Welwyn Hatfield Options Long List

Long List of Options

WHBC3 – Hyde Valley

Long list option	Option measure	Description	Option considerations	Viability Score (1 – Low viability, 5 – High viability)	Take Forward to short list?
Do nothing	Do nothing	All operational and maintenance activities cease	Reducing maintenance could lead to blockages of culverts and sewers and reduction in channel capacity which in turn could lead to further flooding. For example, blockage of the culvert along the Hatfield Hyde Brook would pose a threat to upstream areas, including Desborough Close, which has multiple recorded incidents.		Yes
Do minimum	Do minimum	Continue with current operational and maintenance activities	Continued maintenance will ensure no deterioration in operation of existing assets. For example, maintenance to the culvert along the Hatfield Hyde would remain the same. However, this option will not provide any betterment to the existing scenario and will remain as per the existing situation.		Yes
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 number of reported incidents in the area.		No

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			However, increased clearing of the gully network should be considered to increase capacity for surface water flooding.		
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. PFR	4	Yes

Long list option	Option measure	Description	Option considerations	Viability Score (1 – Low viability, 5 – High viability)	Take Forward to short list?
			should be considered only where more holistic flood risk mitigation measures, which address the source of flooding, are not possible. One area that is potentially suitable for the use of PFR, is in the north east, around Hall Grove and Desborough Close. Within this area, there are numerous flood incident reports which that included internal flooding. Flood depths within the area are predicted to reach 0.2m during a 1 in 75-year event, and so community-wide PFR would be suitable.		
Option 4	Increased conveyance and temporary storage within the highway	Improve the conveyance of surface water and the volume of water which can be temporarily stored within the highway through increased kerb height or lowering of road surface.	Surface water flows occur on the majority of roads within the area. In places, the depths exceed the kerb height, allowing water to flow over pavements and impact property. For example, along Cole Green Lane there have been reported flood incidents which have occurred as a result of surface water. Similarly, along Thistle Grove, creating capacity within the road may prevent surface water flooding which has previously impacted property.	3	Yes
Option 5	Retrofitting of SuDS	Improving areas of storage or conveyance across the hotspot e.g. Great Ganett and Cole Green Road, King George V recreation rround	The area is largely developed and so there is little opportunity for the construction of large storage areas. Instead, the combination of many small areas should be used to alleviate the surface water risk. For example, small areas of green space can be used as temporary storage areas or, where suitable, swales could be used to increase both conveyance and storage.	4	Yes

Long list option	Option measure	Description	Option considerations	Viability Score (1 – Low viability, 5 – High viability)	Take Forward to short list?
			In the west of the hotspot, there is a larger space which could be considered for larger areas of storage. This space is currently a recreation ground, and so impacts of land cover alteration should be considered. The size of this area allows for the combination of multiple methods to be adopted to result in reduced flows.		

Table 1: Viability scoring criteria

Assessment Criteria	Asset criteria description	Do Minimum	Option 1	Option 2	Option 3	Option 4	Option 5
Construction & Maintenance	Disruption for construction and maintenance are minimised	5	5	5	3	2	4
Design Capabilities	Number of properties protected from flooding by surface water runoff	0	0	0	4	4	4
Design Capabilities	Level of additional environmental benefit provided	0	0	1	5	4	5
Health & Safety	Risk to maintenance operatives is minimised	5	5	3	4	2	4
Public Acceptability	Overall acceptability of the scheme to the public	3	3	3	4	3	4
Natural Environment & Visual Amenity	No adverse ecological effect on flora and fauna	5	5	1	4	3	5
Natural Environment & Visual Amenity	Scheme minimises visual impact on surrounding area	5	3	1	4	3	5
Climate Change Adaptation	Design can be easily adapted to accommodate climate change impacts	0	1	1	3	1	2
Cost	Low capital investment required	5	5	5	3	2	3
Cost	Low maintenance costs	5	5	3	4	3	3
	Total (out of 50)	**33**	**24**	**23**	**38**	**27**	**39**
	Viability Score (out of 5)	**3**	**3**	**2**	**4**	**3**	**4**
Scoring Criteria	0 = Does Not Meet Criteria						
Please Note: All options are ranked comparatively	5 = Fully Meets Criteria						

Short list of Options taken forward:

- **Do nothing**
- **Do minimum**
- **Option 3 – Property flood resilience**
- **Option 4 – Increased conveyance and temporary storage within the highway**
- **Option 5 – Retrofitting of SuDS**
- 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 Welwyn-Hatfield 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

Number of residential properties at risk from flooding: Very Significant Risk (>5% AEP)	Number of residential properties at risk from flooding: Significant Risk (Between 5% and 1.3% AEP)	Number of residential properties at risk from flooding: Moderate Risk (Between 1.3% and 0.5% AEP)	Number of residential properties at risk from flooding: Low Risk (< 0.5% AEP)
114	77	57	89
Number of non-residential properties at risk from flooding: Very Significant Risk (>5% AEP)	Number of non-residential properties at risk from flooding: Significant Risk (Between 5% and 1.3% AEP)	Number of non-residential properties at risk from flooding: Moderate Risk (Between 1.3% and 0.5% AEP)	Number of non-residential properties at risk from flooding: Low Risk (< 0.5% AEP)
0	1	0	0

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 4 – Increased conveyance and temporary storage of water within the highway

Summary Description of Option

Storage capability of the highway can be increased through raising kerb heights or lowering of the road surface. In areas whereby there is little greenspace for storage, this is a potential option for preventing surface water reaching properties. Within the hotspot, this would be implemented within the area around Thistle Grove where the area is largely urbanised with little greenspace remaining.

Summary Advantages of Option

- Direct interception of surface water.
- Little maintenance required.
- Water is normally conveyed in the highway; therefore re-routing is not required.

Summary Disadvantages of Option

- Does not address the cause of flood risk.
- Removal of dropped kerbs is often unfavourable.
- Construction of the scheme will result in disruption to travel and potential loss of roadside parking.

Summary of Option Viability and Deliverability

There are several reported food incidents within the area surrounding Thistle Grove and so actions to limit surface water are required. Considering the largely paved nature of the area, it is the most viable option. However, delivering the project would require involvement of the surrounding residents to ensure that access to property is not affected. It should also be noted that this option is not likely to be effective during high-order events.

Option 5 – Retrofitting of SuDS

Summary Description of Option

1. Utilisation of small areas of green space within the built up as areas of storage.
2. There are many grassed spaces between roads and pavements which could be used to intercept flow paths along the highway.
3. Whereby extended parcels of grass are present, swales could be excavated to both store and convey water.

Summary Advantages of Option

- Reduces flow entering the downstream surface water sewer network.
- Combination of small-scale actions, less reliance on one action.
- Area-wide management scheme.
- Potential additional biodiversity and amenity benefits

Summary Disadvantages of Option

- 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

Across the entire study area, there have been several incidents of flooding reported. This area should be approached as a ‘risk area’ and managed as a whole to result in overall reduction of surface water. The area is highly developed with small areas of green space scattered across the area. The options within this management scheme are viable, however will only have a notable impact when combined to have an overall effect.