Part I
Release to Press

Meeting:	**ENVIRONMENT AND ECONOMY SELECT COMMITTEE**	**Agenda Item:**
Portfolio Area:	Environment and Regeneration	
Date:	**16th January 2018**	

FLOOD RISK MANAGEMENT

Authors – Debbie Horner Ext. 2865
Lead Officer – Zayd Al-Jawad Ext. 2257
Contact Officer – Debbie Horner Ext. 2865

1. PURPOSE

1.1 To inform Members of the status of flood risk management in Stevenage.

1.2 To inform Members of the need for any further flood risk management work.

2. BACKGROUND

2.1 The Flood and Water Management Act 2010 (FWMA) enabled the provision of more effective flood management following the flooding of July 2007 and the subsequent Pitt Review.

2.2 Stevenage Borough Council (SBC) is designated as a Risk Management Authority (RMA) and its primary duty is to cooperate with the Lead Local Flood Authority (LLFA), Hertfordshire County Council, and other RMAs to manage flooding from local sources across the Borough.

2.3 Under the requirements of the FWMA, SBC commissioned a Level 1 Strategic Flood Risk Assessment (SFRA) in 2009. This was then updated in 2013 and again in 2016 when an additional Level 2 SFRA was also produced to, among other things, fully inform the Stevenage Borough Local Plan (SBLP).

2.4 In partnership with the LLFA, the FWMA requires SBC, as the RMA, to implement a Surface Water Management Plan (SWMP).

2.5 A SWMP is a plan which outlines the preferred surface water management strategy of a designated area and should establish a long-term action plan to manage surface water (including flooding from sewers, drains, groundwater and runoff from land, smaller water courses and ditches) and should influence capital investment, drainage maintenance, public engagement and understanding, land use planning, emergency planning and future developments.

2.6 Stevenage is well placed in the sense that through its designation as a New Town and the way in which the town has been planned, it has allowed for the engineering of Flood Storage Reservoirs (FSRs) in the most appropriate places across the Borough (11 in total, including Fairlands Valley). As Stevenage continues to grows, both inside the Borough boundary and outside, we should continue to ensure that the risk of surface water flooding is addressed through development and by working in partnership with our neighbours.

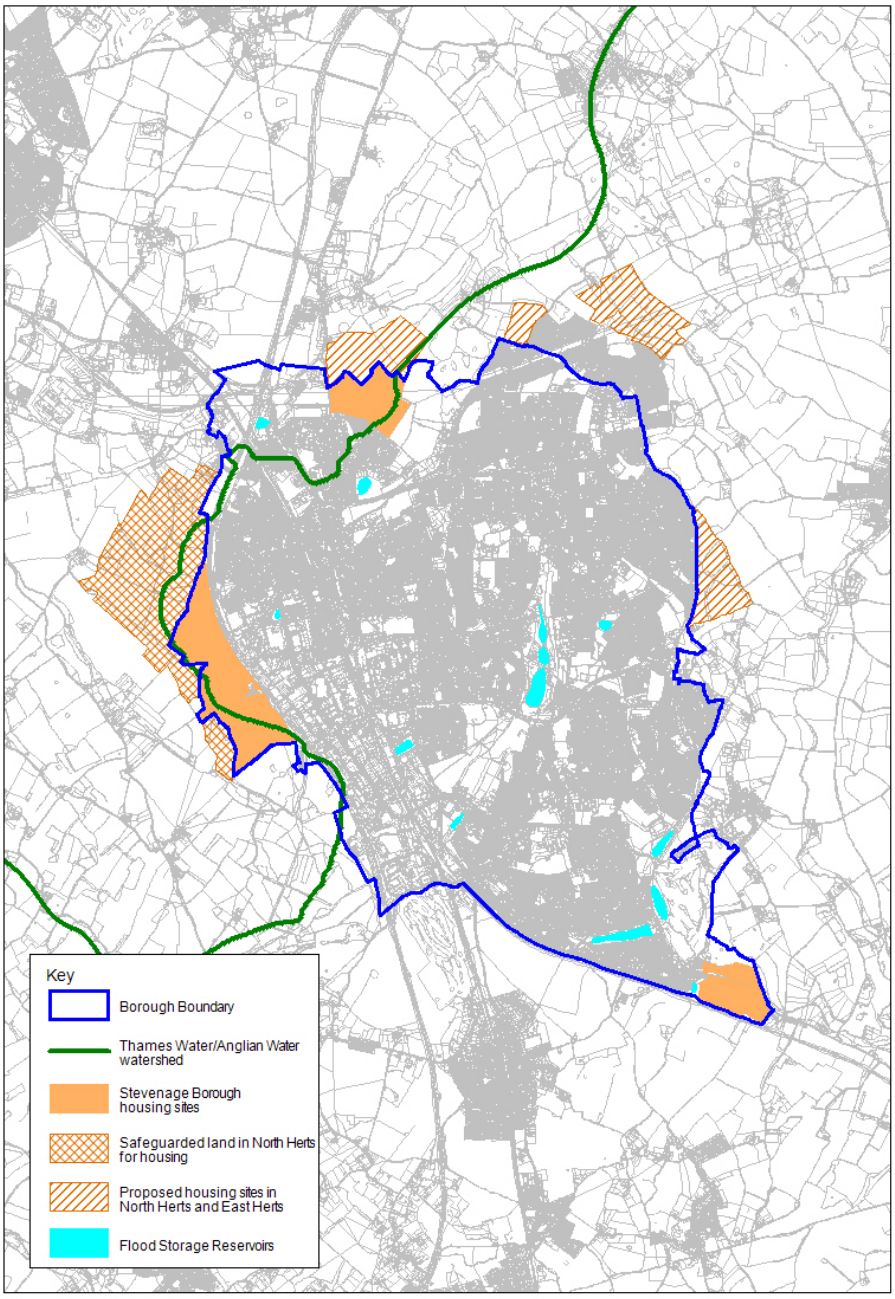

Fig 1 – Map of Stevenage Borough showing the Thames Water/Anglian Water watershed, FSRs, Safeguarded land in North Herts and housing allocations in Stevenage, North Herts and East Herts

2.7 Land at North Stevenage will continue to dispose of foul and surface water, via the mains, across the watershed into the Thames Water catchment. The assumption is also that discharge from the development at NS1 in North Herts will be treated in the same way. Developments at GA1 and GA2 are both within the Thames Water catchment and so will also discharge into the Thames Water catchment.

2.8 The volume of water (both foul and surface water) in the Thames Water mains system will inevitably increase without intervention, placing greater demand on an already overloaded system that discharges to Rye Meads Sewage Treatment Works (STW) via the trunk sewer through south Stevenage.

3. FLOOD RISK MANAGEMENT FOR STEVENAGE

3.1 Thames River Basin Management Plan, updated 2015

3.1.1 Stevenage Borough features in the Upper Lee Catchment of the Environment Agency's Thames River Basin Management Plan[1](RBMP). The RBMP is a requirement of the Water Framework Directive (WFD) and its purpose is to provide a framework for protecting and enhancing the benefits provided by the water environment.

3.1.2 The LLFA contributes towards the RBMP and its aims include:

- Green Space SuDS to mitigate the impact of polluted urban run-off and improve water quality in tributaries of the River Lea;
- Removal of weirs;
- The support and development of a network of Living River Champions to harness local effort and engage more people with the health and history of rivers;
- The production, or updating, of flood modelling for priority water bodies;
- The building of a network of SuDS to contribute to status improvement of water bodies; and
- The establishment of a chalk stream restoration and stewardship programme to achieve additional improvements to chalk streams.

3.1.3 The aims of the Thames RBMP feed down into the SWMP produced by the LLFA in partnership with the RMAs.

[1] A small portion of the Borough, the North West corner around Junction 8 of the A1(M), does fall within the Great Ouse District Flood Risk management Plan.

3.2 Surface Water Management Plan (SWMP)

3.2.1 A SWMP is a plan which outlines the preferred surface water[2] management strategy in a given location.

3.2.2 In November 2017, HCC, as LLFA, and their consultants, JBA Consulting, began to meet with the RMA's to assess and identify hotspot locations in Hertfordshire based on historic flooding, modelled flood risk and other potential drivers.

3.2.3 Hotspots identified in Stevenage include:

- Areas around Matthews Cloe, Rectory Lane and Chancellors Road
- Areas around Bragbury Lane
- Areas around Blair Close and London Road
- Areas around Oxley Road, Hydean Way, Foxfield and Kymswell Road
- Areas around Mildmay Road and Durham Road

3.2.4 JBA are working to collate all the information gathered from the site visits to draw recommendations of the way forward for each hotspot. This will involve deciding which hotspots will be modelled as part of either Phase 2 or Phase 3 of the project, along with non-modelled hotspots suited to survey work or local scale assessments, and whether there are hotspots identified that do not require any further action at this time (i.e are low priority or are subject to other ongoing studies). This process will involve splitting some of the hotspots and extending/editing the boundary of others.

3.2.5 JBA are working to quantify the hotspots in a formalised way using a scoring system. JBA will also score the hotspots against the updated Flood Map for Surface Water (uFMfSW) extent layers and the flood history identified, taking both a proactive and reactive approach to prioritising sites. JBA will also score against opportunities within the hotspot area (e.g. green space available for SuDS or whether proposed development is within a brownfield site that will create opportunity). Upon completion of this, updated summary assessment sheets will be produced for each hotspot, along with a technical review summary report explaining the methodology and recommendations for going forward. The hotspot assessment summary sheets will be subject to further discussion at the hotspot workshop on 16th January 2018.

3.2.6 SBC will continue to work with HCC and contribute fully to the SWMP for Hertfordshire and fulfil the recommendations that the SWMP makes.

3.2.7 It is expected that the report will be published by HCC in autumn 2018.

---

[2] In this context, surface water flooding describes flooding from sewers, drains, groundwater and runoff from land, small watercourses and ditches that occur as a result of heavy rainfall

3.2.8 The SWMP will help inform the next update of the SFRA for Stevenage in due course.

3.3 SFRA

Level 1

3.3.1 The Level 1 SFRA Update, June 2016, was completed, in part, as an evidence base for the Stevenage Borough Local Plan and was timely in that it could incorporate the recently published Environment Agency Climate Change Allowances, published in February 2016.

3.3.2 The Level 1 report identifies and assesses the risk of flooding from all sources including fluvial, surface, groundwater and artificial. It is a rudimentary assessment of the flood risk in Stevenage.

3.3.3 The report identifies 59 sites in Stevenage:

- 3 have no identifiable risk;
- 50 are considered low risk;
- 4 are considered medium risk; and
- 2 are considered high risk.

3.3.4 The Level 1 report advises that a more detailed assessment, or Level 2 assessment, is undertaken for the 6 sites identified as medium and high flood risk.

Local Plan Reference	Description	Overall Flood Risk	Location	Area (ha)
TC11	New convenience provision at the Garden Centre Site	Medium	Graveley Road	3.64
EC1/4	Land west of North Road	Medium	North Road	6376
EC1/7	Land West of Junction 8	Medium	Junction 8 of A1(M)	5.64
HC3	Health Campus	Medium	The Lister Hospital site and extension	22.05
HO1/2	Bragbury End Sports Ground Car Park	High	Aston Lane	0.60
HO4	South East of Stevenage	High	A602	30.22

Fig 2 – Table showing the sites in Stevenage which are at medium and high risk of flood risk

Level 2

3.3.5 The Level 2 report, June 2016, builds upon the sites identified in the Level 1 report as at risk and provides information to support the application of the Exception Test for future development sites.

3.3.6 The Level 2 report fully assesses each of the identified sites in terms of:

- Historic flooding;
- Flood Zone 3b flood extents (including climate change for higher and upper values from the Environment Agency);
- Flood Zone 3a flood extents (including climate change for higher and upper values from the Environment Agency);
- Surface water flooding;
- Groundwater flooding; and
- The suitability of infiltration SuDS in accordance with British Geological Society (BGS) maps.

3.3.7 The Level 2 report concludes that each of the identified sites can be developed provided that a satisfactory site specific Flood Risk Assessment (FRA) is submitted with any planning application for development on the site and is agreed by the Environment Agency prior to development commencing.

3.3.8 Details of the requirements for each of the site specific FRAs are included in Appendix 5.

3.4 Rye Meads Water Cycle Review

3.4.1 The Rye Meads Water Cycle Study is a detailed study that considers the likely impacts of future development on the water environment and water infrastructure in Stevenage.

3.4.2 It does not assess the risk of flooding; however, it does assess the capacity of the sewers in Stevenage and the capacity of the receiving STW at Rye Meads.

3.4.3 Large amounts of surface water are unnecessarily discharged into the mains sewer network in Stevenage. This surface water can be dealt with on site and SuDS can be retrofitted to developed sites, and installed as sites are redeveloped.

3.4.4 Appendix 6 illustrates that a large proportion of Stevenage is deemed appropriate for the installation of SuDS, be them standard or bespoke, according to the BGS infiltration SuDS suitability map.

3.4.5 If opportunities were taken to reduce the surface water runoff from developments into the mains sewer network, the capacity of the mains sewer

network could be increased for foul water and the demand placed upon Rye Mead STW reduced.

4. IMPLICATIONS

4.1 The Thames RBMP is funded by the Environment Agency and DEFRA

4.2 The Hertfordshire SWMP is funded by HCC as LLFA.

4.3 The Stevenage Borough SFRA was funded by the 2016/17 approved General Fund budget.

4.4 Whilst there will, inevitably, be considerable environmental implications from the development of sites in Stevenage these assessments and plans serve to minimise the risk to Stevenage and its neighbours from flooding of all forms.

4.5 It is the responsibility of SBC to ensure that developers meet our very highest standards and expectations for minimising flood risk.

5. OPPORTUNITIES

5.1 Numerous opportunities exist across Stevenage to address flood risk in the Borough.

5.2 Development of the urban extensions will require developers to meet Greenfield runoff rates for surface water runoff. This will involve the developers dealing with surface water on site and not connecting to the mains in order to discharge surface water runoff.

5.3 Development of other Greenfield sites in the Borough also offer the opportunity to open up watercourses and help improve the biological and chemical quality of them, in line with the aims of the WFD. Developers should be encouraged to incorporate the watercourse(s) into the development of a site rather than see them as obstacles to development.

5.4 Redevelopment of Brownfield sites should identify opportunities to disconnect the surface water connection to the mains network and install SuDS on site, to deal with surface water, as part of the redevelopment. This is possible in large areas of the Borough as illustrated in Appendix 6. This would also help to recharge the chalk aquifer below Stevenage.

5.4.1 For example, the Town Centre redevelopment could incorporate the use of permeable paving throughout the public realm areas, create shallow ponds and swales in green open space areas and install green roofs and green walls throughout the Town which would soften some of the brutalist architecture and revitalise areas, thereby contributing to social well-being as well as providing environmental benefits. The town was revolutionary in its development as Britain’s first New Town, it could be revolutionary again through its promotion

and incorporation of SuDS and the way it approaches flood risk in the Borough.

APPENDICES

Appendix 1 (hyperlink) -	Thames River Basin Management Plan
Appendix 2 (hyperlink) -	Rye Meads Water Cycle Strategy Review
Appendix 3 (hyperlink) -	Stevenage Borough Council Level 1 Strategic Flood Risk Assessment Update
Appendix 3a (hyperlink) -	Stevenage Borough Council Level 1 Strategic Flood Risk Assessment Update Appendix
Appendix 4 (hyperlink) -	Stevenage Borough Council Level 2 Strategic Flood Risk Assessment Update
Appendix 4a (hyperlink) -	Stevenage Borough Council Level 2 Strategic Flood Risk Assessment Update Appendix
Appendix 5 -	Site specific FRA recommendations
Appendix 6 -	BGS infiltration SuDS suitability map

Appendix 5 - Site specific FRA

5.4.2 New convenience provision at the Garden Centre Site (TC11)

- The Ash Brook ordinary watercourse runs through the site, some in culvert, with Flood Zone 2 and 3a being present as modelled.
- Development of the site should involve deculverting this section of the Ash Brook and ensuring development is 8m away from the top of the river bank.
- A detailed hydraulic model of the site is required to more accurately define the Flood Zones.
- Development should be directed to areas of the site in Flood Zone 1.
- Any development in Flood Zone 2 and 3 should include flood resistant and resilient design measures.

5.4.3 Land west of North Road (EC1/4)

- The Ash Brook ordinary watercourse runs adjacent to the western boundary of the site in open channel, with Flood Zone 2 and 3a being present as modelled.
- Development of the site should ensure development is 8m away from the top of the river bank.
- A detailed hydraulic model of the site is required to more accurately define the Flood Zones.
- Development should be directed to areas of the site in Flood Zone 1.
- Any development in Flood Zone 2 and 3 should include flood resistant and resilient design measures.

5.4.4 Land West of Junction 8 (EC1/7)

- The Ash Brook ordinary watercourse runs through the site in open channel, with Flood Zone 2 and 3a being present as modelled. The channel is artificial and does not lie in the natural drainage topography of the site.
- Development of the site should ensure development is 8m away from the top of the river bank, when re-aligned into its natural position.
- A detailed hydraulic model of the site is required to more accurately define the Flood Zones.
- Development should be directed to areas of the site in Flood Zone 1.
- Any development in Flood Zone 2 and 3 should include flood resistant and resilient design measures.

5.4.5 Health Campus (HC3)

- The Ash Brook ordinary watercourse runs through the site, some in culvert, with Flood Zone 2 and 3a being present as modelled.
- Development of the site should involve deculverting this section of the Ash Brook and ensuring development is 8m away from the top of the river bank.
- A detailed hydraulic model of the site is required to more accurately define the Flood Zones.
- Development should be directed to areas of the site in Flood Zone 1.
- Any development in Flood Zone 2 and 3 should include flood resistant and resilient design measures.

5.4.6 Bragbury End Sports Ground Car Park (HO1/2)

- The Stevenage Brook main river runs adjacent to the southern boundary of the site in open channel with Flood Zone 2, 3a and 3b being present as modelled.
- Development of the site should ensure development is 8m away from the top of the river bank.
- A detailed hydraulic model of the site is required to more accurately define the Flood Zones.
- Development should be directed to areas of the site in Flood Zone 1.
- Any development in Flood Zone 2 and 3 should include flood resistant and resilient design measures.
- A flood warning and evacuation procedure should be developed for the site to ensure safe access and egress is maintained.

5.4.7 South East of Stevenage (HO4)

- The Stevenage Brook main river runs adjacent to the northern boundary of the northern site in open channel with Flood Zone 2, 3a and 3b being present as modelled.
- Development of the site should ensure development is 8m away from the top of the river bank.
- A detailed hydraulic model of the site is required to more accurately define the Flood Zones.
- Development should be directed to areas of the site in Flood Zone 1.

- Any development in Flood Zone 2 and 3 should include flood resistant and resilient design measures.

- A flood warning and evacuation procedure should be developed for the site to ensure safe access and egress is maintained.

Appendix 6 - BGS infiltration SuDS suitability map