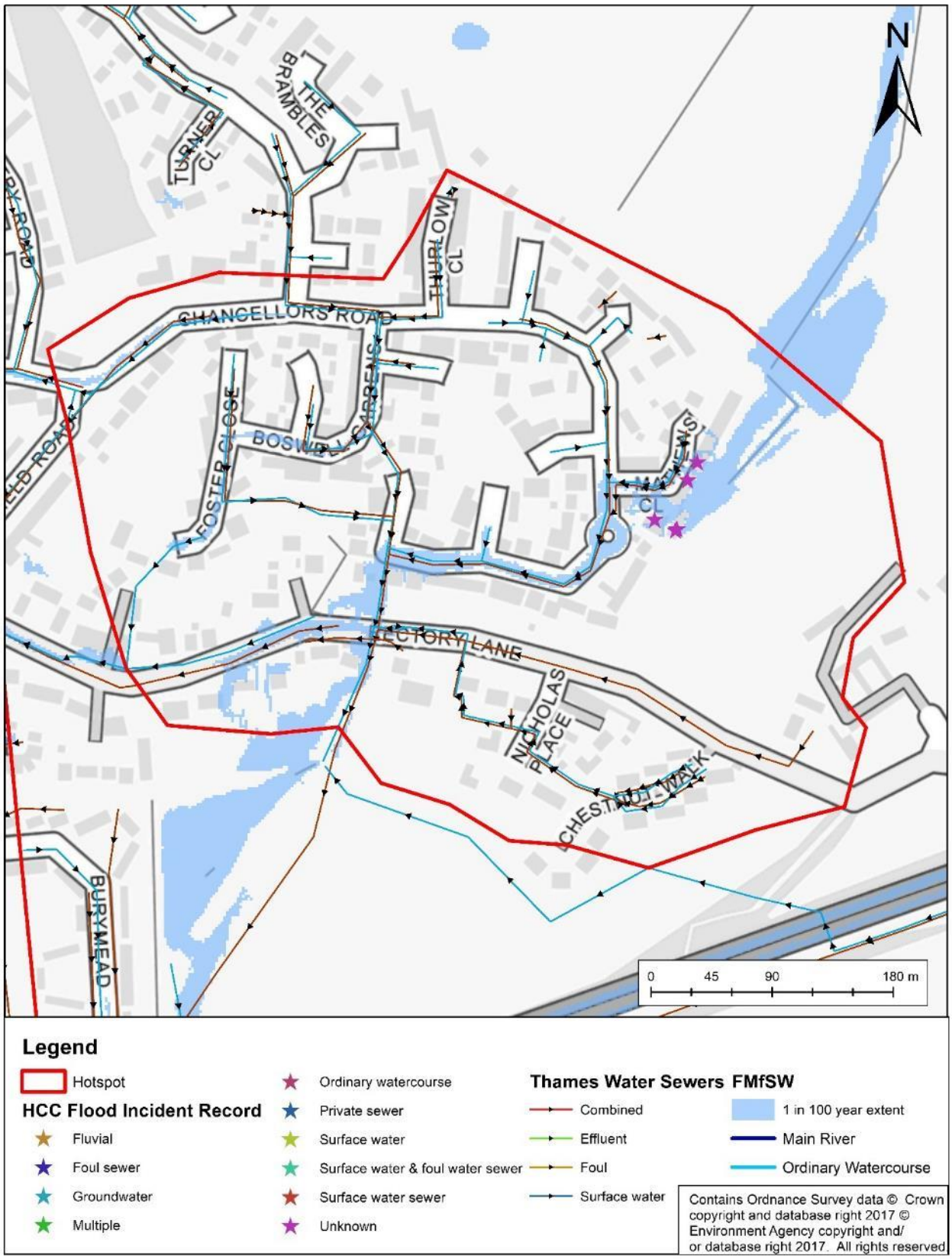
Surface Water Management Plan – Hotspot Selection

Overview

Hotspot Code	SBC1	
Hotspot Name	Matthews Close, Rectory Lane and Chancellors Road	
Postcode	SG1 4XB	
Hotspot Area	**OS Grid Reference**	TL 23846 26368
	X coordinate	523846
	Y coordinate	226368
Local Authority	Stevenage	

Hotspot summary

Risk of Flooding from Surface Water (RoFSW) mapping	Surface water flow path follows the topography of area. The flow path is predominately along Matthews Close and Rectory Lane, and flows from the south west to the north east of the hotspot area. The flow runs along from the urban to the rural area.
Sewerage	This hotspot has surface water and foul sewer systems that drain out of the catchment to the south and to the south west along Rectory Lane.
Other Drainage	HCC records show that there are gullies draining the highways within the hotspot. The pipes leading from gullies are not recorded. It is assumed that they connect to the nearest surface water sewers.
Watercourses	Overgrown ditch in between two fields in the north east of the hotspot boundary. There is a small ordinary watercourse off of Rectory Lane.
Flood incidents recorded	5 flood incidents have occurred from unknown causes. The flood events that have been recorded were over several dates in 2014 and in winter 2013 as well. 3 highway flooding incidents have been recorded over February 2014.
Topography and ground conditions	Elevation around the hotspot area ranges between 114.60 and 106.83 AOD. The topography of the hotspot slopes from the south west to the north, however there is a small depression in the land along Rectory Lane and at two points between Mathews Close and Boswell Gardens.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FOSTER CLOSE
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45
90
180 m
Legend
Hotspot
HCC Flood Incident Record
Fluvial
Foul sewer
Groundwater
Multiple
Ordinary watercourse
Private sewer
Surface water
Surface water & foul water sewer
Surface water sewer
Unknown
Thames Water Sewers
Combined
Effluent
Foul
Surface water
FMfSW
1 in 100 year extent
Main River
Ordinary Watercourse
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Flood Risk

History of flooding	The flooding incidents have been from unknown sources and have mostly caused external flooding to property. The pathway of the flooding has been along roads, particularly Mathews close. Observations from the site visit on28/11/2017 shows that behind Matthews Close there is clear evidence of previous flooding, which runs along the back of the houses from the field runoff.		
Properties at risk from surface water (high, medium, low)(count)	**High (30yr)**	**Medium (100yr)**	**Low (1000yr)**
	0	1	17
Sewer flooding incidents	There has been 1 sewer flooding incident within the postcode sector of SG1 4.		
Local authority incidents	5		

Modelling and existing studies

Existing river models	No model extents covering this area have been provided by the EA.
Existing sewer models	Rye Meads catchment. Detailed modelling of foul sewerage only.
Previous studies (including other SWMPs)	A Section 19 Investigation was requested for the flood event that occurred in February 2014, however a S19 Investigation report has not yet been done.
LiDAR coverage	Yes, the area is covered by LiDAR (EA 2m)

Other catchment needs and opportunities	
Water quality	There is no water quality status for the two ordinary watercourses that are in this hotspot area.
Development	Proposed development exists in the eastern area of the hotspot, behind Mathews Close, where there has been previous flooding incidents. The development to the rear of Mathews Close will be split into a conservation area to the east and a housing area in west.
Green spaces and designations	There are no areas with environmental designations in this hotspot. There is a rural grassland/farmland beyond the hotspot boundary.
Working with natural processes	Within this hotspot there is opportunity for a large amount of riparian woodland and wider catchment woodland to be implemented, as presented under the WWNP mapping.
Ongoing and proposed schemes	None have been identified.

Recommendations and options

Recommendations

Recommended way forward	It is recommended that the upstream area of the hotspot is modelled to estimate flows. Will require survey of the culvert and channels. Upstream storage is a possible option here. Model will involve surveying the sewer netwok and the watercourse to assess the capacity of the current network. At the survey stage an assessment of the sotrage capacity at this site should be made.	
Agreed decision	Significant risk identified and further modelling required	✓
	Non-modelled hotspot (see next section for proposed action	
	No further actions	

Options (section to be completed for non-modelled hotspots only)

Proposed action	Lead organisation	Partners	Costs
Considerations – Will need to speak to the developer (Bellway Homes and Miller Homes) of the committed development to the rear of Mathews Close (as there is committed development here). Consider the phasing of this hotspot as it will not be modelled until 2019-2020 which is too late on in the development plans for the area.			

Photographs

Site Photo 1		Ditch behind Mathews Close
Site Photo 2		Field behind Mathews close. Potential to store water in this area
Site Photo 3		Image of housing estate on Mathews Close
Site Photo 4		

JBA Project Code	2017s6531
Project Name	Hertfordshire County Council SWMP Hotspots
Client	Hertfordshire County Council
Document	Hotspot Selection
Hotspot Code	SBC2

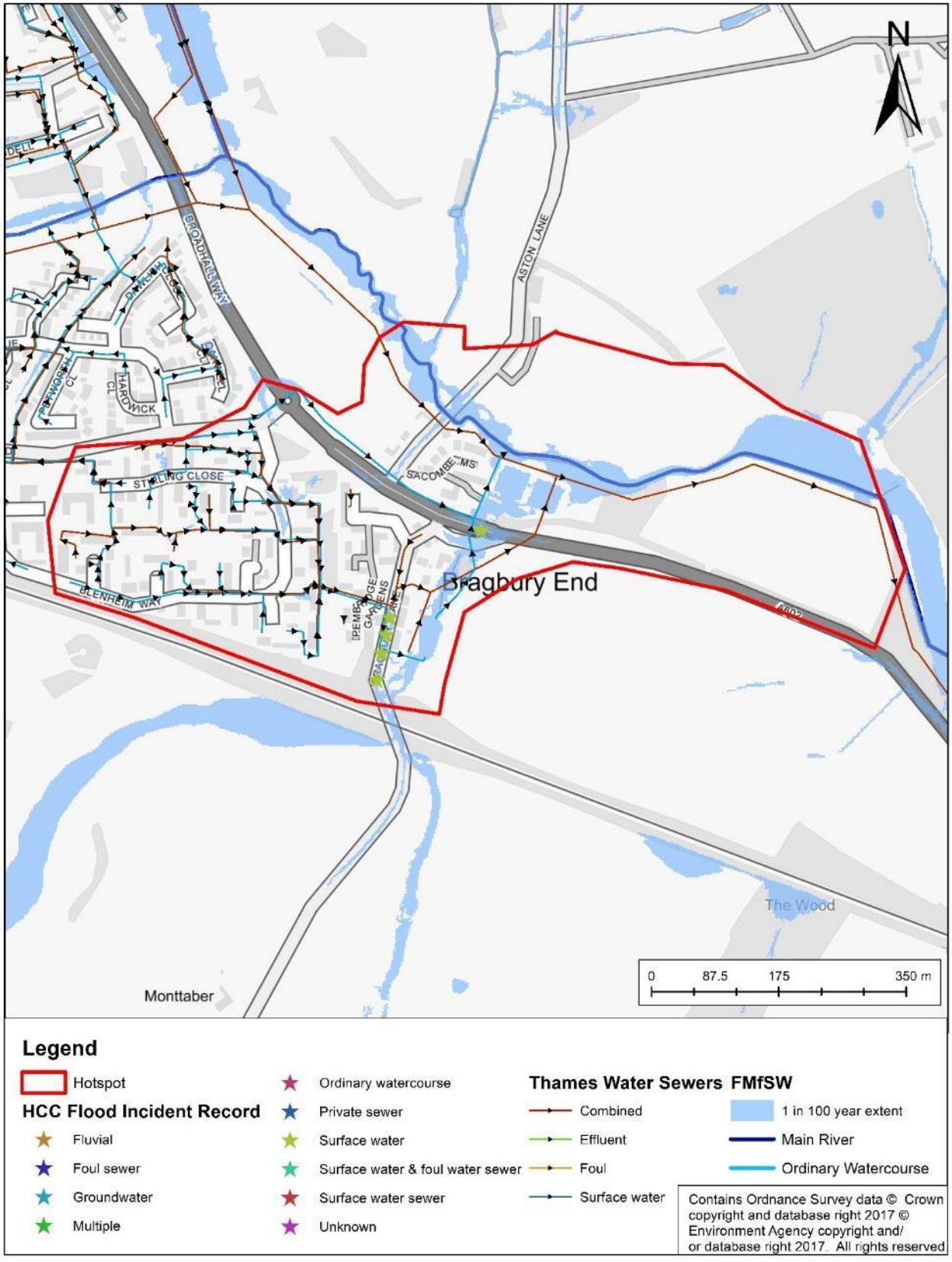
Surface Water Management Plan – Hotspot Selection

Overview

Hotspot Code	SBC2	
Hotspot Name	Bragbury Lane	
Postcode	SG2 8TJ	
Hotspot Area	**OS Grid Reference**	TL 26839 21015
	X coordinate	526839
	Y coordinate	221015
Local Authority	Stevenage	

Hotspot summary

Risk of Flooding from Surface Water (RoFSW) mapping	The surface water pathway goes from east to west. The area of risk covers a wider catchment area around Bragbury End and Broadwater. The path of the surface water follows the natural topography of the land from around the rural land of Stevenage Brook, to along the main road, the A602, and along Bragbury Lane. The site walk over confirmed the flow paths and showed that under flood conditions, water could potentially flow down underneath the railway. However it was highlighted by HCC that surface water to an extent, is dammed before the railway. Water builds up in farmers fields - it is thought that it could be intercepted to avoid this flow path, and for it to be stored in the fields at the back of Bragbury End.
Sewerage	There is a foul and surface water sewer network in this hotspot. Around the area of Stevenage Brook, there is only a foul network. The surface water network drains to Stevenage Brook, whilst the foul network drains out of the catchment area to the west.
Other Drainage	HCC records show that there are gullies draining the highways within the hotspot. The pipes leading from gullies are not recorded. It is assumed that they connect to the nearest surface water sewers.
Watercourses	Stevenage Brook runs through the eastern side of this hotspot boundary. This considered a main source of flood events that have occurred in this area. Robbery Bottom Lane is located along the natural watercourse flow route of the valley. When the open watercourse is in low flow, the water naturally flows from where it first appears just south of the junction of White Horse Lane and Robbery Bottom Lane. It then heads west through one field, through a culvert under a bridleway and into another field.
Flood incidents recorded	5 flood incidents have occurred in this hotspot area. Flood incidents include December 2013, February 2014, October 2014. The flood events in December 2013 and February 2014 . Under the Stevenage SFRA (2008) no previous flooding in the area of Bragbury Lane was recorded. The eastern band of this hotspot area is covered by the EA Historic Flood Map.
Topography and ground conditions	Bragbury Lane is a single lane country road connecting Bragbury End to the village of Datchworth to the south east. The affected area of Bragbury Lane sits in a small depression and the ground slopes away from the road towards the area to the rear of the properties. This area is a flood storage area constructed as part of the Hertford Road development to attenuate surface water runoff into the River Beane. Elevation at eastern boundary of the flow path is 66.27 mAOD, it increases slightly to 72.4mAOD on Bragbury Lane. The road to the east of Bragbury Lane, Pembridge Gardens has a higher elevation of 75.7 mAOD.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ASTON LANE
STIRLING CLOSE
BLENHEIM WAY
SACOMBE MS
Bragbury End
A602
The Wood
Monttaber
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350 m
Legend
Hotspot
HCC Flood Incident Record
Fluvial
Foul sewer
Groundwater
Multiple
Ordinary watercourse
Private sewer
Surface water
Surface water & foul water sewer
Surface water sewer
Unknown
Thames Water Sewers
Combined
Effluent
Foul
Surface water
FMfSW
1 in 100 year extent
Main River
Ordinary Watercourse
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Flood Risk

History of flooding	Properties across all dates were externally flooded and the flood event in February 2014 caused 6 properties to flood as a result of the runoff and 5 to flood internally. The cause of the flooding on all occasions has been due to surface water, particularly from high levels of runoff from farmland. The runoff such as in Feb 2014, filled a flood storage area at the rear of properties, before over spilling into the open watercourse and flooding a commercial property through the rear of the building. The 2017 PFRA stated that blocked highway gullies were considered to be a factor in the February 2014 flooding event, being filled with debris and silt. However their capacity to cope with the flood water would have been limited if they had been fully clear as they have limited ability to intercept large volumes of running water over the road surface. The site visit on 28/11/2017 showed that the ditch in Bragbury End could be cleared. A misconnection from a washing machine was evident at the outfall of the ditch due to the evidence of detergence and bubbles. An additional factor affecting the surface water flow is that there are outfall pipes under the bridge that drain the runoff from the overhead railway. The hotspot selection workshop confirmed that there was a fluvial flood incident on 17/07/2015 that affected the gardens of Sacombe Muse, as high flow conditions caused the channel to become out of its banks.		
Properties at risk from surface water (high, medium, low)(count)	**High (30yr)**	**Medium (100yr)**	**Low (1000yr)**
	0	0	14
Sewer flooding incidents	There has been 39 sewer flooding incidents that have been recorded for the postcode sector of SG2 8.		
Local authority incidents	5		

Modelling and existing studies

Existing river models	This hotspot areas has been covered by the River Beane Flood Mapping Study (outputs were April 2017). It is part of an ISIS-TUFLOW which includes the confluence with the Lee and part of Stevenage Brook to the confluence with the Beane.
Existing sewer models	Rye Meads catchment. Detailed modelling of foul sewerage only.
Previous studies (including other SWMPs)	Section 19 report - for the flood event on 7th February 2014. The flooding in this event was primarily as a result of a succession of storms combining with a heavy rainfall over an extended period of time. The S19 Investigation stated there is no one solution to resolve the flooding in Bragbury End and there is no guarantee that flooding can be prevented. The hotspot selection workshop discussed that there is to be a site specific SFRA to be carried out by SBC for the south east of the hotspot area.
LiDAR coverage	Yes, the area is covered by LiDAR (EA 2m)

Other catchment needs and opportunities	
Water quality	Stevenage Brook has been considered to have a moderate water quality status under the WFD water quality classifications (2016).
Development	There are two proposed development areas in this hotspot, adjacent to Stevenage Brook in the area of current rural land, and a development area on Bragbury Lane next to the railway where there have already been flood incidents.
Green spaces and designations	There are no areas with environmental designations in this hotspot. There are three areas of green space within the hotspot boundary, the largest being in the north of the hotspot along Aston Lane. There is a rural grassland/farmland beyond the at the eastern area of the boundary by the watercourse.
Working with natural processes	The majority of this hotspot area is presented with opportunity for the implementation of riparian woodland and wider catchment woodland under the WWNP mapping.
Ongoing and proposed schemes	None have been identified.

Recommendations and options

Recommendations

Recommended way forward	Based on the flood incidents identified and the RoFSW it is recommended that this hotspot is taken forward to the modelling stage. We recommend carrying out a hydrological assessment and a topo survey as well. We advise this hotspot to be one of the smaller scale models that is undertaken, to assess the amount of upstream storage and the feasibility of connecting the ditch. It is recommended that the culverts are surveyed as well.There are a couple of balancing ponds in this hotspot which will require surveying as well.	
Agreed decision	Significant risk identified and further modelling required	✓
	Non-modelled hotspot (see next section for proposed action	
	No further actions	

Options (section to be completed for non-modelled hotspots only)

Proposed action	Lead organisation	Partners	Costs
Clear the ditch on Bragbury End. At present, the ditch is cleared approximately every 6-7 years according to a representative from SBC.			

Photographs

Site Photo 1

Bragbury End culvert outlet

Site Photo 2

Dry ditch at Bragbury Lane

Site Photo 3		Bragbury End – lane where there is potential to store water upstream of the ditch
Site Photo 4		Field behind railway at Bragbury End – high elevation so surface water will runoff land and flow down the lane. There are pipes under railway bridge that discharge surface water from railway

JBA Project Code	2017s6531
Project Name	Hertfordshire County Council SWMP Hotspots
Client	Hertfordshire County Council
Document	Hotspot Selection
Hotspot Code	SBC3

Surface Water Management Plan – Hotspot Selection

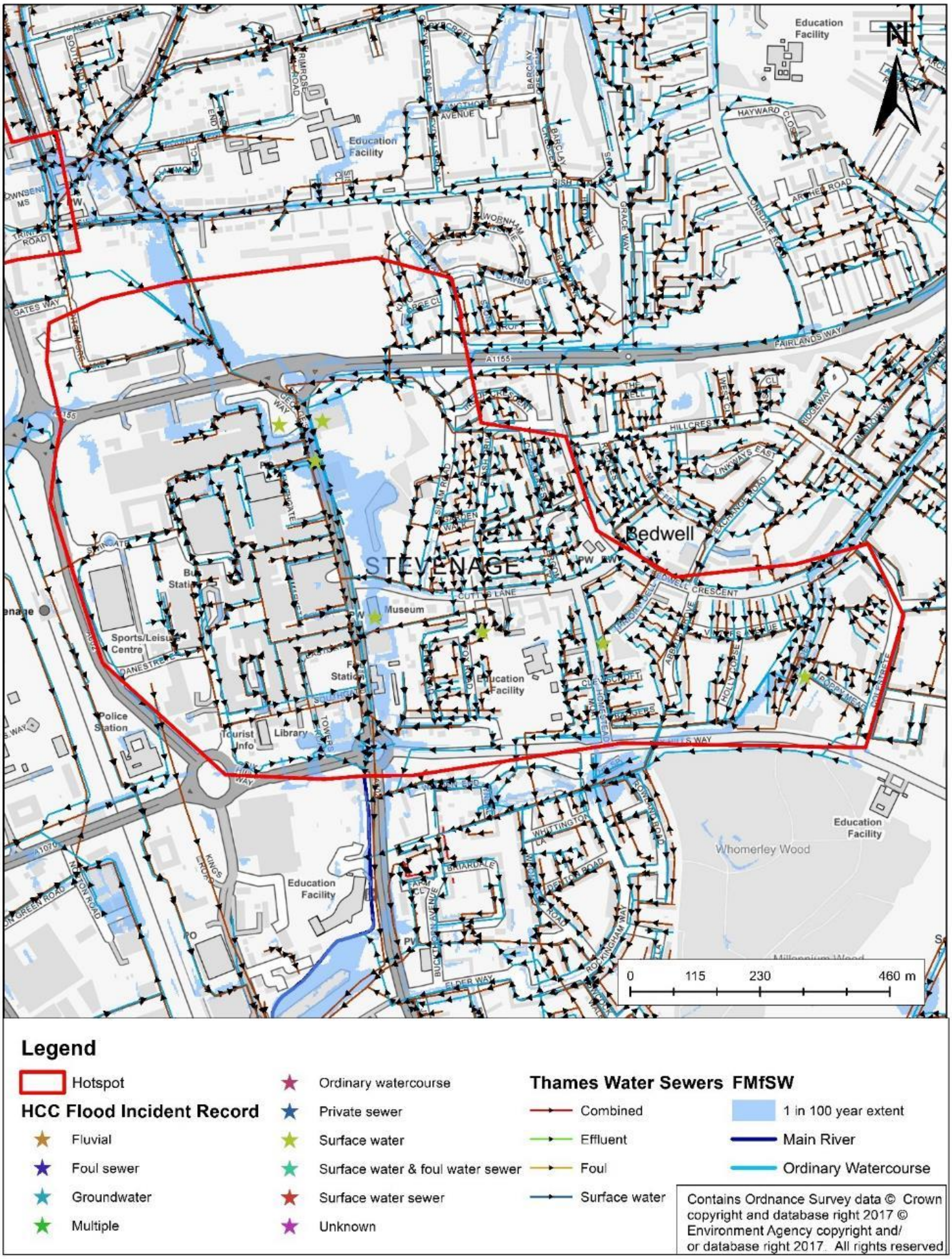
Overview

Hotspot Code	SBC3	
Hotspot Name	St Georges Way	
Postcode	SG1 1HS	
Hotspot Area	**OS Grid Reference**	TL 24047 24036
	X coordinate	524047
	Y coordinate	224036
Local Authority	Stevenage	

Hotspot summary

Risk of Flooding from Surface Water (RoFSW) mapping	The surface water flow path predominately follows the topography of the land and the road network in this area of Stevenage. The main pathway is along St Georges Way, with a secondary pathway along Six Hills Way, and thirdly along Cuttys Way. Under the 1 in 30 year extent, the main area at risk is along St Georges Way where there have already been recorded flood incidents and along Six Hills Way.
Sewerage	This flood hotspot has a complicated surface water and foul sewer network, as it is positioned in the centre of Stevenage Town. The network drains in from the north west and north east and the network drains out from the south. The main drainage network is centred along St Georges Way.
Other Drainage	HCC records show that there are gullies draining the highways within the hotspot on most of the roads. The pipes leading from gullies are not recorded. It is assumed that they connect to the nearest surface water sewers.
Watercourses	There are no main rivers or ordinary watercourses that run through this hotspot area.
Flood incidents recorded	There have been 7 flood incidents which have all been sourced from surface water that were recorded for the event in July 2015. The area has is not part of the EA historic flood map.
Topography and ground conditions	This hotspot is in the town centre of Stevenage and is urbanised with only a small amount of green areas. The area has a slight slope in land from the east to the west, and a light depression along St Georges Way. The area of Bedwell to the eastern boundary of the hotspot is on a steeper slope, so surface water would drain down in a south westerly direction.

JBA Project Code	**2017s6531**
Project Name	**Hertfordshire County Council SWMP Hotspots**
Client	**Hertfordshire County Council**
Document	**Hotspot Selection**
Hotspot Code	**SBC3**



Flood Risk

History of flooding	The 7 incidents of flooding have caused external damage to property, but it is unknown whether the properties were affected internally. The events affected residential buildings, as well as a car park, Stevenage Swimming Centre and Stevenage Museum. The source of the flooding has been from surface water caused by heavy rainfall and exceedance of ground capacity. Observations from the site visit on 28/11/17 showed that along St Georges Way, the fire station has potential to flood. The catchment area takes a lot of surface water drainage due to the high impermeable area. There is also a pond along St Georges way which had an information pack explaining that it has a depth of 450mm. It is located on the stream of the Stevenage Brook which was diverted during the widening of St Georges Way. it is fed by springs (4-5) at a rate of 1l/s in the summer and winter. The Bowes Lyon Centre has flooded in July 2015.		
Properties at risk from surface water (high, medium, low)(count)	**High (30yr)**	**Medium (100yr)**	**Low (1000yr)**
	3	15	71
Sewer flooding incidents	There has been 1 sewer flooding incident within the postcode sector of SG1 1 which the area covered by this hotspot area.		
Local authority incidents	7		

Modelling and existing studies

Existing river models	No model extents covering this area have been provided by the EA.
Existing sewer models	Rye Meads catchment. Detailed modelling of foul sewerage only.
Previous studies (including other SWMPs)	No detailed studies have been carried out for this hotspot area. However previous flooding of the church on St George's Way has been followed up by some PLR work.
LiDAR coverage	Yes, the area is covered by LiDAR (EA 2m)

Other catchment needs and opportunities	
Water quality	No watercourses are present in the area.
Development	There are 13 different areas of proposed development within this hotspot area, predominately in the west, by the Sports/leisure centre and around Danesrete.
Green spaces and designations	There are no areas with environmental designations in this hotspot. However a reasonable portion of the hotspot is covered by green space, such as Town Centre Gardens, Stevenage United Reformed Church, King George V Playing Field and Stevenage Leisure Park.
Working with natural processes	There is a very small amount of potential for the implementation of floodplain reconnection around Six Hills Way at the junction with St Georges Way, however it is limited. There are no other opportunities to work with natural processes that have been ide
Ongoing and proposed schemes	None have been identified.

Recommendations and options

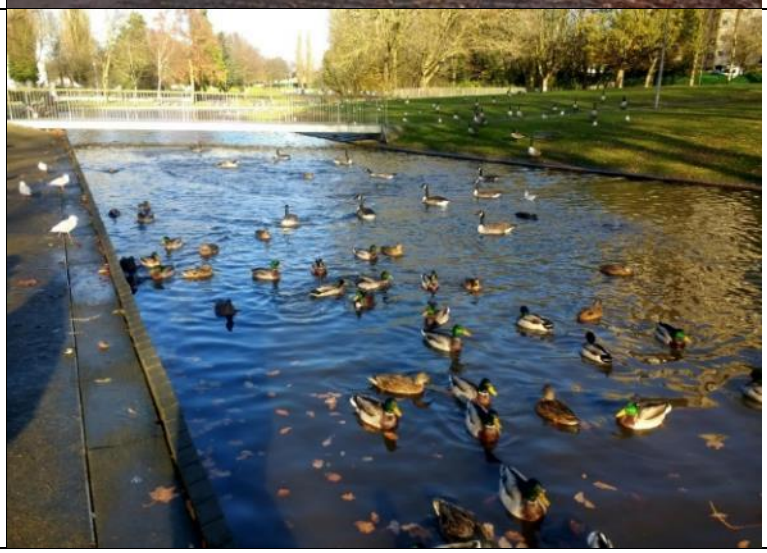
Recommendations

Recommended way forward	Historical flood risk is relatively dispersed. It is recommended that this hotspot is not carried forward to the next phase of this project as there is not enough flood history property counts to warrant it being taken forward. There is a lot of regeneration around this area of Stevenage which means that the risk to the hotspot is likely to change. It is recommended that this hotspit is reviewed in 2019 when the corresponding EA study on the watercourse in this hotspot area is complete. The flood incidents and recorded history of flooding around the church and museum is localised, so it is worth considering carrying out PLR work to drive possible maintenance plans.	
Agreed decision	Significant risk identified and further modelling required	
	Non-modelled hotspot (see next section for proposed action	
	No further actions	✓

Options (section to be completed for non-modelled hotspots only)

Proposed action	Lead organisation	Partners	Costs
Due to the level of infrastructure within the hotspot area it would be difficult to do much work other than PLR.			

Photographs

Site Photo 1		Vulnerable church along St Georges Way that has negative thresholds – land surface slopes downwards
Site Photo 2		The pond on St Georges Way – formed by excavating the naturally fed spring area. Located on the line of the Stevenage Brook which was diverted through St Georges Way.

Site Photo 3		Marshland retention area opposite Asda car park along from St Georges Way
Site Photo 4		St Georges way – showing urbanised nature of the area

JBA Project Code	2017s6531
Project Name	Hertfordshire County Council SWMP Hotspots
Client	Hertfordshire County Council
Document	Hotspot Selection
Hotspot Code	SBC4a

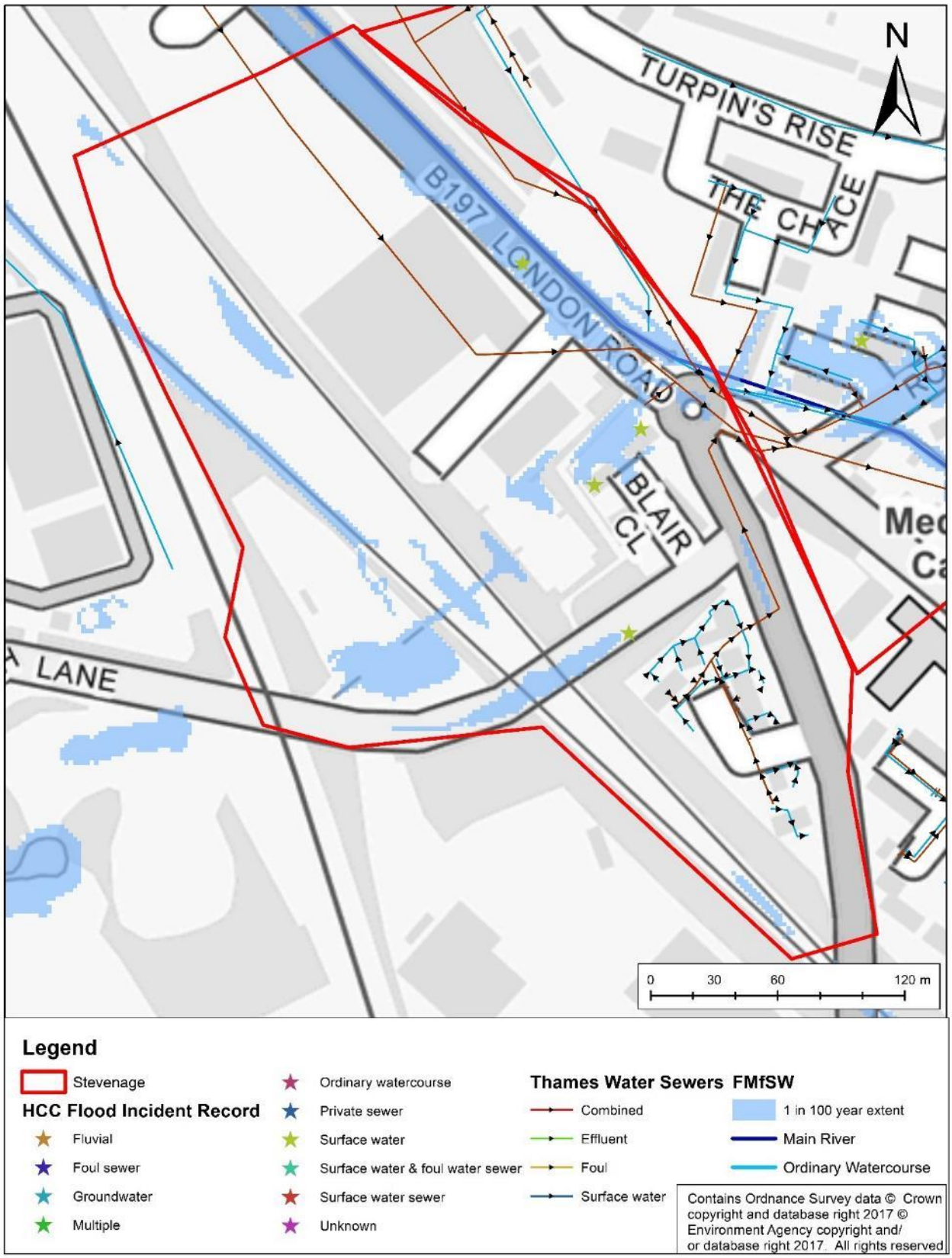
Surface Water Management Plan – Hotspot Selection

Overview

Hotspot Code	SBC4a	
Hotspot Name	Blair Close and London Road	
Postcode	SG2 8DE	
Hotspot Area	**OS Grid Reference**	TL 24515 22127
	X coordinate	524515
	Y coordinate	222127
Local Authority	Stevenage	

Hotspot summary

Risk of Flooding from Surface Water (RoFSW) mapping	The surface water flow path is predominately along the roads in the hotspot, as well as along the route of Stevenage Brook. There is a large mount of risk under the 1 in 1000 each year event, covering London Road Hertford Road and part of Old Knebworth Lane.
Sewerage	This hotspot area has surface water and foul sewer systems that drain in to the catchment area from the north. The foul network drains out of the area towards the south east along Hertford Road, whilst the surface water network drains into Stevenage Brook near to the Medical Centre.
Other Drainage	HCC records show that there are gullies draining the highways within the hotspot, such as on Roebuck Gate and Blair Close. The pipes leading from gullies are not recorded. It is assumed that they connect to the nearest surface water sewers.
Watercourses	Stevenage Brook runs under Ashbourne Road and along to Roebuck Gate, it then goes into an open watercourse alongside London Road.
Flood incidents recorded	Hertford Road has been recorded as part of the EA's Historic Flood Map (HFM) but no other road area within or near this hotspot has been identified as being within the HFM.
Topography and ground conditions	The topography of the land is lower in the area around Stevenage Brook in the east of the hotspot, and around Ashburnam Walk. This hotspot is in situated in a depression (with elevation of mostly between 78mAOD and 81mAOD) with the surrounding higher land area of approximately 90.3mAOD.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Legend
Stevenage
HCC Flood Incident Record
Fluvial
Foul sewer
Groundwater
Multiple
Ordinary watercourse
Private sewer
Surface water
Surface water & foul water sewer
Surface water sewer
Unknown
Thames Water Sewers
Combined
Effluent
Foul
Surface water
FMfSW
1 in 100 year extent
Main River
Ordinary Watercourse
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Flood Risk

History of flooding	The source of the flood events that were recorded in July 2015, were due to surface water flooding as a result of heavy rainfall. The pathway of the flooding has predominately been along the roads. The flood incidents have caused external flooding to properties, but it is unknown whether they were affected internally. The site visit on 28/11/2017 confirmed the location of the ditch on Blair Close, which starts near the railway line (adjacent to Odyssey Health Club). Representatives from SBC confirmed on the site visit that the July 2015 flooding caused 16 properties to flood on London Road, particular along the houses adjacent to the roundabout.		
Properties at risk from surface water (high, medium, low)(count)	**High (30yr)**	**Medium (100yr)**	**Low (1000yr)**
	0	0	0
Sewer flooding incidents	39 sewer flooding incidents have been recorded for the postcode sector SG2 8. The hotspot selection workshop with TW on 16/01/2018 revealed a recorded surface water and foul water issue in 1999, which led to a follow on study to resolve the problem.		
Local authority incidents	4		

Modelling and existing studies

Existing river models	This hotspot areas has been covered by the River Beane Flood Mapping Study (outputs were April 2017). It is part of an ISIS-TUFLOW which includes the confluence with the Lee and part of Stevenage Brook to the confluence with the Beane.
Existing sewer models	Rye Meads catchment. Detailed modelling of foul sewerage only.
Previous studies (including other SWMPs)	The Environment Agency produced a Flood Data Recording Report for the flood event on 17th July 2015. It was reported that in Roebuck, 32 garages were externally affected, whilst 22 properties were internally affected by the flood event, and in Burghley Cl
LiDAR coverage	Yes, the area is covered by LiDAR (EA 2m)

Other catchment needs and opportunities	
Water quality	Stevenage Brook has been considered to have a moderate water quality status under the WFD water quality classifications (2016).
Development	No development is proposed in this hotspot area.
Green spaces and designations	There are no areas with environmental designations in this hotspot.
Working with natural processes	The WWNP mapping presents opportunity in the east of the hotspot along London Road, for the implementation of some riparian woodland and runoff attenuation features for the 1% and 3% AEP.
Ongoing and proposed schemes	None have been identified.

Recommendations and options

Recommendations

Recommended way forward	This hotspot was originally bigger but after the site visit it was recommended that the hotspot was split into two smaller hotspots to allow for the model to focus in on the two separate surface water flow paths (now hotspot SBC4a and SBC4b). It is recommended that only small scale modelling is undertaken in this hotspot area. It is recommended that this hotspot should consider the surface water and fluvial flood risk with extensive survey work required. The surface water risk comes from the SE along to the NE. This hotspot will undergo review once the Stevenage Brook modelling study undertaken by the EA is complete.	
Agreed decision	Significant risk identified and further modelling required	✓
	Non-modelled hotspot (see next section for proposed action	
	No further actions	

Options (section to be completed for non-modelled hotspots only)

Proposed action	Lead organisation	Partners	Costs
Note that for surveying purposes before the model is built, JBA will need to contact Rail Electrification Alliance Supply RAMS to enter the compound where the ditch starts and where it becomes culverted.			

Photographs

Site Photo 1		Watercourse along London Road – has previously overflowed and flooded houses on London Road.
Site Photo 2		Image of Blair Close
Site Photo 3		Outfall pipe into the watercourse along London Road.

Site Photo 4		Image of Blair Close
		Section of open channel upstream of Blair Close, located within the land owned by Rail Electrification Alliance.

JBA Project Code	2017s6531
Project Name	Hertfordshire County Council SWMP Hotspots
Client	Hertfordshire County Council
Document	Hotspot Selection
Hotspot Code	SBC4b

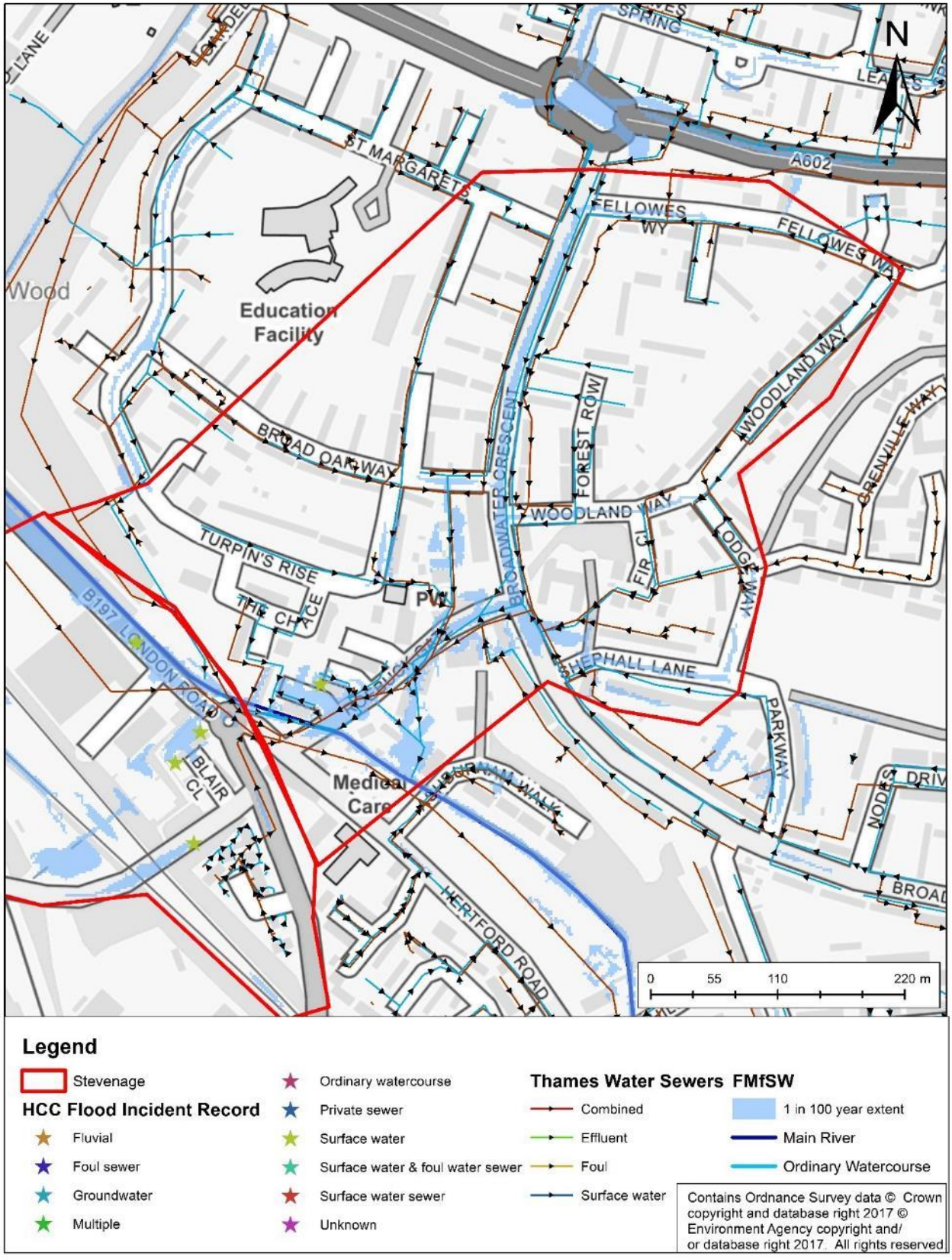
Surface Water Management Plan – Hotspot Selection

Overview

Hotspot Code	SBC4b	
Hotspot Name	Roebuck Gate	
Postcode	SG2 8DL	
Hotspot Area	**OS Grid Reference**	TL 24704 22177
	X coordinate	524704
	Y coordinate	222177
Local Authority	Stevenage	

Hotspot summary

Risk of Flooding from Surface Water (RoFSW) mapping	The surface water flow path is predominately along the roads in the hotspot. The site visit confirmed that the surface water mapping is accurate. The site visit to this hotspot no 28/11/2017 confirmed that the surface water flow path along Roebuck Gate is separate to the flow path along London Road.
Sewerage	This hotspot area has surface water and foul sewer systems that drain into the catchment from the north west. The surface water network drains in a south eastly direction towards the watercourse, Stevenage Brook.
Other Drainage	HCC records show that there are gullies draining the highways within the hotspot on Roebuck Gate. The pipes leading from gullies are not recorded. It is assumed that they connect to the nearest surface water sewers.
Watercourses	Stevenage Brook runs under Ashbourne Road and along to Roebuck Gate, it then goes into an open watercourse alongside London Road.
Flood incidents recorded	Hertford Road has been recorded as part of the EA's Historic Flood Map (HFM) but no other road area within or near this hotspot has been identified as being within the HFM.
Topography and ground conditions	The topography of the land is lower in the area around Stevenage Brook in the east of the hotspot, and around London Road. The elevation within the land boundary ranges between approximately 75.59mAOD.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BROAD OAK WAY
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Medical Care
BROADWATER CRESCENT
FOREST ROW
WOODLAND WAY
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GRENVILLE WAY
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PARKWAY
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Stevenage
HCC Flood Incident Record
Fluvial
Foul sewer
Groundwater
Multiple
Ordinary watercourse
Private sewer
Surface water
Surface water & foul water sewer
Surface water sewer
Unknown
Thames Water Sewers
Combined
Effluent
Foul
Surface water
FMfSW
1 in 100 year extent
Main River
Ordinary Watercourse
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Flood Risk

History of flooding	Comments from The Comet newspaper at the time of flooding on London Road reported water to be between 4 and 5 ft deep. The pathway of the flooding has predominately been along the roads. The flood incidents have caused external flooding to properties, but it is unknown whether they were affected internally. The site visit to this hotspot no 28/11/2017 confirmed that the surface water flow path along the road of Roebuck Gate leaves the houses vulnerable due to the negative threshold. A representative from the local authority confirmed that the previous flooding has also been linked to the section of culverted watercourse along London Road where there is open channel either side. It was also reported that residents have complained on several occasions that flooding has been linked to the blockage of drains along London Road and Roebuck Gate.		
Properties at risk from surface water (high, medium, low)(count)	**High (30yr)**	**Medium (100yr)**	**Low (1000yr)**
	2	11	48
Sewer flooding incidents	39 sewer flooding incidents have been recorded for the postcode sector SG2 8.		
Local authority incidents	1		

Modelling and existing studies

Existing river models	This hotspot areas has been covered by the River Beane Flood Mapping Study (outputs were April 2017). It is part of an ISIS-TUFLOW which includes the confluence with the Lee and part of Stevenage Brook to the confluence with the Beane.
Existing sewer models	Rye Meads catchment. Detailed modelling of foul sewerage only.
Previous studies (including other SWMPs)	No detailed studies have been carried out for this hotspot area.
LiDAR coverage	Yes, the area is covered by LiDAR (EA 2m)

Other catchment needs and opportunities	
Water quality	Stevenage Brook has been considered to have a moderate water quality status under the WFD water quality classifications (2016).
Development	No development is proposed in this hotspot area.
Green spaces and designations	There are no areas with environmental designations in this hotspot.
Working with natural processes	The WWNP mapping presents a small amount of opportunity for floodplain reconnection around the area of the Stevenage Brook that passes through the hotspot (around Roebuck Gate).
Ongoing and proposed schemes	None have been identified.

Recommendations and options

Recommendations

Recommended way forward	This hotspot was originally bigger but after the site visit it was recommended that the hotspot was split into two smaller hotspots to allow for the model to focus in on the two separate surface water flow paths (now hotspot SBC4a and SBC4b). IT is recommended that only small scale modelling is undertaken in this hotspot area.	
Agreed decision	Significant risk identified and further modelling required	✓
	Non-modelled hotspot (see next section for proposed action	
	No further actions	

Options (section to be completed for non-modelled hotspots only)

Proposed action	Lead organisation	Partners	Costs

Photographs

Site Photo 1		Negative thresholds along London Road of houses that have previously reported to flood.
Site Photo 2		
Site Photo 3		
Site Photo 4		

JBA Project Code	2017s6531
Project Name	Hertfordshire County Council SWMP Hotspots
Client	Hertfordshire County Council
Document	Hotspot Selection
Hotspot Code	SBC5

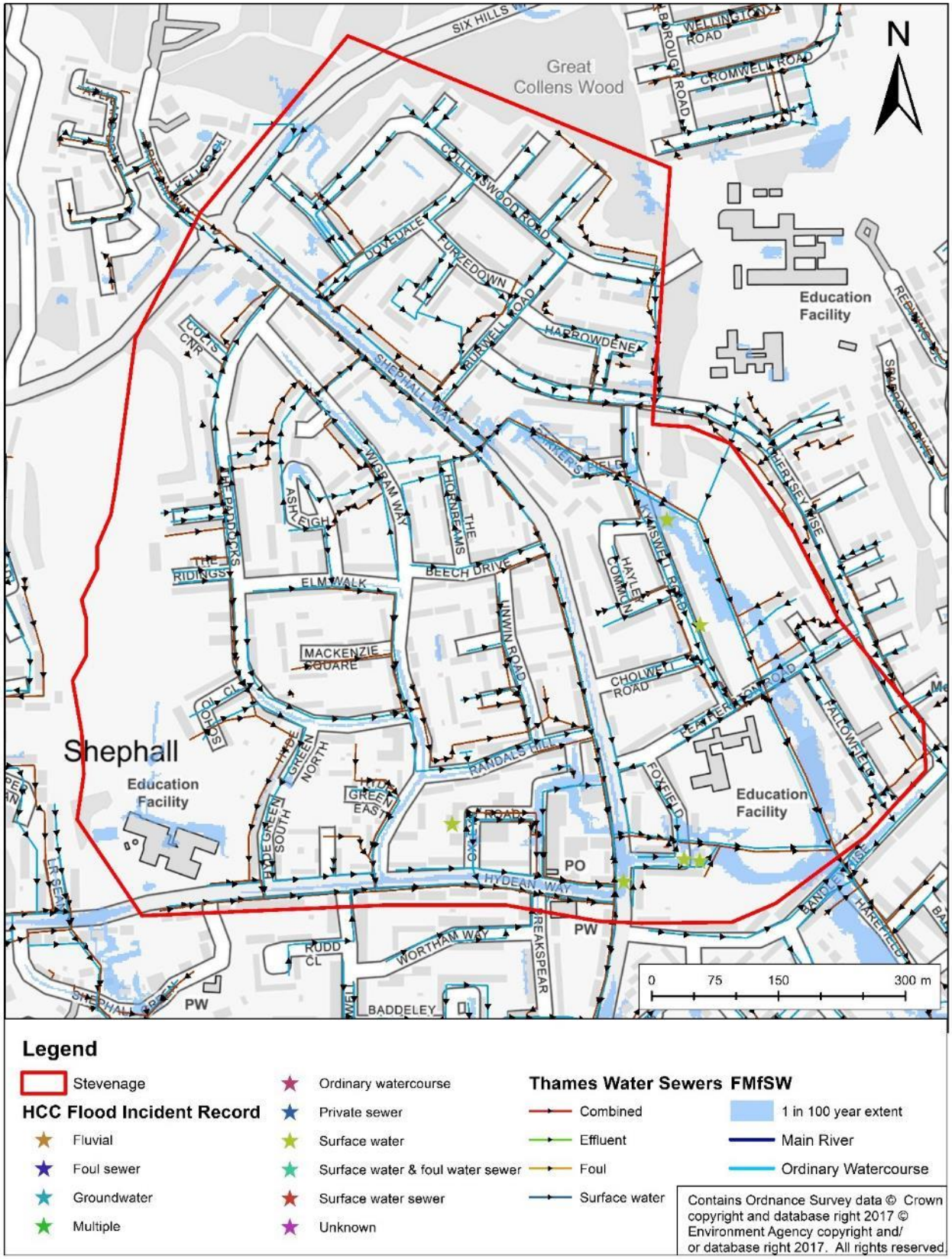
Surface Water Management Plan – Hotspot Selection

Overview

Hotspot Code	SBC5	
Hotspot Name	Oxleys Road, Hydean Way, Foxfield and Kymswell Road	
Postcode	SG2 9YE	
Hotspot Area	**OS Grid Reference**	TL 25977 23153
	X coordinate	525977
	Y coordinate	223153
Local Authority	Stevenage	

Hotspot summary

Risk of Flooding from Surface Water (RoFSW) mapping	There are two main surface water flow paths. One is from the north of the catchment which slopes southwards, primarily along the roads (Kymswell Road) and the other is from the south west, which again, flows along the road (Hydean Way). It would be likely to pond in the green area behind the school (by Bandley Rise) before flowing further south.
Sewerage	This hotspot has surface water and foul sewer networks that drain into the catchment from the north west and drain out of the catchment at the south.
Other Drainage	HCC records show that there are gullies draining the highways within the hotspot, such as around Featherston Road and Hydean Way. The pipes leading from gullies are not recorded. It is assumed that they connect to the nearest surface water sewers.
Watercourses	There are no main rivers or ordinary watercourses that run through this hotspot area.
Flood incidents recorded	The majority of flood incidents have been recorded in the south of the hotspot around Foxfield, and there are a couple dotted around Oxleys Road and Kymswell Road. The flood events have been reported to be due to surface water flooding.
Topography and ground conditions	The hotspot is within a residential area, which is centred around an education facility on Featherston Road. The education facility has the lowest elevation, of approximately81.41mAOD, whilst the higher elevated area of the hotspot, around the western, northern and eastern boundary is approximately 95.48mAOD. Thus, the land slopes southwards.


N
Great Collens Wood
Education Facility
Shephall
Education Facility
Education Facility
SIX HILLS
WELLINGTON ROAD
BOROUGH ROAD
CROMWELL ROAD
COLLENSWOOD ROAD
DOVEDALE
FURZEDOWN
FURZEWELL ROAD
HARROWDENE
SHEPHALL WAY
WIGRAM WAY
ASHLEIGH
THE PADDOCKS
THE RIDINGS
ELM WALK
THE HOLNBEAMS
BEECH DRIVE
UNWIN ROAD
MACKENZIE SQUARE
HAYLEY COMMON
CHOLWELL ROAD
FALLOWFIELD
FOXFIELD
RANDALS RIDE
HYDE GREEN NORTH
HYDE GREEN EAST
HYDE GREEN SOUTH
HYDEAN WAY
WORTHAM WAY
BREAKSPEAR
RUDD CL
BADDELEY
PW
PO
0 75 150 300 m
Legend
Stevenage
HCC Flood Incident Record
Fluvial
Foul sewer
Groundwater
Multiple
Ordinary watercourse
Private sewer
Surface water
Surface water & foul water sewer
Surface water sewer
Unknown
Thames Water Sewers
Combined
Effluent
Foul
Surface water
FMfSW
1 in 100 year extent
Main River
Ordinary Watercourse
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Flood Risk

History of flooding	The 6 recorded flood incidents that have been recorded relate to the flood event in July 2015. The flood incidents were due to surface water flooding as a result of heavy rainfall and caused both internal and external flooding to property. The incident also recorded manholes surcharge on Shephall Way, which led to water flowing down into Foxfield. Representatives from HCC confirmed that there have been previous problems with the gullies on the road along Foxfields and that number 38 is the property that is most affected by flooding in the area. The site visit on 28/11/2017 also confirmed that there is a negative threshold from the pathway to the houses . It was also observed that water backs onto the school playing field. Along Kymswell Road it was observed that here is typically approximately 4 steps down to the houses from the road and that the flooding that has previously been recorded is likely to be under reported. It was observed that the kerbs have been dropped on the side of the road, but there is not much land/green space to play with. Bandley Hill Play Centre is another area in this hotspot that has experienced flooding which is adjacent to the playing field.		
Properties at risk from surface water (high, medium, low)(count)	**High (30yr)**	**Medium (100yr)**	**Low (1000yr)**
	4	0	87
Sewer flooding incidents	89 sewer flooding incidents have been recorded for this postcode sector SG2 9.		
Local authority incidents	6		

Modelling and existing studies

Existing river models	No model extents covering this area have been provided by the EA.
Existing sewer models	Rye Meads catchment. Detailed modelling of foul sewerage only.
Previous studies (including other SWMPs)	No detailed flood risk studies have been carried out for this hotspot area. However discussions from the site visit revealed that a small section of Shephall Way is part of a highway scheme.
LiDAR coverage	Yes, the area is covered by LiDAR (EA 2m)

Other catchment needs and opportunities	
Water quality	No watercourses are present in the area.
Development	There are two proposed areas of development in this hotspot, in the west by Hydean Way and in the north by Parkers Field.
Green spaces and designations	There are no areas with environmental designations in this hotspot. However there are two areas of green space in the hotspot, a playground in the centre of the hotspot and an area of green space at St Hilda's Roman Catholic Church.
Working with natural processes	No potential for WWNP has been identified in this hotspot area under the mapping, due to the urbanised nature of the hotspot.
Ongoing and proposed schemes	None have been identified.

Recommendations and options

Recommendations

Recommended way forward	Flood incidents have been identified in this hotspot as well as significant modelled risk. It is recommended that the hotspot is modelled to improve understanding of risk and to test potential options to manage risk.	
Agreed decision	Significant risk identified and further modelling required	✓
	Non-modelled hotspot (see next section for proposed action	
	No further actions	

Options (section to be completed for non-modelled hotspots only)

Proposed action	Lead organisation	Partners	Costs
Possibility of implementing traffic calming measures			

Photographs

Site Photo 1		Image of Hayley Common – new parking area has recently been put in place but it slopes downwards slightly. Negative threshold towards houses with sloping field behind houses making a valley like catchment for the row of houses.
Site Photo 2		Image showing negative threshold to houses, where water would pond during flood.

Site Photo 3		Playing field behind houses on Hayley Common that slopes
Site Photo 4		Bandley Hill Play Centre - Pre school that is situated at the end of the playing field shown above. Area is at risk to flooding due to nature of topography and low thresholds.

JBA Project Code	2017s6531
Project Name	Hertfordshire County Council SWMP Hotspots
Client	Hertfordshire County Council
Document	Hotspot Selection
Hotspot Code	SBC6

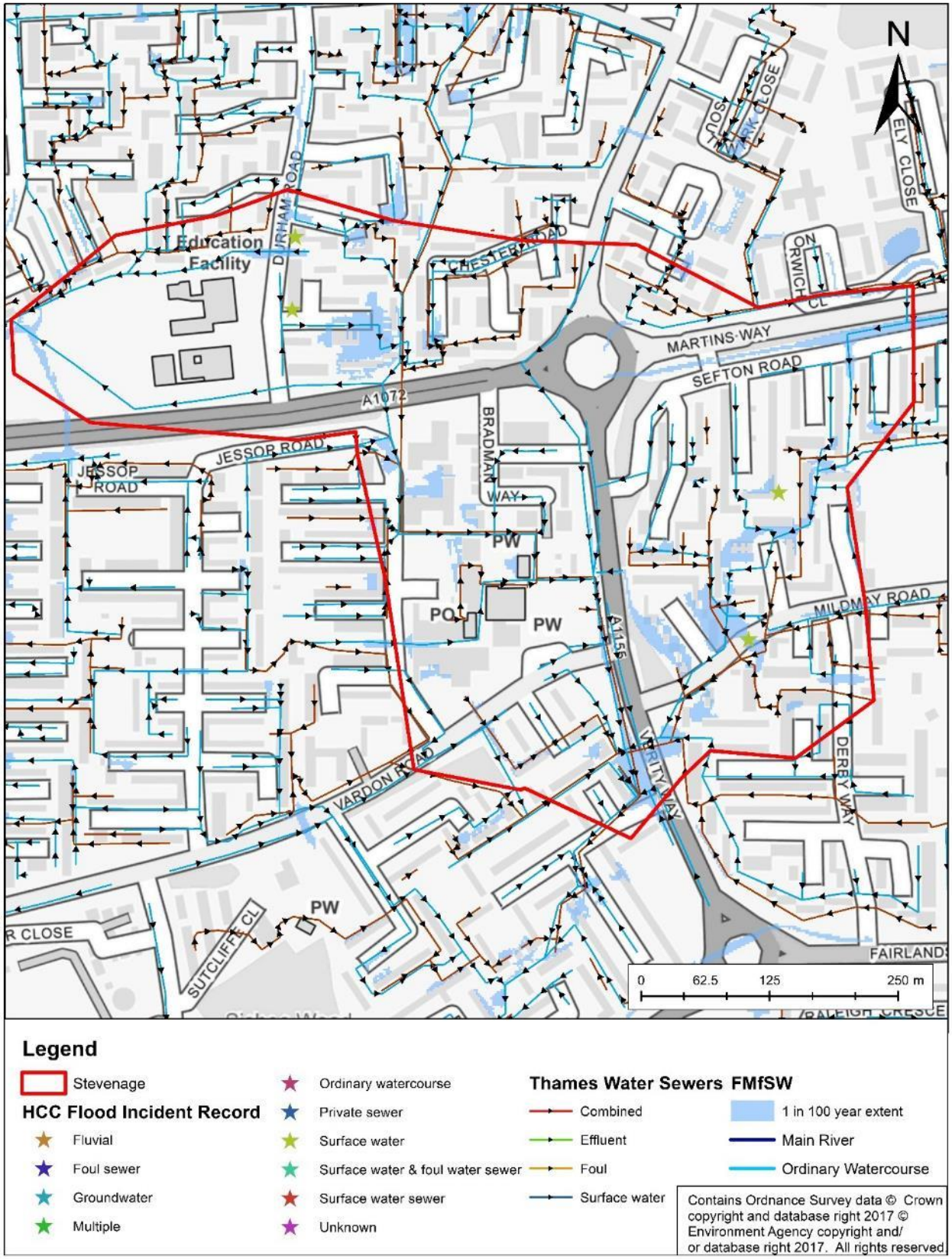
Surface Water Management Plan – Hotspot Selection

Overview

Hotspot Code	SBC6	
Hotspot Name	Mildmay Road and Durham Road	
Postcode	SG1 5TP	
Hotspot Area	**OS Grid Reference**	TL 25585 25999
	X coordinate	525585
	Y coordinate	225999
Local Authority	Stevenage	

Hotspot summary

Risk of Flooding from Surface Water (RoFSW) mapping	The RoFSW follows the natural topography of the land; thus the route of the flow is not just along the roads but goes in a diagonal route across the residential areas from north east to south west. Most surface water flood risk exists along Mildway Road.
Sewerage	Surface water and foul networks drain out of this small hotspot boundary from the north to the south.
Other Drainage	HCC records show that there are gullies draining the highways within the hotspot, such as around Mildmay Road and Jessop Road. The pipes leading from gullies are not recorded. It is assumed that they connect to the nearest surface water sewers.
Watercourses	There are no main rivers or ordinary watercourses that run through this hotspot area.
Flood incidents recorded	Surface water flood incidents have been recorded in this hotspot on 17/07/2015. The areas in this hotspot that have experienced along Mildmay road, Durham Road and Sefton Road. This hotspot area does not fall into the EA's historic flood map.
Topography and ground conditions	The topography of the land in this hotspot area ranges between approximately 122.65mAOD and 140mAOD. The steeper elevation exists in the north of the hotspot boundary around the roundabout along the A1702 and Sefton Road. The area is residential with an education facility in the north west. The hotspot slopes from the north to the south east.


N
Education Facility
DURHAM ROAD
CHESTER ROAD
ELY CLOSE
MARTINS WAY
SEFTON ROAD
A1072
JESSOP ROAD
BRADMAN WAY
PW
PC
A1155
MILDMAY ROAD
VARDON ROAD
VERITY WAY
DERBY WAY
SUTCLIFFE CL
FAIRLANDS
0 62.5 125 250 m
Legend
Stevenage
HCC Flood Incident Record
Fluvial
Foul sewer
Groundwater
Multiple
Ordinary watercourse
Private sewer
Surface water
Surface water & foul water sewer
Surface water sewer
Unknown
Thames Water Sewers FMfSW
Combined
Effluent
Foul
Surface water
1 in 100 year extent
Main River
Ordinary Watercourse
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Flood Risk

History of flooding	The flood history in this hotspot has been a result of surface water flooding as a result of heavy rainfall. All incidents were reported to cause external flooding to properties, however it is unknown whether internal property damage occurred. Observations from the site visit on 28/11/2017 confirmed that there is flood risk in this hotspot area and that the underpass along Durham Road floods frequently and doesn't drain properly. A resident reported to us during the site visit that the July 2015 flooding caused the underpass on Mildmay Road to flood severely. There are no drains on the underpass which increases the risk to the area from surface water flooding. The hotspot selection workshop on 16/01/2018 revealed that the flood risk in the area is largely a maintenance issue and is localised in the hotspot.		
Properties at risk from surface water (high, medium, low)(count)	**High (30yr)**	**Medium (100yr)**	**Low (1000yr)**
	3	9	51
Sewer flooding incidents	7 sewer flooding incidents have occurred in the postcode sector SG1 5.		
Local authority incidents	4		

Modelling and existing studies

Existing river models	No model extents covering this area have been provided by the EA.
Existing sewer models	Rye Meads catchment. Detailed modelling of foul sewerage only.
Previous studies (including other SWMPs)	No S19 Investigations have been requested for this hotspot area and no previous studies have been carried out.
LiDAR coverage	Yes, the area is covered by LiDAR (EA 2m)

Other catchment needs and opportunities	
Water quality	No watercourses are present in the area.
Development	There is one area of proposed development in this hotspot boundary, in the east along Vardon Road.
Green spaces and designations	There are no areas with environmental designations in this hotspot. There is one small area of green space that has been identified in the north western corner of the hotspot boundary.
Working with natural processes	No potential for WWNP has been identified in this hotspot area under the mapping, due to the urbanised nature of the hotspot.
Ongoing and proposed schemes	None have been identified.

Recommendations and options

Recommendations

Recommended way forward	It is recommended that this site is carried forward as a non-modelled hotspot as it has been identified as one that is of lower priority. The committed development in the hostpot poses potential for SuDS opportunities.	
Agreed decision	Significant risk identified and further modelling required	
	Non-modelled hotspot (see next section for proposed action	✓
	No further actions	

Options (section to be completed for non-modelled hotspots only)

Proposed action	Lead organisation	Partners	Costs
PLR work - limited action can be taken. However it is suggested that an investigation of the drainage under the underpass is carried out. There is future potential to use the green grass verge by the underpass for the implementation of SuDS techniques.			
Possibly a temporary pumping plan			

Photographs

Site Photo 1		Underpass on Mildmay Road during dry conditions – area has experienced high flood waters as per the image below
Site Photo 2		Residents photo of flooding of underpass on Mildmay Road during the flood event of June 2016

Site Photo 3		Pathway leading to underpass on Mildmay Road
Site Photo 4		Slope leading down from Mildmay Road to underpass

JBA Project Code	2017s6531
Project Name	Hertfordshire County Council SWMP Hotspots
Client	Hertfordshire County Council
Document	Hotspot Selection
Hotspot Code	SBC7

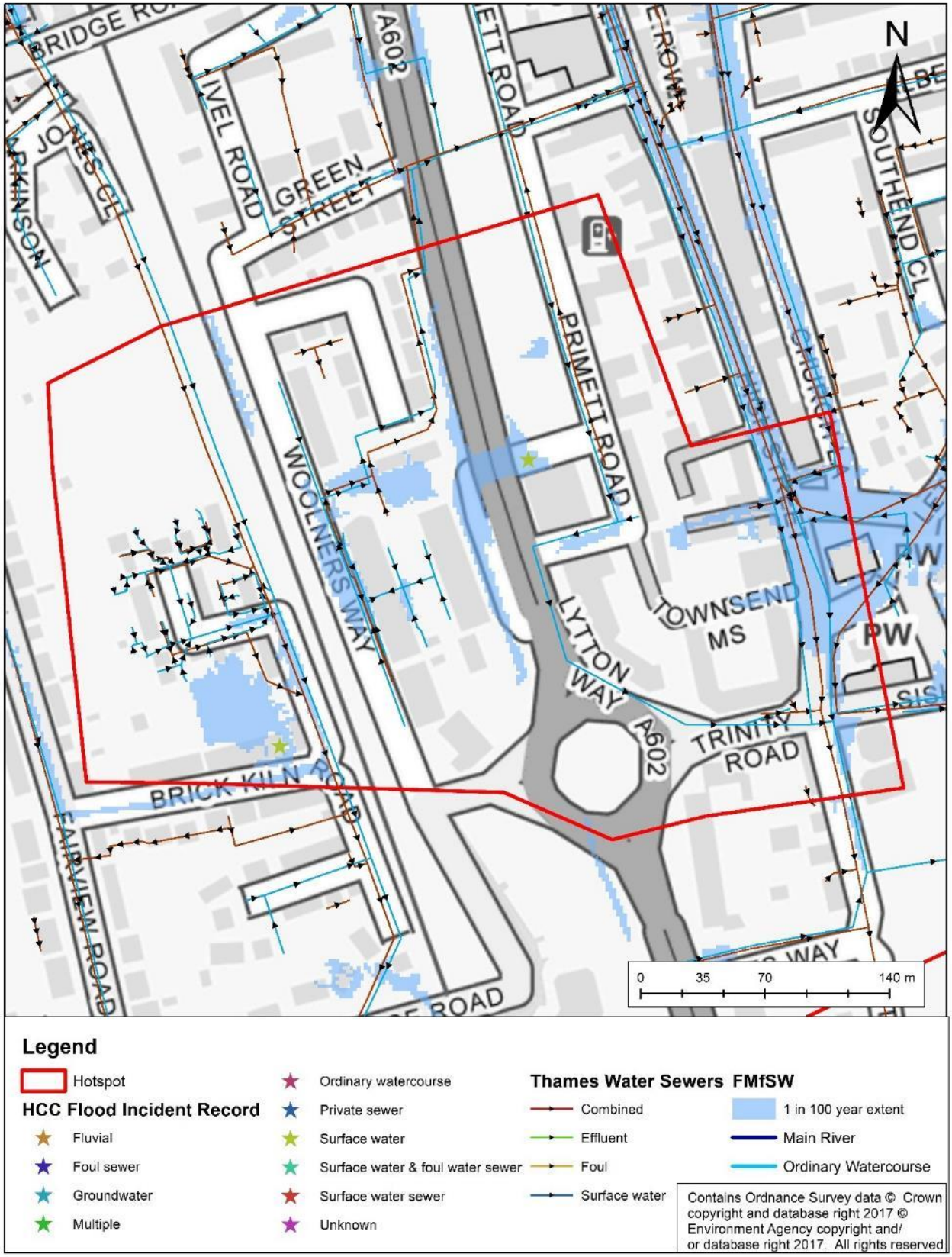
Surface Water Management Plan – Hotspot Selection

Overview

Hotspot Code	SBC7	
Hotspot Name	Primett Road Brick and Kiln Road	
Postcode	SG1 3DF	
Hotspot Area	**OS Grid Reference**	TL 23328 24865
	X coordinate	523328
	Y coordinate	224865
Local Authority	Stevenage	

Hotspot summary

Risk of Flooding from Surface Water (RoFSW) mapping	The RoFSW in this hotspot area is predominately along the roads. There is a large area of potential ponding in the south east, along the area of the High Street, Townsend MS and Sish Lane.
Sewerage	Small sewer network hotspot area, consisting of surface water and foul networks that drain to the south. The hotspot is part of two separate networks.
Other Drainage	HCC records show that there are gullies draining the highways within the hotspot such as along Woolners Way and Lytton Way. The pipes leading from gullies are not recorded. It is assumed that they connect to the nearest surface water sewers.
Watercourses	There are no main rivers or ordinary watercourses that run through this hotspot area.
Flood incidents recorded	The flood incidents from surface water have occurred on Brick Kiln Road and Primett Road underpass.
Topography and ground conditions	The topography of the hotspot area is relatively low for the borough, with a range in topography of between approximately 88.77mAOD along Lytton Way, to 90mAOD along the High Street and 96.34mAOD around the area of Woolners Way.


N
A602
PRIMETT ROAD
LYTTON WAY
TOWNSEND MS
TRINITY ROAD
BRICK KILN ROAD
WOOLNERS WAY
GREEN STREET
SOUTHEND CL
0
35
70
140 m
Legend
Hotspot
HCC Flood Incident Record
Fluvial
Foul sewer
Groundwater
Multiple
Ordinary watercourse
Private sewer
Surface water
Surface water & foul water sewer
Surface water sewer
Unknown
Thames Water Sewers
Combined
Effluent
Foul
Surface water
FMfSW
1 in 100 year extent
Main River
Ordinary Watercourse
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Flood Risk

History of flooding	The 2 flood incidents that have been recorded in this hotspot have been due to surface water flooding. External flooding to properties was the receptor of these events, but it is not known if they events caused any internal flooding to properties. The site visit on 28/11/2017 confirmed the flooding history that has been experienced on the underpass, as the land slopes down from the main road. on Brick Kiln Road it was observed that there are low thresholds into the house entrances from the pathway. It was observed that there is a culverted watercourse below the high street, but discussions with HCC and SBC confirmed that there are no known issues there currently.		
Properties at risk from surface water (high, medium, low)(count)	**High (30yr)**	**Medium (100yr)**	**Low (1000yr)**
	0	2	8
Sewer flooding incidents	No sewer flooding events have been recorded in the postcode sector which covers this hotspot.		
Local authority incidents	2		

Modelling and existing studies

Existing river models	No model extents covering this area have been provided by the EA.
Existing sewer models	Rye Meads catchment. Detailed modelling of foul sewerage only.
Previous studies (including other SWMPs)	No S19 Investigations have been requested for this hotspot area and no previous studies have been carried out.
LiDAR coverage	Yes, the area is covered by LiDAR (EA 2m)

Other catchment needs and opportunities	
Water quality	No watercourses are present in the area.
Development	There are 3 areas of proposed development in this hotspot boundary; on Trinity Road, Primett Road and Lytton Way.
Green spaces and designations	There are no areas with environmental designations in this hotspot. Beyond the southern boundary of the hotspot there are a couple of green areas, around watson Road/Kilby Road and King George V Park. Holy Trinity Church is a named green area in the hotspot and there is a patch of allotments in the north west of the boundary.
Working with natural processes	No potential for WWNP has been identified in this hotspot area under the mapping, due to the urbanised nature of the hotspot.
Ongoing and proposed schemes	None have been identified.

Recommendations and options

Recommendations

Recommended way forward	There is not enough flood history to warrant this hotspot being taken forward to the next phase.	
Agreed decision	Significant risk identified and further modelling required	
	Non-modelled hotspot (see next section for proposed action	
	No further actions	✓

Options (section to be completed for non-modelled hotspots only)

Proposed action	Lead organisation	Partners	Costs

Photographs

Site Photo 1		Image of Brick Kiln Road showing the low thresholds of the driveways
Site Photo 2		Height of kerbs on Brick Kiln Road

Site Photo 3		Primett Road topography. Flooding has occurred by underpass at the bottom of the road
Site Photo 4		

JBA Project Code	2017s6531
Project Name	Hertfordshire County Council SWMP Hotspots
Client	Hertfordshire County Council
Document	Hotspot Selection
Hotspot Code	SBC8

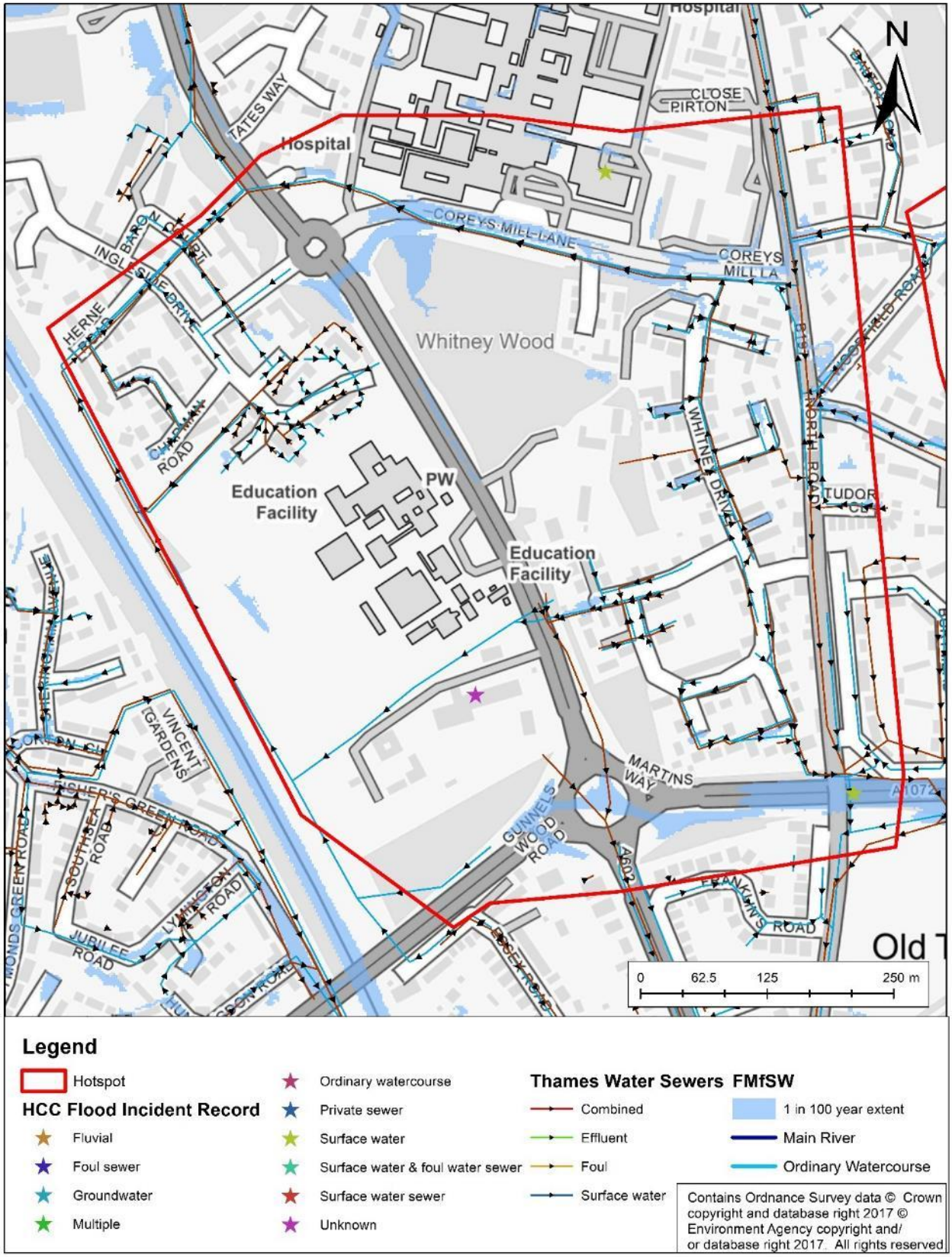
Surface Water Management Plan – Hotspot Selection

Overview

Hotspot Code	SBC8	
Hotspot Name	Corey's Mill Lane (Lister Hospital , Martins Way and Hitchin Road (Fire and Rescue service)	
Postcode	SG1 4TN	
Hotspot Area	**OS Grid Reference**	TL 23081 26461
	X coordinate	523081
	Y coordinate	226461
Local Authority	Stevenage	

Hotspot summary

Risk of Flooding from Surface Water (RoFSW) mapping	The RoFSW in this hotspot area follows the roads. The main areas of risk are along Corey Mill Lane, Martin's Way and along Whitney Drive. The flow paths also follow the natural topography of the land, flowing from the north west and from the south east. The site visit confirmed that the surface water flow path around the railway is possibly overestimated as the mapping just picks up a cutting from the dip in the topography.
Sewerage	This hotspot has surface water and foul sewer networks draining out of the catchment. The surface water network drains to the west of the boundary, whilst the foul network drains to the south.
Other Drainage	HCC records show that there are gullies draining the highways within the hotspot such as along Martins Way and Corey's Mill Lane. The pipes leading from gullies are not recorded. It is assumed that they connect to the nearest surface water sewers.
Watercourses	There are no rivers or ordinary watercourses that run through this hotspot. However there are two small lakes that exist within the boundary of Whitney Wood.
Flood incidents recorded	The flood incidents that have been recorded in this hotspot area have been from surface water, and one has been from an unknown source. They have occurred along Martins Way, at Lister Hospital and by Hertfordshire Training and Development Centre (fire station)
Topography and ground conditions	The topography of the land ranges between 103mAOD in the residential area around Whitney Drive to 99.4 around the recorded flood incident and 92.1mAOD around the hospital at the northern boundary. This hotspot is located in a residential area around Hitchin Road. There is an education facility located in the west of the hotspot area where there is also a considerably large area of green space. There are 3 areas of woodland around the hotspot.


N
Hospital
CLOSE
PIRTON
TATES WAY
COREYS MILL LANE
COREYS MILL LA
Whitney Wood
Education Facility
PW
Education Facility
WHITNEY DRIVE
NORTH ROAD
TUDOR CL
CHAPMAN ROAD
VINCENT GARDENS
FISHER'S GREEN ROAD
SOUTHSEA ROAD
LYMINGTON ROAD
JUBILEE ROAD
MARTINS WAY
GUNNELS WOOD ROAD
A602
FRANKLINS ROAD
A1072
0
62.5
125
250 m
Legend
Hotspot
HCC Flood Incident Record
Fluvial
Foul sewer
Groundwater
Multiple
Ordinary watercourse
Private sewer
Surface water
Surface water & foul water sewer
Surface water sewer
Unknown
Thames Water Sewers
Combined
Effluent
Foul
Surface water
FMfSW
1 in 100 year extent
Main River
Ordinary Watercourse
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Flood Risk

History of flooding	The surface water flood events in this hotspot area have caused external flooding to properties, but it is unknown whether they were affected internally as well. The hotspot area does not fall within the EA historic flood map coverage. Discussions with a representative from SBC from the site visit on 28/11/2017 confirmed that the summer 2015 flooding caused flooding to the car park and reception area of the hospital. A report in the Comet online newspaper (http://www.thecomet.net/news/flooding-still-affecting-services-and-transport-around-stevenage-and-letchworth-1-4157124) showed the 2015 flood event to affect the basement of the hospital, which affected the NHS service temporarily. SBC have reported that Sainsburys subway along Hitchin Road has previously experienced flood waters of up to 6-8ft high.		
Properties at risk from surface water (high, medium, low)(count)	**High (30yr)**	**Medium (100yr)**	**Low (1000yr)**
	0	0	4
Sewer flooding incidents	1 sewer flooding incident has been recorded in this postcode sector of SG1 4.		
Local authority incidents	3		

Modelling and existing studies

Existing river models	No model extents covering this area have been provided by the EA.
Existing sewer models	Rye Meads catchment. Detailed modelling of foul sewerage only.
Previous studies (including other SWMPs)	This hotspot boundary is just below a previous hotspot area that was undertaken as part of the SWMP for North Herts and Dacorum Borough Council. The hotspot selection workshop on 16/01/2018 revealed there were two foul water blockages in 2015 TW.
LiDAR coverage	Yes, the area is covered by LiDAR (EA 2m)

Other catchment needs and opportunities	
Water quality	No watercourses are present in the area.
Development	There is one development area that has been identified in the hotspot, around Hitchin Road.
Green spaces and designations	Witney Wood is located adjacent to Coreys Mill Lane. There are no other green spaces or designations in the area.
Working with natural processes	A small amount of wider catchment woodland has been identified as an opportunity under the WWNP mapping in the south east of this hotspot area.
Ongoing and proposed schemes	None have been identified.

Recommendations and options

Recommendations

Recommended way forward	This hotspot has a small number of flood incidents that are scattered across the area. We recommend not taking this hotspot to detailed modelling, however a site investigation of the reported flooding at Lister Hospital would be advisable given the sensitivity of this receptor.	
Agreed decision	Significant risk identified and further modelling required	
	Non-modelled hotspot (see next section for proposed action	
	No further actions	✓

Options (section to be completed for non-modelled hotspots only)

Proposed action	Lead organisation	Partners	Costs
Check hospital records of flood incidents that have occurred and carry out a follow up visit to look at the current resilience measures in place against flood risk.			
Possibility for the future for mitigating surface water flood risk by using the flood storage reservoirs. This has potential to tie in with plans of the water course and larger surface water system in Stevenage.			

Photographs

Site Photo 1	No images were taken for this hotspot area
Site Photo 2	
Site Photo 3	
Site Photo 4	