Stevenage BC Options Long List

Long List of Options

SBC4b - Roebuck Gate

Long list option	Option measure	Description	Option considerations	Viability Score (1 – High viability, 5 – Low viability)	Take Forward to short list?
Do nothing	Do nothing	All operational and maintenance activities cease	A reduction of maintenance within this hotspot would relate to a deteriorating condition of the Stevenage Brook. Limiting the maintenance along the watercourse would result in decreasing channel capacity (through increased vegetation growth) and blockage of culverts. Within the hotspot, the watercourse is culverted below Roebuck Gate. If this culvert were not to be maintained, potential blockage would occur, resulting in increased fluvial to upstream areas including London Road.	N/A	Yes – for economic appraisal
Do minimum	Do minimum	Continue with current operational and maintenance activities	Continued maintenance will ensure no deterioration to the Stevenage Brook and in operation of existing assets. However, this option will not provide any betterment to the existing scenario and the standard of protection (SoP) will remain as per the existing.	3	Yes – for economic appraisal
Do more	Do more	Increased maintenance regime	Increased maintenance of culverts and sewers to include more regular jetting and better channel maintenance. This option would further reduce risks of blockage and localised flooding but would not fundamentally increase conveyance capacity and standard of protection to properties going forward. Furthermore, the dominant source of flood risk within this hotspot is surface water, and so increased maintenance of watercourses and associated structures would not have a significant impact upon the	N/A	No

Long list option	Option measure	Description	Option considerations	Viability Score (1 – High viability, 5 – Low viability)	Take Forward to short list?
			number of reported incidents in the area.		
Option 1	Allocation of Land within Local Planning	Long term designation of land, placing more vulnerable land uses away from at-risk areas.	Land designation involves altering land uses in at risk areas. Consequently, less vulnerable land-uses (e.g. recreation space, car parks etc.) are placed within the areas that have a higher chance of being flooded. However, the properties at risk are within a well-established town community and so it is not feasible to re-designate the land use.	3	No
Option 2	Flow restrictions on outflows from new developments	Recommending restrictions on surface water outflows from new developments within the catchment (to greenfield runoff rates)	As the LLFA for the area, Hertfordshire County Council advise the LPA on the suitability of surface water drainage plans for new developments. The LPA can then lower runoff rates of a planned site, if justifiable through the Local Plan or SFRA. However, the current national and local standards do not require reducing flows from developments below greenfield rates. The guidance would need to be changed to allow imposing stricter requirements. This wouldn't however constitute a stand-alone flood mitigation option.	2	No
Option 3	Property flood resilience	Protection to individual properties (e.g. via air brick covers, door guards etc.)	The flood depths shown to occur, within the modelling, around the at-risk areas, are typically low and so installation of property flood resilience may be a viable option. Based upon EA guidance, PFR should only protect against flood depths up to 0.6m; beyond this the structural integrity of a property is at risk. This would be an option around Blair Close, whereby property flooding has been reported as a result of localised ponding. PFR should be considered only where more holistic flood risk mitigation measures, which	3	Yes

Long list option	Option measure	Description	Option considerations	Viability Score (1 – High viability, 5 – Low viability)	Take Forward to short list?
			address the source of flooding, are not possible.		
Option 4	Rills along Broadwater Crescent within the highway	Installation of rills along Broadway Crescent to transfer water along the highway to prevent ponding	Flow paths moving south along Broadwater Crescent contribute to flood risk. Areas of ponding occur and extend beyond the highway. Rills along the road would transfer this water, reducing the extent and depths of flooding. Providing additional storage within the highway would limit the volume of water that enters the surface water sewer network and therefore limits the chance of sewer exceedance.	2	No
Option 5	Upsizing of sewers along Broadwater Crescent	Increased manhole capacity along Broadwater Crescent whereby surcharging occurs	Upsizing sewers in built-up area would have to take into account land ownership and existing utilities in the public roads. Incorporation of large diameter sewers unlikely to be viable. No scope for environmental enhancement. Maintenance of underground structures is also more difficult due to lack of visual signs of potential issues, like blockages and structural faults. Furthermore, jetting of pipework can sometimes lead to dislodging blockages from one location to another increasing flood risk.	2	No
Option 6	Retrofitting of SuDS	Disconnect direct runoff from existing roofs and roads from public sewers and route it via SuDS before re-connecting to public sewers.	Flooding occurring in Blair Close is highly localised and likely to be occurring as a result of runoff from roofs. Installation of rain gardens would provide a source of infiltration for the water that is ponding adjacent to the property. However, there is very little space and opportunity to implement SuDS in this area. Along Broadwater Crescent, there are areas of grass between the road and pavement that provide opportunity for areas of	3	Yes

Long list option	Option measure	Description	Option considerations	Viability Score (1 – High viability, 5 – Low viability)	Take Forward to short list?
			storage. This could be incorporated through rain gardens or swales in extended sections of grass. This would aim to keep increased volumes of surface water on the surface and restrict the volumes that enter the surface water sewer network.		
Option 7	Disconnection of surface water runoff from the sewer network	Limit volumes of surface water that enter the surface water network	The surface water sewer network in this area is at capacity or exceeding in several points. The prevention of water entering the system where possible would allow capacity for runoff in higher order events. One method would be to limit the runoff from roofs through storage such as water butts. Although the capacity stored within each of these will be small, the cumulative effect across the hotspot would have a notable impact.	3	Yes

Table 1: Viability scoring criteria

Assessment Criteria		Do Minimum	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7
Construction & Maintenance	Disruption for construction and maintenance are minimised	5	5	5	3	4	5	4	4
Design Capabilities	Number of properties protected from flooding by surface water runoff	0	0	0	2	1	3	3	3
	Level of additional environmental benefit provided	0	0	1	1	0	0	4	1
Health & Safety	Risk to maintenace operatives is minimised	5	5	3	4	2	3	2	3
Public Acceptability	Overall acceptability of the scheme to the public	3	3	3	4	3	2	4	4
Natural Environment & Visual Amenity	No adverse ecological effect on flora and fauna	5	5	1	4	2	2	5	4
	Scheme minimises visual impact on surrounding area	5	3	1	4	2	4	4	3
Climate Change Adaptation	Design can be easily adapted to accommodate climate change impacts	0	1	1	3	1	1	2	2
Cost	Low capital investment required	5	5	5	3	3	2	3	4
	Low maintenance costs	5	5	3	4	3	1	2	2
	Total (out of 50)	**33**	**32**	**23**	**32**	**21**	**23**	**33**	**30**
	Viability Score (out of 5)	**3**	**3**	**2**	**3**	**2**	**2**	**3**	**3**

Scoring Criteria *Please Note: All options are ranked comparatively*	0 = Does Not Meet Criteria 5 = Fully Meets Criteria

Short list of Options taken forward:

- **Do nothing**
- **Do minimum**
- **Option 3 – Property Flood Resilience**
- **Option 6 – Retrofitting of SuDS**
- **Option 7 – Disconnection of surface water from the system**
- Note: Options 1 and 2 relate to wider LLFA and LPA policy recommendation and therefore have not been taken forward for further investigation at this time.

Do-nothing Option Data

Summary Description of Option
No active intervention within the study area. No maintenance of watercourses / sewers undertaken. All assets approaching the end of their life allowed to fail.

Summary Advantages of Option
No costs incurred.

Summary Disadvantages of Option
Channel capacities will be reduced due to vegetation and debris. The risk of blockage of culverts and sewers will increase due to accumulated debris / sediment. The existing measures would cease to protect properties to the current standard. Overall flood risk would be expected to increase and additional properties could be put at flood risk.

Summary of Option Viability and Deliverability
The Do-nothing scenario is not viable in a well-developed area like Stevenage and should not be considered further. This option is however taken to the short list as it forms the comparative case in the economic analysis.

Do-minimum Baseline Option Data

Summary Description of Option
Existing maintenance regime to continue and existing assets to be repaired as required to ensure the current standard of protection is maintained. This scenario still poses flood risk to number of properties in the area. This will not prevent future increases in flood risk as a result of climate change.

Summary Advantages of Option
• Affordable (No capital spend). • Maintains the existing situation.

Summary Disadvantages of Option
• Does not provide any reduction in flood risk. • Potential for maintenance requirements (and costs) to increase over time.

Summary of Option Viability and Deliverability

This option is viable and can be delivered but offers no betterment to the existing scenario and will still result in an increased flood risk in the future due to climate change.

Standard of Protection Provided by Option	Based on the integrated surface water modelling of the area the level of protection offered by the current arrangement is less than a 1 in 5-year standard.		
Properties at Risk from Flooding in Baseline Do-minimum Scenario			
Very Significant Risk (>5% AEP)	Significant Risk (Between 5% and 1.3% AEP)	Moderate Risk (Between 1.3% and 0.5% AEP)	Low Risk (< 0.5% AEP)
Number of Residential Properties at Risk from Flooding			
462	61	22	51
Number of Non-Residential Properties at Risk from Flooding			
14	0	2	1

Option 3 – Property Flood Resilience

Summary Description of Option

Passive Property Flood Resilience measures including flood doors, self-closing air bricks, etc. to be offered to all residential properties at risk of 1 in 75-year flooding.

Summary Advantages of Option

- No land take.
- Work areas limited to individual properties thus limited risk of difficult ground conditions, utility clashes, access constraints etc.

Summary Disadvantages of Option

- Does not address causes of flooding.
- Some properties may not be suitable/ property owners may not want such measures.
- Adoption by all properties within allocated area may be required to ensure full potential of this option is achieved.

Summary of Option Viability and Deliverability

PFR remains a viable standalone option particularly for smaller groups of affected properties and may also be considered as an alternative or complimentary to other capital schemes.

Deliverability will be subject to the outcomes of a PFR survey and resident consultations.

Standard of Protection Provided by Option	1 in 75-year to all affected properties.

Option 6 – Retrofitting of SuDS

Summary Description of Option

1. Utilisation of green space along Broadwater Crescent.
2. Additional storage could be provided through storage areas, rain gardens or swales.
3. Would increase the volume of water that can be stored on the surface and therefore reduce the amount entering surface water sewers.

Summary Advantages of Option
• Reduces flow entering the downstream surface water sewer network. • Direct intervention to limit the volume of water reaching the road. • Little impact upon the natural environment. • Construction / operation works do not affect individual properties. • Visual reassurance to the local residents that they are protected against flooding. • Overground storage features are easier to maintain than underground structures due to their accessibility and visually apparent blockages/ degradation, etc. that require attention. • Potential additional biodiversity and amenity benefits

Summary Disadvantages of Option
• Relatively high capital costs. • Residual risk of overtopping or failure. • Land ownership and land-take will require consideration. • Increased maintenance may be required, as a result of additional greenspaces, dependent upon existing regime. • Retrofitting of SuDS may result in a loss of amenity space.

Summary of Option Viability and Deliverability
The dominant flow path within this hotspot is along Bragbury Lane and occurs as a combination of surface water sewer exceedance and surface water flow. Creating areas of storage along the highway would mitigate both of these risk factors. This option is viable, with the main consideration concerning the continued upkeep following construction.

Option 7 – Disconnection of surface water

Summary Description of Option
This involves limiting the volumes of water that enter the surface water sewer system from urban development such as buildings. As a result of the disconnection, there is greater capacity in the system for volumes generated directly by rainfall. Actions can include capturing runoff from roofs through the use of storage water butts.

Summary Advantages of Option
• Reduces flow entering the downstream surface water sewer network. • Direct intervention to limit the volume of water entering sewer system and therefore limits manhole exceedance. • Overground storage features are easier to maintain than underground structures due to their accessibility and visually apparent blockages / degradation, etc. that require attention.

Summary Disadvantages of Option
• Relatively low capital costs. • Will not protect against higher order events. • Areas will require upkeep and maintenance to ensure continued efficiency.

Summary of Option Viability and Deliverability
This option is viable as it is relatively cheap and, if implemented across the hotspot, can have a notable impact. The deliverability of this option is largely reliant upon the willingness of individual residents to cooperate by allowing options such as water butts to be within their properties.