

## **The Flood Risk Management Strategy**

### **Note on Reviewed Flood Storage Volume used as the basis for the WYG Bath Compensatory Storage Study Phase 1 (November 2011)**

- 1.1 This note outlines the methodology used in updating the assessment of the flood storage volume established in the Flood Risk Management Strategy (FRMS) required to compensate for the loss of flood plain as a result of redevelopment of sites along the river corridor in Bath. The re-assessed storage volume has been used as the basis for the WYG Bath Compensatory Storage Study.
- 1.2 The Flood Risk Management Strategy (FRMS) (June 2010) produced by Atkins, has investigated strategic and site based flood risk management measures. It has concluded that there is no strategic solution reducing flood risk through Bath which is either technically or economically viable, and recommended the provision of on-site flood risk mitigation measures for redevelopment sites along the river corridor, combined with off-site compensatory floodplain storage located upstream of the city. To prevent flood risk being made worse to existing land nearby, new developments located within flood zone 3 must provide compensation for the loss of flood plain caused by the development either being raised, or protected from flooding, in accordance with PPS25. In order to meet this requirement, the Atkins FRMS concluded that a flood storage volume of 345,000 m<sup>3</sup> would be required. Development sites considered by the FRMS included sites with extant planning permissions, and sites not now projected to come forward within the plan period.
- 1.3 The Council has undertaken an updated assessment to review the original compensatory storage volume requirements recommended by the FRMS in light of the most likely major development sites that are now to be allocated within the river corridor, and falling within flood zone 3. This updated assessment of storage volume has been used as the basis for the WYG Bath Compensatory Storage Study. The methodology adopted to update the assessment of volume can be summarised as follows.
  - The proposed redevelopment sites assessed are set out on the attached drawing number TX00209/BCS/02 (Appendix A). Only sites located within Flood Zone 3 were assessed for their compensatory storage requirements.
  - The Environment Agency 1 in 100 year flood zone (Flood Zone 3) was compared to the location and extent of the proposed development sites. The area/footprint of each development site within the flood zone 3 was derived. Light Detection and Ranging (LiDAR) data, received from the Environment Agency's Geomatics group was used to derive the average elevation (ground level) of the areas within the Flood Zone 3 for each development site.

- The 1 in 100 year flood levels, with an allowance for climate change, for the River Avon have been provided by the Environment Agency. From this data, flood depths were calculated at each development site. The flood depth, multiplied by the area within Flood Zone 3 gives the volume of compensatory storage required for each site.

1.4 Using the methodology/data described above, the total storage volume required to compensate for future loss of floodplain volumes due to the redevelopment of the allocation sites located within FZ3 has been calculated, as set out in the attached table ref TX00209/BCS/02 (Appendix A) and the sites are shown in Appendix B.

1.5 Following discussion with the EA, an additional allowance of 20% of the calculated total storage volume was included to accommodate peak flow effect and potential diversion of flood routes.

1.6 The total compensatory storage requirement is therefore:

	<b>Storage required</b>
Sites listed in TX00209/BCS/02 (Appendix A) Provisional Volume	146,786.24 m <sup>3</sup>
Additional 20% for peak flow accommodation	29,357.20 m <sup>3</sup>
Additional allowance for flood routes being 'cut off' for areas adjacent to sites B6,B8, B9a, B9b, B14 (The areas highlighted in yellow in the attached map)	28,575 m <sup>3</sup>
<b>Total requirement</b>	<b>204,718.44 m<sup>3</sup></b>

**Appendix A**  
**Site information TX00209/BCS/02**

Development Site Plan Ref	Site name	Area in FZ3 (m <sup>2</sup> )	Average elevation of site (mAOD)	Flood level at site (mAOD)	Flood depth on site (mAOD)	Storage Required (m <sup>3</sup> )
B2a	Empire Undercroft	1,477.3	20.39	21.72	1.33	1,964.81
B2c	Grand Parade	912.1	20.22	21.62	1.4	1,276.94
B3a	The REC	15,386.62	18.23	21.66	3.43	52,776.11
B4	Manvers Street	5,183.32	19.69	20.93	1.24	6,427.32
B5	Former Menzies Hotel	3,049.84	19.4	20.71	1.31	3995.29
B6	Avon Street Car Park	12,688.5	18.71	19.74	1.03	13,069.16
B7	Green Park Station	3,101.29	18.15	19.4	1.25	3,876.61
B8	BWR East	6,462.55	18.76	19.31	0.55	3,554.40
B9a	South Quay	9,658.08	18.66	19.63	0.97	9,368.34
B9b	RBP to Travis Perkins	14,562.7	18.47	19.54	1.07	15,582.09
13a	Lower Bristol Rd	8,041.56	17.45	18.23	0.78	6,272.42
13b	Lower Bristol Rd	336.33	16.8	17.95	1.15	386.78
13c	Lower Bristol Rd	307.54	17.02	17.99	0.97	298.31
B13d	Lower Bristol Rd	1,465.17	17.26	17.855	0.595	871.78
B13e	Lower Bristol Rd	59.14	16.99	17.83	0.84	49.68
B13f	Brassmill	8,292.25	16.36	17.2	0.84	6,965.49
B14	Locksbrook	27,911.09	17.34	18.14	0.8	22,328.87
B15	The Maltings	385.78	17.37	17.58	0.21	81.01
B17	BWR Phase 3	318.34	18.81	18.91	0.1	31.83
B18	Westmark	647.08	17.68	18.43	0.75	485.31
B19	Comfortable Place /TA Centre	1,375.74	18.14	18.79	0.65	894.23
B20	Onega Centre	193.12	18.19	18.88	0.69	133.25
B21	Hinton Garage	556.5	18.27	18.96	0.69	383.99
					<b>Total=</b>	<b>146,786.24</b>

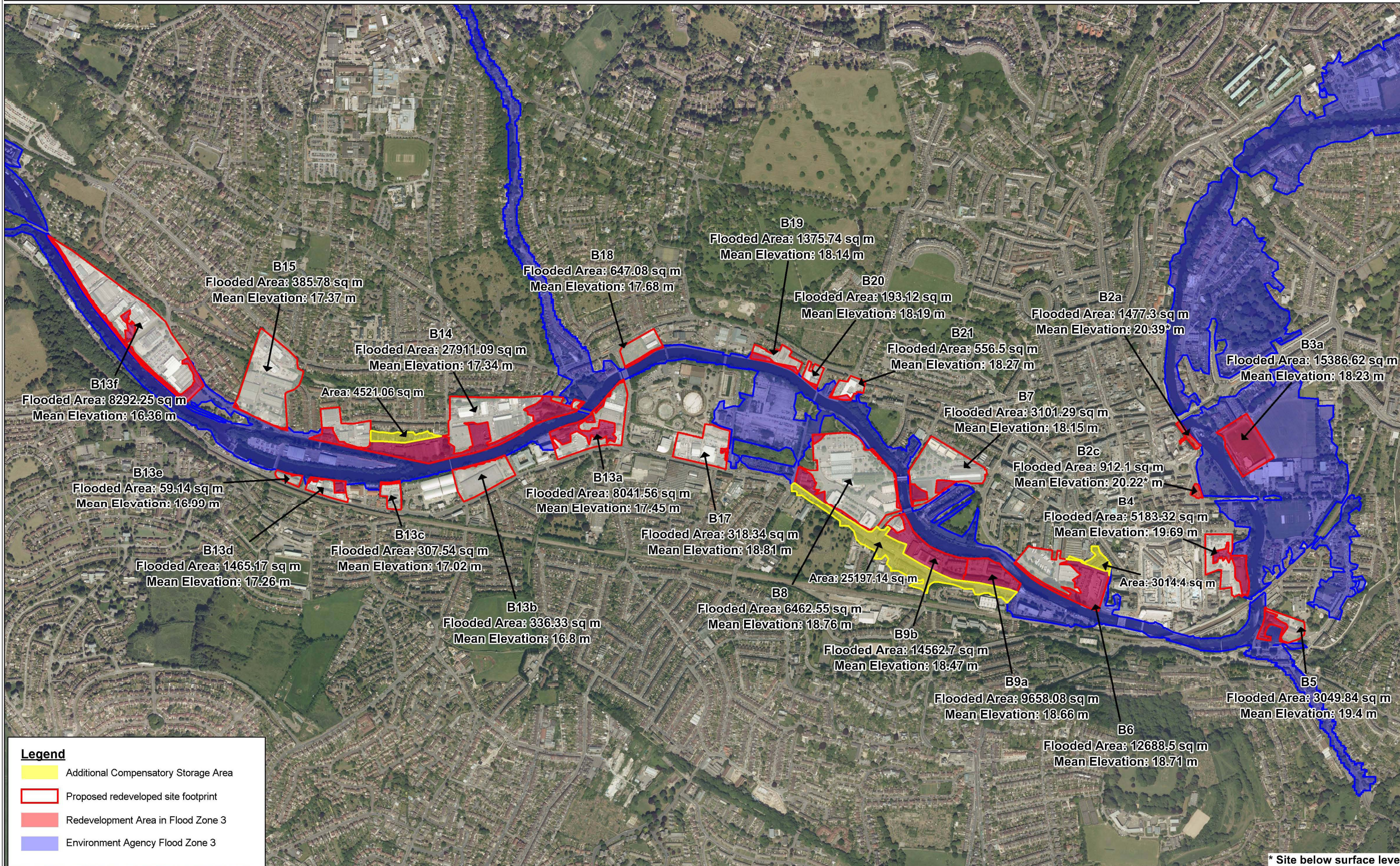


# Bath Compensatory Storage Scheme

Scale : 1:10,000  
Author : B Stone  
Date : 17/10/2011  
Drawing Reference: TX00209/BCS/01



v3



**Legend**

- Additional Compensatory Storage Area
- Proposed redeveloped site footprint
- Redevelopment Area in Flood Zone 3
- Environment Agency Flood Zone 3

\* Site below surface level