railway line.	
Evidence	Photographs and anecdotal evidence from Highways officers	
History of flooding	Flooding in 2012, and December 2013	
Summary	<p>Surrounding field catchment and highways ditches of approx 388 Acres or 157 hectares catchment draining to the ordinary water course flowing along either side of the embankment in to the River Pinn. When the River Pinn is high this watercourse cannot flow away and water floods the road. The Council was already aware of flooding at this location, and has engaged with Network Rail as Riparian Landowner in 2013 to clear the streams on their land. Network Rail has cleared the stream to the north side of the embankment which has reduced the frequency of flooding. They have also at request of the Council replaced a culvert headwall which was blocking flow. However the site is still at risk and flooded in 2014. Further works by Network Rail are required to ensure the south side watercourse is clear. This will continue to be monitored by the Council.</p>	
Action by Network Rail	Clearance of ditch on a regular basis and completion of the replacement headwall.	

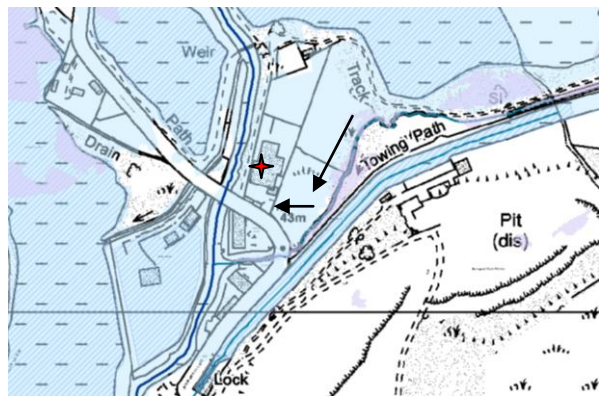

Area affected	h) Ruislip Lido	
Date of flooding	December 2013 - March 2014	
Grid Reference	508703 189034 or TQ0889SE	
Land ownership	Hillingdon Council	
Map of Area	Photo	
Location of flooding marked as a red star	January 2014 (From LBH)	
		
Duration of flooding	Continued ordinary watercourse and groundwater flows	
Source of flooding	Ordinary Watercourse - Cannons Brook and also groundwater.	
Cause/Pathway	High water levels at the Lido and Northwood Golf Club.	
Impact of flooding	1 report of Northwood Golf Club being closed. Water contained within the Lido preventing flooding.	
Evidence	Anecdotal evidence from Council officers and photographs.	
History of flooding	Over-flow from Lido in 1977, 200/2001 and 2009	
Summary	<p>Due to the sustained period of rainfall and flow into the Lido, water levels rose considerably above the agreed managed water level. However as a result, the Lido provided substantial storage for water which reduced the likelihood of flooding downstream. There was concern by Northwood Golf Club that water was being held back in Ruislip Woods, and was impacting on the use of their greens.</p>	
Action by the Council	<p>A Flood Risk Assessment (FRA) was undertaken for the Lido by the Council. This recommended that water levels should be managed at 0.65m below da. The Council continues to monitor water levels regularly, and operates valves to allow the discharge of water from the Lido. The Council has undertaken the work recommended by the FRA, by restricting the diameter of one overflow pipe, and by carrying out works downstream on the Cannons Brook including the replacement of the Ladygate Lane Trash screen. However the Council continues to work with the Environment Agency to determine the best management regime to ensure water levels can be maintained at the agreed level. The Council has investigated the operation of sluices within the woods and has confirmed that in times of high flow, water would flow over them and into the Lido. In addition the ditch network has been checked and debris cleared as a result.</p>	

Area affected	h) Kings College Playing Fields	
Date of flooding	December 2013- April 2014.	
Grid Reference	509468 188088 or TQ0988SW	
Land ownership	Residents and the Council.	
Map of Area	Photo	
Location of flooding marked as a red star	January 2014 (from LBH)	
		
Duration of flooding	December 2013- June 2014.	
Source of flooding	High water table and continued groundwater flows	
Cause/Pathway	Groundwater and surface water.	
Impact of flooding	9 reported incidents of back gardens and 1 of a garage flooded in addition to large areas of water ponding on the Kings College playing fields. Footpath to the playing fields also flooded.	
Evidence	Anecdotal evidence from the Council and residents, and photographs taken.	
History of flooding	1977 and 2012.	
Summary	The Playing fields and surrounding residential properties are a low lying area adjacent to the River Pinn identified by the 'Environment Agency Flood Map for Surface Water'. Once built up, water takes a long time to drain back into the River Pinn.	
Action by the Council	The Council constructed land drainage in 2004 to alleviate flooding. However due to the record amounts of rain, water remains ponded on site. Further work is being considered, survey work has been undertaken and proposals are being drawn up. An application for funding has been made for this work.	
Action recommended by Residents	As the area is identified as being at risk from both fluvial, surface and groundwater, Council recommends that the residents work together to produce a Community Flood Plan. Support will be offered in starting this, and in identifying and signposting any appropriate grants and appropriate property level protection.	
Action by the Environment Agency	Funding has been awarded by the Regional Flood Risk and Coastal Committee for a ' River Pinn Flood Risk Management Strategy' to reduce flood risk from the river. The Environment Agency to take into account groundwater issues in the area in developing the potential scheme. Initial investigation work by the Environment Agency scheduled to take place in 2014/2015.	

Area affected	j) High Road, Eastcote and surrounding area	
Date of flooding	510391 188421 or TQ1088SW	
Grid Reference		
Land ownership	Residents.	
Map of Area	Photo	
Location of flooding marked as a red star		
		
Duration of flooding	Approx 24 hours 2014.	
Source of flooding	Unconfirmed	
Cause/Pathway	Unconfirmed	
Impact of flooding	A number of garages and the highway	
Evidence	Anecdotal evidence from the Council and residents.	
History of flooding	None the Council is aware of	
Summary	<p>2 Residents have reported issues with the drainage at Pembroke Park. The Council has undertaken an investigation in to this which found that Taylor Wimpey is responsible. The Council raised concern over the drainage on the site and work was undertaken by Taylor Wimpey to clear it.</p> <p>1 resident reported ongoing issues of flooding on the High Road: gullies were cleared by the Council but water still remained. The issue was reported to Thames Water and a clearance of the pipe scheduled. However this appears to be a continuing issue.</p>	
Action by Taylor Wimpey and A2 Dominion	The responsibility for drainage within Pembroke Park will be handed over to Private Management Company 'A 2 Dominion' in the future. Therefore A2 Dominion should continue to ensure that the drainage infrastructure is cleared regularly in the future. (with the exception of the main road through the development, which is to be adopted by the Highway Authority)	
Action by Thames Water	Clearance of sewer draining High Road, Eastcote.	

Area affected	k) Moorhall Road, Harefield	
Date of flooding	07/02/2014	
Grid Reference	505189 188821 or TQ0588NW	
Land ownership	Private Landowner and the Council	
Map of Area	Photo	
Location of flooding marked as a red star		
		
Duration of flooding	Approx 24 hours 2014.	
Source of flooding	Surface water flooding	
Cause/Pathway	Water falling on the road not able to drain away	
Impact of flooding	Water covered the road, and access from the west to approx 3 businesses.	
Evidence	Anecdotal evidence from Council officers and residents	
History of flooding	None Council is aware of	
Summary	Highways officers attended the site to place signage to say that the road was flooded. Queries were raised by tenants as to the responsibility for sewers which are on the private land. Offices implemented their Business Continuity Plan to advise their employees.	
Action by the Council	The Council advised on roles and responsibilities for tenants to contact the Thames Water regarding the sewer. Provide business continuity advice to those local business that were affected or are at future risk.	

Area affected	I)) Royal Quay and Summerhall Lane, Harefield	
Date of flooding	07/02/2014	
Grid Reference	504084 191208 or TQ0491SW	
Land ownership	Private Landowner and Residents	
Map of Area	Photo	
Location of flooding marked as a red star	February 2014 (Taken by resident)	
		
Duration of flooding	Approx 24 hours 2014.	
Source of flooding	Ordinary watercourse (Channel from Canal) and surface water flooding.	
Cause/Pathway	Water from Canal flowing over the proposed development site of Royal Quay and at other points along the towpath to the north. The foul water sewer system was overwhelmed and caused backing up into toilet systems of at least 1 residential property.	
Impact of flooding	Island at Royal Quay, and 3 residents gardens along Canal towpath and residents on Summerhall Lane.	
Evidence	Anecdotal evidence from residents and photographs.	
History of flooding	None. Previous issues of sewer flooding	
Summary	During recent heavy rainfall evidence was provided of the flooding and concern expressed about the implications of the new development.	
Action by Thames Water	Further investigation of the flooding events and operation of the sluices to be undertaken. Provision of management plan by Thames Water for the sluices at Coppermill Lock to demonstrate they are being managed appropriately. The Council recommends that this information is provided to new residents on the site to allow them to contact Thames Water directly about any issues. In addition, The Council have asked Thames Water to investigate the pump and sizing of the foul water system to alleviate flooding at Summerhall Lane.	
Action by Developer	Developer to undertake an addendum to their Flood Risk Assessment to address recent revisions in proposals and the flood risk to and from their site.	

Area affected	m) Springwell Lane, Harefield	
Date of flooding	07/02/2014	
Grid Reference	504354 193121 or TQ0493SW	
Land ownership	Private Landowner	
Map of Area	Photo	
Location of flooding marked as a red star	February 2014 (from LBH)	
		
Duration of flooding	Approx 24 hours 2014.	
Source of flooding	Main River - River Colne, Ordinary watercourse, and surface water flooding.	
Cause/Pathway	Unconfirmed combination from multiple sources. Potential flow path from the River Colne across Stockers Lake and along ordinary watercourse following the arrows.	
Impact of flooding	Flooding cutting off access to 1 business, and possibly residents although not reported.	
Evidence	Anecdotal evidence from officers and residents, and photographs taken.	
History of flooding	None the Council is aware of	
Summary	Water falling on the road, could not drain away as the River Colne was very high. The Council Highways team attended to place signs to close the road, however there was concern that the Council did not do enough to help.	
Action Residents and or Businesses	To ensure that landowners where appropriate are undertaking their 'Riparian' responsibilities, and clearing ditches. To develop a Flood Plan supported by the Council	
Action by the Council	The Council is to advise of any support for businesses provided by the government that may be appropriate and to advise on the flood plan.	

Area affected	n) Generic queries regarding flooding
Queries	Actions
1 A number of residents have raised concerns through Members about being able to contact the Council if needed.	Each request has been responded to individually. There is information for residents on the Hillingdon website identifying who to contact, and how, both during and out of normal working hours. The Council is contactable 24 hrs a day, and has a number of officers on standby to respond to emergencies. Increase information available to residents which does not require a conversation with an officer / increase number of officers able to provide flood related advice (potentially via contact centre)
2 A number of queries across the borough concerned the roles and responsibilities of the different Flood Risk Management Authorities such as the Council and Environment Agency and who was responsible for managing different types of rivers such as main rivers and ordinary watercourses.	Roles and responsibilities are continually evolving. Council officers to provide clarity via the website and possibly via hard copy in libraries, as to what the Council and Environment Agency's responsibilities and work they do. However information can currently be found in the Hillingdon Strategic Flood Risk Assessment (SFRA) ⁵ available on the Hillingdon website. The Council to review ditch management where it has responsibility. The Council to publicise via the website, and possibly libraries, the responsibilities of a riparian owner i.e. owner of land through which a ditch passes. More details can be found in 'Living on the Edge' ⁶ an Environment Agency publication.
3 A number of residents expressed concern about how often the Council clear trash screens.	Development of an asset management plan is required which will detail what the Council manages and their management programme. This would be made available to residents.
4 A number of 'vulnerable institutions' such as schools are affected by flooding and should have a flood plan.	Council officers to advise educational institutions on producing a flood plan ⁷ and/or business continuity plan. Guidance can be found on the Environment Agency or Flood Forum websites.
5 Large number of Schools have had localised surface/ groundwater issues.	Educational institutions to ensure they are aware of their drainage assets and are managing and clearing them appropriately.
6 Residents and Councillors have reported a number of highway flooding incidents. The Council has attended the site, cleared the gullies and passed the query to the Utility company. However the flooding has remained an ongoing issue, for example on Bury Street, Wood End Green, High Road, Eastcote and Station Approach, South Ruislip.	The Council to continue to respond to blocked gullies. The Council to continue to work with and raise issues with water utility companies where the problems continue. Specific incidents have been raised with Thames Water through their local government liaison officer and officers have met the Operations Manager for the area. Where it is a significant flooding incident, the Council may consider if there are options and the resources to be able to take to alleviate the flooding. This is limited as the Council cannot alter utilities pipework. Additional resources and budget are needed in order to investigate these issues further, such as being able to undertake CCTV surveys and carrying out high pressure jetting. Thames Water to respond to issues reported and provide

⁵ <http://www.hillingdon.gov.uk/index.jsp?articleid=24117&nor=1>

⁶ <https://www.gov.uk/government/publications/riverside-ownership-rights-and-responsibilities>

⁷ <http://apps.environment-agency.gov.uk/flood/151256.aspx>

	feedback on ongoing issues including timeframes for solutions.
7 Sandbags	Review policy to ensure it is sustainable and realistic and permits appropriate prioritisation of activities by highways staff.

3 Conclusion

In summary from the previous reports, 26 properties and 7 Businesses were affected as well as 4 schools/ educational facilities. However this investigation highlights the areas that would be first affected in any larger flood event and should be a focus for the Council to consider options to reduce flooding.

The Council has considered the investigation findings and puts forward the following actions:

Short Term Actions

The Council

- To update information on the website regarding the roles and responsibilities of each of the flood risk bodies.
- Review the Environment Agency report and provide feedback to ensure co-ordinated approach to actions particularly regarding communications
- To publicise the government Flood Support Schemes, for business and home owners and develop where there is eligibility the mechanism for administering these proposals.
- To finalise investigations and provide feedback to residents and contacts directly where issues have been reported.

The Environment Agency

- To provide the Council with their flooding review and information on the actions they will be taking.
- To investigate providing real time data on river and sea levels for professional partners and or the public.
- To undertake the promised review of location of gauges, and timings and appropriateness of Flood Warnings within the Borough and discuss this with the Council.
- To share more clearly information on management and maintenance and projects to allow the Council and other Riparian owners to develop their own programme of works and maintenance.

Residents

- To take action by producing Community Flood plans and using the 'resilience' measures tool, (Detailed in the SWMP Appendix B).

Long Term Actions

The Council

- To review and update the Multi Agency Floodplan, where necessary to reflect the current flood risks for the borough, and to formalise the council's internal flood response plan(s).
- To review of the ditch management and maintenance programme for the Council. This is already underway by the Flood and Water Management Officer.
- To review sandbag provision and formulate a clear policy based on cost benefit of reactive response versus the provision of advice by the Council to residents to implement site specific resilience measures.
- Following investigations, the Council to work with other responsible bodies and identify landowners to ensure they are taking appropriate action to reduce flood risk.

- To publish the Flood Investigation report and notify other Risk Management Authorities with Actions.
- To establish a communication plan to engage with residents regarding information on the Council's response to reducing flood risk and to ensure clear communication during a flood event both in and out of hours.
- To provide advice to those educational establishments in areas at flood risk, to put a flood plan in place and to ensure their drainage system is m
- To continue working towards delivering the legal requirements of the Flood and Water Management Act 2010 and the Flood Risk Regulations 2009.
- Review the Council policy on the provision and use of Sandbags.
- To continue implementing the Surface Water Management Plan⁸ Actions. There are a number of actions to manage flood risk from local sources such as surface water and groundwater which the Council has already set out in the SWMP. Some of these actions are repeated below:
 - Following this investigation the Council should update the Surface Water Management Plan: Evidence and Action Plans, Appendix A Site Specific Actions and Appendix C Generic Council Actions.
 - Continue to progress site specific projects. To also incorporate those at risk from Main River flooding so there is one clear list of the projects relating to flood risk being progressed by various bodies across the Borough. For example the River Pinn and Cannons Brook projects led by the Environment Agency. Add additional projects where there have been significant events identified within this investigation such as, c 'The Common' and i 'Kings College Playing Fields'.
 - Continue to develop and update a Flood Plan for the Council.
 - Continue development of Asset Register for 'significant assets' affecting flooding.

⁸ Surface Water Management Plan available on Hillingdon website <http://www.hillingdon.gov.uk/26402>