

Proposed & Discounted Options			
Option No	Location	Description	Comments
Strategic Options			
1	Upstream Storage (u/s of the A4 Bath Road upstream storage)	Creation of an in-line flood detention area extending from the south side of the Bath Road A4 road bridge at Bathford for some 1.5km southwards. Includes construction of flow control structure/weir some 100m south of A4 road bridge; may require site specific defence raising through city river corridor.	Proposed option
2	Bypass Tunnel & Pumping Station - 4km Tunnel Under Bath	Bore a tunnel beneath Bath some 4km in length, from just upstream of the A36 Bathwick Street Bridge to just downstream of Brassmill Lane Industrial Estate to convey a range of peak flood flows around the city, thereby minimising defence raising or avoiding them altogether. The tunnel would be around 4m in diameter and sunk to such a depth beneath the City, and along such a route, as to not conflict with services, tunnels or the springs serving the spas. An intake at the upstream end will take river water into a series of pump sets with a variable phase power supply thereby providing an efficient and reliable variable speed pump system, catering for a range of flows in the most efficient manner possible. A variable phase supply will enable more cheap and reliable single speed motors to run pumps at a range of flow rates whilst using electricity in the most efficient manner possible. Given the size and importance of Bath's economy, this solution appears to be strongly viable. Further geotechnical and environmental investigation would be required to fully validate this solution.	Proposed option
3	Raised defences and compensatory storage	Raise hard river defences along whole river corridor and provide compensatory flood storage downstream at Newton St Loe and Holm Mead.	Proposed option
4	Cumulative Development Site Site-Specific Flood Storage Areas	Provision of compensatory flood storage within the river corridor in the City of Bath by the construction of the site specific flood storage areas at development sites: B1a, B3b, B4a, B5, B6a, B7, B8, B16, B17i, B18; Also includes the non development sites: Victoria park (next to B2c), Green Park (next to B6c), Locksbrook Island (remove section of island next to B13d&e)	Proposed option
5	Channel Widening & Deepening Through City of Bath	Widen channel through City of Bath by up to 50% and lower bed by 1m to 2m between Pulteny Weir and Sluice at Locksbrook Island. This option has a capital cost estimate of some £150M, as it requires replacement of road bridges, shoring up of foundations to riverside structures and alterations to weirs.	Proposed option
6	Twerton sluice improvements and compensatory flood storage downstream at Newton St Loe	Construct new sluice to improve flood alleviation, this would still require site specific defence raising options. Compensatory storage will be required.	Proposed option - Compensatory storage at Holm Mead in Keynsham was discounted from this option due to two existing wiers along the route and the increased flood risk for Salford Town
7	Upstream storage at Kensington Meadows and the proposed Mill Lane park and ride	Provision of flood detention upstream storage by adapting land surface profile of the Kensington Meadows and Mill Lane park & ride site; would still require site specific defence raising options.	Proposed option - Below ground storage options at both sites were discounted on high cost grounds
8	Riverside upstream storage	Channel widening / terracing to provide flood storage.	Proposed option
9	River Wellow Storage & Council Land to the North of	Provision of flood storage areas	Proposed option
10	West Hill Gardens Flood Storage & Fox Hills Flood Storage	Provision of flood storage areas	Proposed option
11	Overdredging of Channel through Bath	Removal of accumulated silt to improve conveyance capacity	Discounted - Due to high cost of dredging, environmental and cost issues associated with silt removal and work would need redoing every 2 years (>£5m each time), all for a limited impact on SoP.
12	Mill Lane Park & Ride - Buried Storage Tank	Excavation for and construction of a buried storage tank with associated flow control structures and pump sets.	Discounted - Due to very Large construction cost (>£2M) problems with disposal of large quantity of soil (environmental and cost) for a comparatively small impact on SoP, particularly compared to the cheaper cost of the above ground options.
13	Cricket Ground Buried Storage Tank	Excavation for and construction of a buried storage tank with associated flow control structures and pump sets.	Discounted - Due to very Large construction cost (>£2M) problems with disposal of large quantity of soil (environmental and cost) for a comparatively small impact on SoP, particularly compared to the cheaper cost of the above ground options.
14	Generic: Accumulation of a series of small flood storage areas along the river corridor; each strategic option being 1 number (FSA) less than the previous option.	Cumulative compensatory storage FD benefit obtained by constructing a series of small FSAs along the river corridor.	Discounted - Only one option included under strategic options as successive removal of FSAs from the scope reduced an already questionable improvement in SoP.
15	Clandown Flood Storage RK2-RK8	FSA to provide attenuation of flood flows	Discounted - FSA not considered to have sufficient capacity to provide benefit.
Previous Scoping Study Options Discarded			
16	Building Regulations - Resilience	Imposing minimum FD standard for new developments through Planning Process.	Discounted - Felt that this was already incumbent within PPS25 and its implementation in Planning Regulations and therefore outside the scope of the FRMS.
17	Aforestation upstream of Bath	Reduce baseflow and surface water runoff during storms by planting woodland upstream of city.	Discounted - not believed to provide sufficient reduction in flood flows.
18	Rural Land Use Chanage Upstream of Bath	Reduce surface water runoff upstream of Bath.	Discounted - not believed to provide sufficient reduction in flood flows and would be hard to implement.
19	Relocation of Properties	Relocate properties outside of flood zones.	Discounted - not in keeping with objective of FRMS.
20	Diversion of flow from the River Avon to the Avon Kennet canal	Transfer of peak flood flows around Bath altogether.	Discounted - from previous experience of canal system there would be insufficient capacity to make this option viable. Also, overflow channels feeding canal would quickly become full and discharge into main river system anyway.

Bath and North East Somerset Flood Risk Management Strategy – Appendix B

Proposed & Discounted Options				
Option No	Location		Description	Comments
Site Specific Options				
101	B1b	Commarket to Podium	a) Integrated Building Defences & SUDS; e.g. hard defences, patios etc.	Proposed option - Channel widening to create a cantilvered walkway was considered but discounted due to the minimal effect in relation to cost - Site Specific Only
102	B2a	Empire undercroft	a) 2m high glazed flood barrier within undercroft concourse, enabling removal of steel railings	Proposed option - Site specific only.
103	B2c	Grand Parade	a) Bunding to landward boundary to provide in-line flood detention & SUDS. Opportunity for creation of an amphitheatre should this be included in the strategic storage option.	Proposed option - for Strategic Option Combination & Site Specific are the same.
104	B3a	The Rec & sports centre	a) Excavate underground flood storage tank to absorb some of the peak flows & SUDS. Playing field will be laid to roof of tank ensuring continual use of pitch. (part of combined strategic storage options)	Proposed option - Off-line detention with defence raising as combination to strategic option.
			b) Perimeter flood wall only (3.8m in height & clad with ornate masonry) inc. SUDS drainage & below ground storage & permeable paving to car park	Proposed option - Site specific only.
105	B3b	Cricket Ground	a) Bunding and ramped access to outside perimeter of grounds will enable its use as a temporary flood detention area (part of combined strategic storage options) & SUDS.	Proposed option - Below ground storage options at both sites were discounted on high cost grounds - Site Specific
106	B4a	Manvers Street	a) Integrated building defences and SUDS, including flood walls/perimeter flood defence (possibly running from upstream and downstream bridges).	Proposed option - Site specific only.
			b) Bypass channel and pond to provide storage and amenity including SUDS.	Proposed option if combined with Integrated Building Defences.
107	B5	Former Menzies Hotel	a) Perimeter flood defence to hotel and mitred flood gate (to canal theme) on canal to Rossiter's Bridge will enable canal basin/marina to act as a small flood detention area. Lock keeper's cottage will need perimeter defence raising and footpath to cottage & SUDS.	Proposed option - Strategic & Site Specific Option
108	B6a	Avon Street Car / Coach Park	a) Integrated Building Defences & SUDS with widened channel for aesthetic purposes as part of development only.	Proposed option - Combined strategic option.
			b) Integrated Building Defences and SUDS (e.g. wetlands).	Proposed option - Site specific only.
109	B6b	City of Bath College	a) Integrated Building Defences & SUDS	Proposed option - Site specific only.
110	B6ci	Green Park House Topland		Proposed option - Site specific only.
111	B6cii	Green Park House other		Proposed option - Site specific only.
112	B6di	Kingsmead House		Proposed option - Site specific only.
113	B6dii	Rosewell Court		Proposed option - Site specific only.
114	B6e	1-3 James St West		Proposed option - Site specific only.
115	B6f	4 James St West		Proposed option - Site specific only.
116	B6g	The Forum		Proposed option - Site specific only.
117	B7	Green Park Station	a) Integrated building defences & SUDS (e.g. Architecturally designed hard defences to be in keeping with existing development, defence height optimised through construction of terraced inlet channel again), designed in correlation with remodelling of Green Park as small flood detention area (FDA)	Proposed option - Combined strategic option.
			b) Integrated Building Defences & SUDS	Proposed option - Site specific only.
118	B8	BWR East	a) Re-profiling (e.g. Remodel green open space to north boundary and recreation ground on opposite bank to provide channel widening), combine with hard defences to perimeter bund car park.	Proposed option - Combined strategic option.
			b) Create bypass channel within site to provide flood storage.	Proposed option - Combined strategic option.
			c) Integrated Building Defences & SUDS	Proposed option - Site specific only.
119	B9a	South Quay	a) Integrated Building Defences & SUDS	Proposed option - Site specific only.
			b) Widen channel and provide set-back defences	Discounted option
120	B9b	RBP to Travis Perkins	a) Integrated Building Defences & SUDS, raised hard defence to northern property edge.	Proposed option
			b) Widen channel by excavating into car park/form free flooding basin in car park to form marina of floating pontoons. Pontoons serve as car parking or goods storage, unaffected by rising river levels. Goods to be supplied by river transport from proposed Locksbrook Island small-freight handling depot.	Discounted option
121	B12	Bath Press	a) Integrated Building Defences & SUDS, raised hard defence to northern property edge.	Proposed option - Site specific only.
122	B13a	Lower Bristol Road	a) SUDS only.	Proposed option - Site specific only.
	B13b	Lower Bristol Road	a) Integrated Building Defences & SUDS, raised hard defence to northern property edge.	Proposed option - Site specific only.
	B13c	Lower Bristol Road	a) SUDS only.	Proposed option - Site specific only.
	B13d	Lower Bristol Road	a) Integrated Building Defences & SUDS, raised hard defence to northern property edge.	Proposed option - Site specific only.
	B13e	Lower Bristol Road - Access to Locksbrook Island Depot	a) Integrated Building Defences & SUDS, raised hard defence to northern property edge.	Proposed option - Site specific only.
123	B13f	Brassmill Lane Industrial Estate	a) Integrated Building Defences & SUDS, hard defences/berm to property perimeter, Berm cut into channel on right bank by up to 16m & convert disused railway easement into swale/side channel,	Proposed option - Viable as Site specific option, provides environmental and aesthetic benefits. (Was also part of a combined strategic option.)
			b) Integrated Building Defences & SUDS.	Proposed option - Site specific only.
124	B14	Locksbrook	a) Flood Storage: set back defence with berms; coach vehicle trailer parking area relocated to disused Maybey bridge and original parking area remodelled to provide in-line flood detention/Ground remodelling could incorporate a bay or a beach and provide additional storage.	Proposed option - Combined strategic option.
			b) Integrated Building Defences & SUDS	Proposed option - Site specific only.
125	B15	The Maltings Industrial Estate	a) Integrated Building Defences & SUDS, raised hard defence to riverside property edge.	Proposed option
126	B16	BWR Phase one	a) Create wetland as compensatory flood water features as part of development. Capping off of potentially contaminated land with spoil from Recreation Ground underground SUDS storage reservoir option (for B3a).	Proposed option
			b) Integrated Building Defences & SUDS, raised hard defence to property edge.	Proposed option - Site specific only.
			c) Channel widening to left bank.	Discounted option
127	B17f	BWR Phase Three (2&3)	a) Integrated Building Defences & SUDS, raised hard defence to perimeter. Same for each site.	Proposed option - Site specific only.
128	B18	Westmark	a) SUDS, only (permeable paving), no integrated building defences required.	Proposed option - Site specific only.
			b) Some channel widening to existing wasteland (understood to be developed with residential property)	Discounted option
129	B19	Comfortable Place / TA Centre	a) Integrated Building Defences & SUDS	Proposed option - Site specific only.
130	B20	Omega Centre	b) Widen channel with some set-back defences to carry path.	Discounted option
131	B21	Hinton Garage	a) SUDS only.	Proposed option - Site specific only.
			a) Remodel recreation ground lowering main area and pushing earth into bunds to the back of the grounds (Nelson Place West and Norfolk Crescent).	Proposed option - Combined strategic option.
			b) SUDS, no Integrated Building Defences required	Proposed option - Site specific only.
132	KM1	Somerdale / Cadburys	c) Widen channel and replace lost footpath with suspended cable stayed footbridge running alongside channel for 50m to 100m - in same style as Victoria Bridge Suspension bridge	Discounted option
133	KM3b	The Centre	a) Flood Detention Area with control structures on Keynsham Hams, combined with raising of bunded defences to Cadbury's site as necessary	Proposed option
			b) Integrated Building Defences & SUDS, raised hard defence to property edge	Proposed option - Site specific only.
134	KM8	Riverside Park	a) Integrated Building Defences & SUDS, raised hard defence to property edges.	Proposed option
			a) Channel widening and high level overflow channels.	Proposed option
135	KM9	Keynsham Paper Mill	b) SUDS and combined with new culverts beneath road and rail embankments, includes wetland creation.	Proposed option
136	KM11	Broadmead Lane Waste Site	a) SUDS (Detention basins, open channels and swales).	Proposed option
137	MN3	Chesterfield House	a) Flood Detention Area, Integrated Building Defences & SUDS.	Proposed option
138	MN4	Streamside	a) Integrated Building Defences & SUDS, raised defences to property edge	Proposed option
139	MN8	Somer Centre		
140	MN9	Welton	a) Flood Detention Area & channel widening combined with raising of bunded defences. Raised hard defences	Proposed option
			b) Integrated Building Defences & SUDS	Proposed option - Site specific only.
			c) Deculverting	Proposed option
141	MN12	High Street	a) Integrated Building Defences & SUDS, raised defences to property edge	Proposed option - Site specific only.
142	MN13	Town Park		Proposed option - Site specific only.
143	MN14	Town Park Housing		Proposed option - Site specific only.
144	MN17	Old Mills Industrial Estate Extension	a) Flood Detention Area & channel widening combined with raising of bunded defences	Proposed option
			b) Integrated Building Defences & SUDS, raised defences to property edge	Proposed option - Site specific only.
145	RK2	Rymans	a) Integrated Building Defences & SUDS, raised defences	Proposed option - Site specific only.
146	RK3	Charltons	a) Integrated Building Defences & SUDS, raised defences	Proposed option - Site specific only.
147	RK4	Old Bakery		Proposed option - Site specific only.
148	RK5	Post Office		Proposed option - Site specific only.
149	RK6	Library / Youth Centre		Proposed option - Site specific only.
150	RK7	Fortescue Road		Proposed option - Site specific only.
151	RK8	RadCo	a) Flood Detention Area & channel widening combined with raising of bunded defences	a) Proposed option b) Proposed Site Specific Option Only.
			b) Integrated Building Defences (flood walls/bunds) & SUDS	
152	RK9	Combend	a) Clandown FSA with repairs to existing masonry culvert b) Integrated Building Defences (flood walls/bunds) & SUDS	a) Proposed option b) Proposed Site Specific Option Only.