BUDGET COST ESTIMATE OF WORK OPTIONS

NOTE: The risk commonly experienced in producing budget cost estimates for proposed construction works, particularly where no formal design exercise has been undertaken, is that the costs prove to be significantly under-estimated, with potentially damaging consequences (in terms of public relations and when applying for further funds). Consequently, the following costs have been reported to the nearest significant figure; this involves figures being rounded up to the nearest £10,000 or £100,000.

1. PUMPED TUNNEL

Assumes 3 no 2.5m diameter tunnels 4km long with pump sets, receive and delivery shafts 4m diameter 30m depth and pump sets and station set below ground (sited at Kensington Meadows):

Tunnels = £20M (Based on cost of Thames Water Utilities London Ring Main

Pumps = £30M (Quote from manufacturer)

Allow further £15M Fees, land and compensation issues and general contingencies

Total = £65M

2. MILL LANE, BATHAMPTON PARK & RIDE

Based upon currently proposed parking area at Mill Lane site providing flood storage during a flood event.

a) This option assumes entire above ground parking area is used.
Assume approximately 1500 Spaces @ 2.4 x 4.5 + 10% total area = 17,820m² say, 18000m²

Excavation required to establish car parking/flood storage area at appropriate height = 8.8m deep x 18000m² = 158400m³ x £5/m³ = £800k say

Bund (to retain flood water at areas below required flood storage level) = 250m long x 1m high x 2m wide = 500m³ = £2.5k

Assume that spoil can be disposed of at Gas works site (Bath) = cost neutral

Control Structures (inflow & outflow weirs) = £30k lump sum

Construction overheads = £60k

+ 60% Optimism bias = £286.5k

Total = £1.3m including landscaping design, land, legal & infrastructure

BUDGET COST ESTIMATE OF WORK OPTIONS

b) Buried tank version (an alternative to sub-option a), above, that would allow car park to remain in operation during a flood):

Excavated volume to form buried flood detention tanks
= area 81.5m x 81.5m for a depth of 3m = 20,000m³
Plus ground works @ 1m tank base slab thickness = 6,600m³
Foundation Edge Beam 81.5 x 0.5 x 4 x 4 no. = 660m³
Total excavated volume = 20,000 + 6600 + 660 = 30,000m³

Cost of excavation & waste disposal: (20,000+6,600) x £20/m³ = £540k
RC (Reinforced Concrete) = 82.5 x 0.5 x 4.5 x 4 = 742.5m³
@ (£71.31 + £19) = £68,000
Columns @ 4m spacings 3m high 0.3m²
((2 x 81.5 x 4) + (20 x 20 x 3 x (0.30)²)) x £39.85/m² = £31,000 say

Slabs x 2 (Floor and Roof) = ((92² x 1) + (92² x 0.5)) x £90.31 = £1.146M

£1.146M + £31k + £68k + £540k = £1.8M

+ Pump + 3 phase = £50k

Surfacing = 1) 95m x 95m x 0.15 hardcore @ 16/m³ = £22k
           2) 95² x 0.1 Macadam @ 16/m³ = £15k
           Total Surfacing costs = £37k

£1.8M + £50k + £37k = £1.89M

+ 60% = £1.134M
+ 1.89M

Total = £3.00M

3. KENSINGTON MEADOWS FSA

   a) Lower existing ground level of meadows + breach existing flood wall
       and build new one on set-back alignment

   b) Lower existing ground level of meadows + demolish existing flood wall
       + rebuild on set back alignment

   Cost of a) + b) = same with demolition + disposal costs added to b)

   a) Area = 22,500m²
   Area level to be excavation down by 2.0m

   = 330m x 68m x 2.0m = 44,900m³ @ £2.07/m³ = £93k

BUDGET COST ESTIMATE OF WORK OPTIONS

Bund to contain flood water in areas where existing ground level is too low
= 466m length x 1.5m high x 2.5m wide = 1800m³ x £1.03 = £1,800
= £2,000 say

Dispose of spoil to Gasworks Amelioration = assume cost neutral

Strip topsoil store + relay = 330m x 68m x 0.25m depth x (£0.93+£0.88)/m^3
= £10,154 = £11,000

Site set-up, running and overheads = £82,000

£93,000 + £2,000 + £11,000 + £82,000 = £188,000 say
+ 10% landscape + seeding + environmental enhancement/ mitigation
+ 60% design, land, legal, supervision etc = £331,000

4. THE REC AND SPORTS CENTRE

a) Above ground detention for temporary flood storage
b) Construct below ground storage within the site
a) Pitch detention area with bunding

Area = 12000m² Set by existing site boundaries;

a) 93m x 126m x 1m = 11,718m³ excavation x 2.07 = £24,256

Fill 4760m³ x £1.03/m^3 = £5,000 say

1m high architectural floodwall = 340 x £1000/m (including architectural
cladding)   = £340,000

Sub-total = 24,256 + 5,000 + 340,000 = £369,256

+ £50k control system + pumping = £419,256

+ 70% landscaping, design, land, overheads, supervision, estates,
subsoil drainage

Total = £720k

b) Below ground storage tank option, to allow continued use of site during
a flood event:

23,436m³ ÷ 3m (tank height) = 7812m² √ = 88.4m x 88.4m

BUDGET COST ESTIMATE OF WORK OPTIONS

Excavated volume of tank wall footing: 88.4m x 3m x 4 no. x 0.5 x £2.07/m^3 = <u>£1.1k</u>

RC Walls = 88.4 x 3 x 4 x 0.5 = 530m³ x £90.3 = <u>£0.048M</u>

RC Foundation Slab = 88.4 x 88.4 x 0.5 = 3907m³ x £90.3 = <u>£0.353M</u>

RC Roof = 4,000m^3 concrete x £90.3/m^3 = <u>£1.067M</u>

RC Total = <u>£1.47M</u>

Excavation = 89.4 x 89.4 x 4m = 32000m^3 x £5.2 = <u>£166k</u>
(disposal of spoil would be cost neutral)

+ £70k for Control Structures & Pumps Etc.

=<u>£1.71M</u>

+45% for construction overheads, design, supervision &c.

<u>Total = £2.48M</u>

Note: With sub-option b) the pitch can still be used during operation of storage tank.

5. TWERTON SLUICE

Lowering of sluice to allow reduction in depth of flow upstream, in vulnerable reaches of River Avon:

Cofferdam = 20m length x £2000/m = <u>£40k</u> for cofferdam & other temporary works

Site Set up & overheads = <u>£50k</u>

Demolish = 1000m³ x £75 = <u>£75k</u>

Remove to tip = 1000m³ x £100 = <u>£100k</u>

Sub-total = <u>£265k</u>

New structure = £18,500 x 60m = <u>£1.11M</u>
(Includes fabrication, construction and installation)

Sub-total = <u>£1.38M</u>

BUDGET COST ESTIMATE OF WORK OPTIONS

x 1.8

Total = <u>£2.5M at least.</u> Not a viable option

6. CLAVERTON FSA (RESERVOIR)

This option involves the construction of large storage area upstream of Bath at the A4, between the Batheaston Swainswick Bypass and Claverton. This storage area would have to be of sufficient capacity to store peak discharges, releasing stored water only once storm flows have subsided. Flows in the River Avon would be restricted at the downstream end of the reservoir, causing flow to go out of banks onto flood meadow. This accumulated flow would be further constrained by a perimeter bund, acting as a dam, enabling a large volume of water to be stored.

Dam and connected Bund to retain water = £300/m x 2500m length (the channel lies in a valley and so natural topography provides the remaining constraints to the stored water.

= <u>£0.75M</u>

Control Structure = <u>£1.7M</u>

+ opt bias 60%

Total = <u>£3.5M</u>

<u>Not a viable option</u>

BUDGET COST ESTIMATE OF WORK OPTIONS

B1b CORNMARKET TO PODIUM

RC flood retaining wall 0.3m thick x 1.6m high x 260m length x £191 = £23,840

Cladding 2 faces x 1.6m high x 260m long x £100 = £83,200

Excavation for wall foundation and reinforced concrete works = £220k say
Site set up and overheads = £100k

x 1.4 opt bias

Total = £0.6M

Of which SUDS @ £170/m below ground storage. Say 50m = £8,500

B2a. EMPIRE UNDERCROFT

Toughened Glass Flood Barrier 2m in height with stainless steel frames anchored into ground.

£1000/m x 200m = £200k

No real SUDS opportunity provided

B2c GRAND PARADE

Propose raising development: Volume of fill = 2m deep x (50m x 40m) = 4000m³, @ £10/m³ import = £40k

Excavate and prepare existing ground 50m x 40m x 1.5m depth x £6 = £18,000

Access ramps = 6 No. @ 2m x 24 x 3 x 0.5 = 432m³

Retaining walls to ramps including cladding 24m x 2m x 0.5m x 0.3m x £291 = £2100, x 6 No. = £13,000 say

+ £25k contribution to site set up and overheads

x 1.4 design fees, planning etc. and optimism bias

Total = £135k

BUDGET COST ESTIMATE OF WORK OPTIONS

B3a FLOOD WALL OPTION ONLY

Perimeter Length = 300m + 150m + 300m + 300m = 1050m
For a FD height required = 3.8m
(Needs to be a wall as bund footprint would be excessive)

Cost = £1000/m (plan length)
= £1.05M

+ £100k set-up and overheads

x 1.4 Design fees, planning etc

Total = £1.61M

SUDS = £100k = £150k Swale, source control, filtration

B3b. CRICKET GROUND FLOOD STORAGE

a) Options for an Above ground Flood Detention Area/Flood Wall to Riverside Boundary involve the same type and quantity of works
b) By inspection – a below ground FDA would not be cost effective.

Area = 127m x 90m = 11,430m^2

Wall 1.2m high x (48m + 20m) length x £1500/m = £123k

+ Gates @ £30k each

Bunds = (120m+67m+93m) x 1.5m high x 2.5m width x £2.03/m³ = £1,082
= £3k say

Earth Moving 127m x 90m x 1.0m depth x £2.07/m² = £23,660

+ 10% Design landscape reinstatement, supervision, overheads & legal

+ 60%

Total = £365k including £60k for special surface drainage measures, petrol interceptor etc

SUDS = £15k – £30k source control, filtration

BUDGET COST ESTIMATE OF WORK OPTIONS

B4a MANVERS STREET

Total = £500k

Approximately twice the extent of works as B19 Comfortable Place

SUDS Standard range can be applied = £100k

B5 FORMER MENZIES HOTEL

300m of raised flood defence; required raised defence height = 1.215m

Volume of RC to walls and foundations (wall: 0.4m x 2.5m high x 92m length) + (foundation: 1.5m width x 0.5m depth x 92m) = £162.3/m

£162.3/m x 300m = £48,690 = £50k say

Excavation for Flood wall footings and disposal to licensed tip:
B x H x W = 300m x 1.5m x 1.5m x £20/m^3 = £13,500 say

Sub-total = £64k

+£50k for improvements to existing lock gates to raise defences

Summary:
£50k for new/modified lock gates

£64k for perimeter flood defence wall

£64k + £50k x 1.4 opt bias
= £159,600

For estimating purposes:

Total = £165k

Note: none of this would be ornamental

SUDS = Source control £100k

BUDGET COST ESTIMATE OF WORK OPTIONS

B6a. AVON STREET CAR COACH PARK

a) Channel widening and property development on footbridge stilts
Area = 270m x 50m = 13,500m²

Demolition = 270m x 4m x 1.8m x 116/m³ = £225k

Existing river wall Remove from site = £16/m³ x 1944m³ = £32k

Enabling Works ramp = Tilt Dam/Barrier 320m long = £50k

Consider Economic cost of enabling works equipment (Hire or buy-sell)

SUDS standard range can be applied = £100k to £150k

Dredging out to widen channel = 50m x 270 x 4 x £5.20/m³ = £281k

Remove from site = £16/m³ x (50m x 270m x 4m) = £864k

R C River Wall (Terraced) = 270m x 8m x 1.3m thick x £90.31/m³ = £254k

Stone Cladding surface area = 270m x 6.5m x £100/m² = £175,500,
= £200k say

£100/m² is reduced rate for bulk order (11 sites @ 100m + frontage, local material)

2 no Islands Not including actual development of buildings:
270 No. piles 15m Long;
- Purchase cost = £195 (each) x 270 no. = £52.7k
- Set-up, positioning and driving = £126/m x 15m length x 270 no.
   = £510k
- Extra/over driving £10/m x 15m x 270 No. = £40.5k

Sub-total = £603k

Decking = 2 x (90m x 25m) x £68/m² = £306k

Formwork = 2 x (90m x 25m) x £38.62/m² = £173.79k
Bridges (hump) = 2 x £50k each = £100k

Total = £2.87M   x 1.8 (overheads, enabling design, land etc)

Total = £5.1M

BUDGET COST ESTIMATE OF WORK OPTIONS

b) Defence Raising Only

RC Wall 270m long x 1.4m high x 0.5m width x £90.31/m^3 = £18,288
Cladding 270m long x 1.4m height x £100 = £37,800
Excavation and removal of soil: 270m x 3m x 2.5m x £20/m^3 = £40,500
Overheads = £50k

x 1.8

Total = £270k including design fees etc.

On top of developers fee payments and developed construction works

B6b CITY OF BATH COLLEGE

Total = £200k

As per B6g The Forum

SUDS standard range can be applied = £100k - £150k

B6ci. GREEN PARK HOUSE TOPLAND

Raise Defences by 0.3m:

Total = £110k

SUDS source control = £100k

B6cii. GREEN PARK HOUSE TOPLAND

Raise Defences by 0.3m:

Total = £110k

SUDS source control = £100k

BUDGET COST ESTIMATE OF WORK OPTIONS

B6di KINGSMEAD HOUSE

Raise paving by 0.3m to form flood barrier (includes kerb replacement and use of natural stones and stonemason work)

= (40m + 40m + 40m) x 2m wide x £569/m^3 = £41k

Site enabling works and coordination of construction = £10k

x 1.8 Overheads and general optimism bias

= Total of £100k say

SUDS source control = £100k

B6diii ROSEWELL COURT

Raise perimeter ground levels by 0.3m

110m of low bunding and road ramps: 110m x 0.4m x 3m x £25/m³ = £3.5k

Road ramp = £20k

Set up and Overheads = £15k

x 1.8

Total = £70k say

SUDS source control = £100k

B6e 1-3 JAMES ST WEST

Integrated Building defences = £90k

SUDS control = £100k

BUDGET COST ESTIMATE OF WORK OPTIONS

B6f. 4 JAMES ST WEST

Flood protection: Flood = 0.7m above threshold level

Proprietary Sheet rubber and metal frame shutters to doorways for implementation by owner, ties in with flood alarm

For estimating purposes, £30k per property

SUDS Control = £100k

B6g THE FORUM

Raise defence level by 1.0m
Over accumulated perimeter length 80m+ 50m+ 50m+ 50m = 230m

Raised ground floor level and access ramps to perimeter
50m x (80m+50m/2) = 3,250m²

Raise perimeter wall including stone cladding:
230m length x 1.0m high x 0.3m thick £291 = £20k

Footings = 1m x 1m x 230m x (£20+£191) = £48,530

Site set up & overheads = £50k

x 1.6 optimism bias

Total = £193k

Underground storage @ 50m³ x £130/m³ = £7k say

SUDS Control = £100k

B7. GREEN PARK

a) Offline Storage Area to absorb peak flows directly affecting site (initial assumption proved this option would not generate sufficient benefits on further analysis)

Storage Area = 3150m²

Grading works using mechanical excavators = £120k lump sum

BUDGET COST ESTIMATE OF WORK OPTIONS

Terraced Inlet channel = (100m x 10m x 4m) x £5.20/m^3 = <u>£20.8k</u>

RC works= (100m length x 10m high x 0.5wide) x £68/m³ = <u>£34k</u>

Stone Cladding = (2 no. x 100m x 2.5m) x £100/m^2 = <u>£50k</u>

Control Structures = <u>£30k</u>

Sub-total = <u>£272k</u>

x 1.7

Total = <u>£462k</u>

SUDS Standard range = £100k - £150k

b) Minimum Flood Defence Requirement

Raise RC flood wall including cladding = 100m x 2.0m x 0.35 x £191/m³ = <u>£13,370</u>

Foundation Excavation = 100m x 2.0m x 2.0m x £20/m³ = <u>£8,000</u>

Foundation RC = 100m x 1.5m x 2.0m x £65/m³ = <u>£20,000</u>

Site setup and overheads = <u>£80k</u>

x 1.8 optimism bias

<u>Total = £220k</u>

<u>B8. BWR EAST</u>

Option proposes channel widening to reduce local peak river levels. Widened channel provides opportunity for pontoons as car parking or materials/goods storage as a potential urban regeneration benefit. (Initial assumption proved this option would not generate sufficient benefits on further analysis.)

Channel Excavation = <u>£21k</u> drawing on previously worked example

Disposal of excavated material = <u>£67k</u>

RC works = <u>£51k</u>

BUDGET COST ESTIMATE OF WORK OPTIONS

Provision and installation of proprietary pontoon system
= 15m x 5m @ £10k each
6 No. = £60k

Sub-total = £199k

x 1.7

Total = £338k   SUDS Standard range = £100k - £150k

B9a SOUTH QUAY

Raise building foundations and associated hard defences to above flood level.

Excavation and construction of RC building foundations including disposal:
200m x 2m x 2m x £85/m^3 = £68,000

RC Wall: 200mm x 1.0m x 0.3m x £191/m^3 = £11,500

Site set up & Overheads = £80,000

x 1.7 optimism bias

Total = £270,000   SUDS Standard range = £100k - £150k

B9b RBP to Travis Perkins

Raise building foundations and associated hard defences to above flood level.

Excavation and construction of RC building foundations including disposal
200m x 2m x 2m x £85/m^3 = £68,000

RC Wall: 200m x 1.0m x 0.3m x £191 = £11,500

Site set up & Overheads = £80,000

x 1.7 opt bias

Total = £270,000   SUDS Standard range = £100k - £150k

BUDGET COST ESTIMATE OF WORK OPTIONS

B12 BATH PRESS

Raise foundation/floor level to say 0.3m over 300m @ £0.64k/m = £192k

SUDS source control, filtration = £100k - £150k

B13a Lower Bristol Road A

Perimeter defence raising works = 125m x 1.0m raising:
1.0m x 125m x 0.3m x £92/m³ = £3.5k
1.0m x 1.0m x 125m x (£20 + £92) = £14k
Concrete = £18k
 Sub-total = £35k

x 1.4 opt bias = £50k

+ SUDS (permeable paving sunk storage):
200m³ x £170/m³ = £35k

Total = £85k

B13c LOWER BRISTOL ROAD C

No defence raising required. Allow £35k for SUDS features only.

B13b LOWER BRISTOL ROAD B

Raise perimeter flood defence level by 0.3m over 200m @ 0.64k = £130k

SUDS source control, filtration = £3.5k

B13d Lower Bristol Road A

Raise perimeter flood defences = 125m long x 1.0m high:
1.0m x 125m x 0.3m x £92/m³ = £3.5k
1.0m x 1.0m x 125m x (£20 + £92) = £14k
Concrete = £18k
 Sub-total = £35k

x 1.4 opt bias = £50k

BUDGET COST ESTIMATE OF WORK OPTIONS

+ SUDS (permeable paving sunk storage):
200m³ x £170/m³ = £35k

Total = £85k

B13e Lower Bristol Road A

Raise perimeter flood defences = 125m x 1.0m raising:
1.0m x 125m x 0.3m x £92/m³ = £3.5k
1.0m x 1.0m x 125m x (£20 + £92) = £14k
Concrete = £18k
Sub-total = £35k

x 1.4 opt bias = £50k

+ SUDS (permeable paving sunk storage):
200m³ x £170/m³ = £35k

Total = £85k

B13f. BRASS MILL LANE INDUSTRIAL ESTATE

600m channel widening by cutting berm in to right bank 10m wide (average) to locally reduce depth of flow in river channel (proved to provide insufficient benefits on further analysis)

Excavation = 600m long x 10m wide x 2m high x £5/m³ = £60k

Disposal = 600m long x 7.5m wide x 2m high x £16/m³ = £144k

Bund (600m long) = 600 x 2.5 x 2 x £2/m³ = £6k

Total = £210k

SUDS Source control = £70k

Further Option:

CHANNEL & CULVERTS BEHIND INDUSTRIAL ESTATE

= (380 x 320) x 1.5 x 5 x £5m/³ = £27k

BUDGET COST ESTIMATE OF WORK OPTIONS

2 x Culverts = £30k

£210k + £27k + £30k = £267k

x 1.5

Total = £400k

Site Specific option:

Raise flood wall over 100m = £50k

Provide SUDS drainage; underground detention tank and permeable paving = £70k

Total = £120k

B14 LOCKSBROOK

£400k Determined by comparison with other, similar sites

SUDS = £85k

B15 THE MALTINGS

£250k Determined by comparison with other, similar sites

SUDS = £85k

B16 BWR PHASE 1

a) Floodable Car Park & Storage Area/Channel Widening

Excavation for channel widening = £21k

Disposal of excavated material = £67k

Reinforced Concrete = £51k

Pontoons = 15m x 5m @ £10k each for 6 No. = £60k

BUDGET COST ESTIMATE OF WORK OPTIONS

Sub-total = £199k

x 1.7

Total = £338k

b) Wetland & Compensatory Flood Storage Area. Integrated building defences combined with SUDS

Excavation:

Bunds 3m high x 160m long x 15m wide x £5 = £36k

Bunds 1.5m high x 160m long x 45m wide x £5 = £54k

Dispose on site so no disposal costs

Landscaping (area prepared and planted) = 160m x 45m x £2 = £15k say

Sub-total = £105k

x 1.5

Total = £160k

Plus £110k for ground level raising over and above presumed capping off fill, as Brownfield site. Remains as contribution to site development option

= £270k

B17i BWR PHASE 2
Raise say 0.3m over 50m @ £0.64k/m = £32k

B17ii BWR PHASE 3 SCHOOL
Raise say 0.3m over 50m @ £0.64k/m = £32k

Or just use SUDS filtration = £32k

BUDGET COST ESTIMATE OF WORK OPTIONS

B18. WEST MARK CHANNEL WIDENING

Excavation:

3 x 160 x 15 x £5 = £36k
1.5 x 160 x 45 x £5 = £54k

Dispose on site so no disposal costs

Landscaping = 160 x 45 x £2 = £15k say

Sub-total = £105k

x 1.5

+ £40k Waste

Total = £200k

No defence raising required

SUDS 160 x 2 x £70   For estimating purposes say £20k

B19 COMFORTABLE PLACE

Raise perimeter flood defences by 0.9m over 190m length

FD Wall: 190m long x 2m x 2m x (£20 + £91 + £100) = £160,360

FD Wall Foundations: 190m long x 1.5m x 0.3m x £191 = u

Site set up and overheads = £80k

x 1.4 opt bias

Total = £247,479

SUDS = £35k for permeable paving and/or filter drains

B20 ONEGA CENTRE
Defence required for boundary with B19

Raise Reinforced Concrete flood wall
=40m long x 1.6m high x £300 = £20k

BUDGET COST ESTIMATE OF WORK OPTIONS

Excavate and construct foundations for raised flood wall
= 40m x 1.5m x 0.5m x £15 = £450

+ overheads etc = £25k

+ £15k SUDS on private land with no council road works

= £40k say, assuming no design, planning, legal, construction

For estimating purposes

= £50k for FD + SUDS only

SUDS only source control, filtration = £50k

B21 HINTON GARAGE (REMODEL RECREATION GROUND)

Excavation of ground levels adjacent to river channel to form small flood
detention area (this proved this insufficient under further analysis)
= £7/m^3 x 20m wide x 180m long x 2m deep x 1.4 = £70k

Control Structures = £25k

x 1.6

Total = £150k

SUDS above ground storage £15k

Site Specific Option not required as site not at flood risk no defence raising
required

BUDGET COST ESTIMATE OF WORK OPTIONS

11. FSA FARMLAND SOUTH OF TWERTON

Excavation for flood storage area

= 1.5m depth x 160m length x 45m width x £5/m^3 = £54k

Dispose on site so no disposal costs

Landscaping = 160m x 45m x £2 = £15k say

Sub-total = £105k

X 1.5

Total = £160k

KM1 Somerdale/Cadburys Site

SUDs only option, Standard Range of SUDs features (Source Control, Filtration, Swale/Wetland = £100k to £150k

KM3b. KEYNSHAM HOLM MEAD FSA

Excavation:

3m x 160m x 15m x £5/m^3 = £36k

1.5m x 160m x 45m x £5/m^3 = £54k

Dispose on site so no disposal costs

Landscaping = 160m x 45m x £2/m^3 = £15k say

Sub-total = £105k

X 1.5

For estimating purposes Total = £200k

BUDGET COST ESTIMATE OF WORK OPTIONS

13. SYDENHAM MEAD FSA

Formation of Flood Storage Area by use of bulldozer including all re-landscaping works

700m x 1m x 100m x £5/m^3 = £350k

x 1.4

Total = £490k

KM9. KEYNSHAM HAMS FSA

Formation of Flood Storage Area by use of bulldozer including all re-landscaping works

1000m x 250m x 5/m^3 x 1.0m = £1.25M

x 1.5 overheads, design, inc. control structures

Total = £1.88M

15. RIVERSIDE MIDSOMER NORTON

Channel widening and flow improvements

200m x 20m x £5/m^3 x 1.5m = £30k

x 1.5 overheads, design, inc control structures = £45k

Total = £50k say

16. RADSTOCK WELTON HOLLOW FSA

Formation of Flood Storage Area by use of bulldozer including all re-landscaping works:

350m x 50m x 1.2m x £5/m^3 = £105k

x 1.5

Total = £160k

BUDGET COST ESTIMATE OF WORK OPTIONS

17. WELTON FSA (FARMLAND)

Bunds 5m wide 1.5m high

(350m + 350m + 50m + 50m) x 5 x 1.5 x £11.83 = £71k

x 1.4

Total = £100k

18. WEST HILL

Provision of flood defence bunds
= 5m wide 1.5m high

(350m + 350m + 50m + 50m) x 5m wide x 1.5m high x £11.83 = £71k

x 1.4

Total = £100k

20. FOX HILLS FSA

Flood storage formed by provision of perimeter bunding
= 5m wide x 1.5m high

(350m + 350m + 50m + 50m) x 5m x 1.5m x £11.83/m^3 = £71k

x 1.4

Total = £100k

30. KM8 RIVERSIDE PARK CHANNEL WIDENING SUDS & CULVERTS

Similar scope of works to B21 HINTON GARAGE

Total = £150k

Assuming no land purchase or consultation required.

BUDGET COST ESTIMATE OF WORK OPTIONS

31. KM11 BROADMEAD LANE WASTE SITE

RC perimeter flood wall (assuming all-in rate)

500m length x £300/m

x 1.4

Total = £250k

MN9 WELTON

Total = £300k

As KM11 with SUDS as in urban area and a commercial facility

32. MN3 CHESTERFIELD HOUSE

By Inspection Perimeter FD + Drainage = £0.15k

33. MN4 STREAMSIDE & MN8 SOMER CENTRE

By inspection, perimeter flood defences to large site = £0.25M

34.MN12, MN13 & MN14 HIGH STREET, TOWN PARK & TOWN PARK HOUSING

By inspection, perimeter flood defences to large site = £0.30M

To build a Flood Detention Area stand-alone site; price includes for land purchase + design + planning.

35. MN17 OLD MILLS

Construction of small flood storage area formed of new channel and bunds = £0.3M

BUDGET COST ESTIMATE OF WORK OPTIONS

36. RK2, 3, 4,+ 5 SHOPS

Small buildings, for estimating purposes £30k each,
(priced as B6E 4 James St)

Assumes defence works will be incorporated into the overall construction works for the site development.

37. RK6 & RK7 LIBRARY/YOUTH CENTRE, FORTESCUE ROAD

Total = £100k each

By inspection and comparison with requirements of RK3 & RK5

38. RK8 & RK9

RK8 = £0.15M

RK9 = £0.15M

(SUDs a component part of the proposed works element)