

BEST Case Study

Natural Flood Management in the Royal Borough of Greenwich

Background

Clothworkers Wood is in Shooters Hill area of the Royal Borough of Greenwich, London. The area is currently susceptible to flooding, which impacts on a school and on residents.

In 2014 during prolonged storms the woodland was flooded due to children building dams/bridges in the stream. It was obvious that the woodland was an ideal location to hold back a volume of water in the upper catchment of the Wickham Valley Watercourse (Marsh Dykes/Wogebourne) to ease pressure on the heavily urbanised lower catchment as most of the river is confined to culvert until it re appears in Thamesmead.

Approach

Given the woodland was working well naturally, with a little help from the local children it was considered to use the naturally available materials to introduce barriers/dams and berms to hold back and store water in the woodland, so design parameters were very clearly set from the outset as to how we can use what is available within the woodland with minimal imported materials and minimal construction impact on the woodland and stream i.e. leave it as we found it with the interventions naturally integrated into the wood and stream.

The scheme was originally funded primarily from FDGiA with contributions from Local Levy and Royal Borough of Greenwich. The GiA was based on protecting properties adjacent to the stream and downstream. The remaining project funding is now being funded directly from the Governments £15m Natural Flood Management Pilot Projects. Final business case has been approved and funding for the final construction has been approved, construction will commence in 2019.

The study considered four options.

- Option 1 – Do nothing
- Option 2 – Installation of natural flood management (NFM) to create a wet woodland
- Option 3 – Targeted and Specific Maintenance of the Watercourse.
- Combining Options 2 and 3 to assess an additional option, Option 4

The assessment is based on Option 4, which includes additional NFM measures and a watercourse diversion to include leaky dams, 186m length of 0.4m high berms, 664m³ of attenuation storage over a 0.33ha flooded area, and the creation of 130m of watercourse.

Results summary

The main results table from BEST is shown below. Option 4 provides a total present value (PV) benefit of £0.34mn (before confidence) and £0.19mn (post confidence). The benefit cost ratio (post confidence) is 4.6 (range of 0.4 to 13.7).

Present Value Assessment Stage	Total PV Benefits	Total PV Costs	Net Present Value	Benefit Cost Ratio	Benefit distribution score
Present Value before confidence applied	£337,856	£38,900	£298,956	8.7	F
Present Value after confidence applied	£189,477	£38,900	£150,577	4.9	F
Present Value sensitivity - low	£16,578	£38,900	-£22,322	0.4	F
Present Value sensitivity - high	£532,439	£38,900	£493,539	13.7	F

The export report from the assessment is included below. This report includes the following outputs from B£ST.

- Project details
- B£ST Results Dashboard
- Written evidence

B£ST Export Report

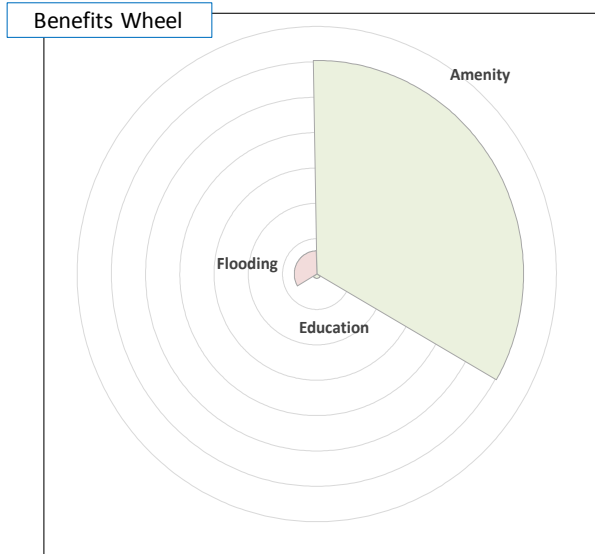
B£ST: Version: 4.1., February-2019, 12 Feb 2019, 09:26:32

Author	J McMullan
Date	12th Feb 2019
Project Name	Clothworkers Wood - Option 4c
Project Reference Number	4c
Assessment version	1
Location name	Clothworkers Wood, Shooters Hill area of Royal Borough of Greenwich, London
Summarise baseline option	Do nothing
Summarise proposed option	Option 4c - Additional NFM measures and a watercourse diversion to include leaky dams, 186m length of 0.4m high berms, 664m ³ of attenuation storage over a 0.33ha flooded area, and the creation of 130m of watercourse

B£ST: Version: 4.1., February-2019, 12 Feb 2019, 09:26:32

Author	J McMullan
Baseline option Present Value Cost (if applicable)	£36,000
Proposed option Present Value Cost	£74,900
Scheme supporters	Environment Agency, Local Authority
Scheme funders	Environment Agency, Local Authority
Discount rate to apply	3.5%

Results Dashboard

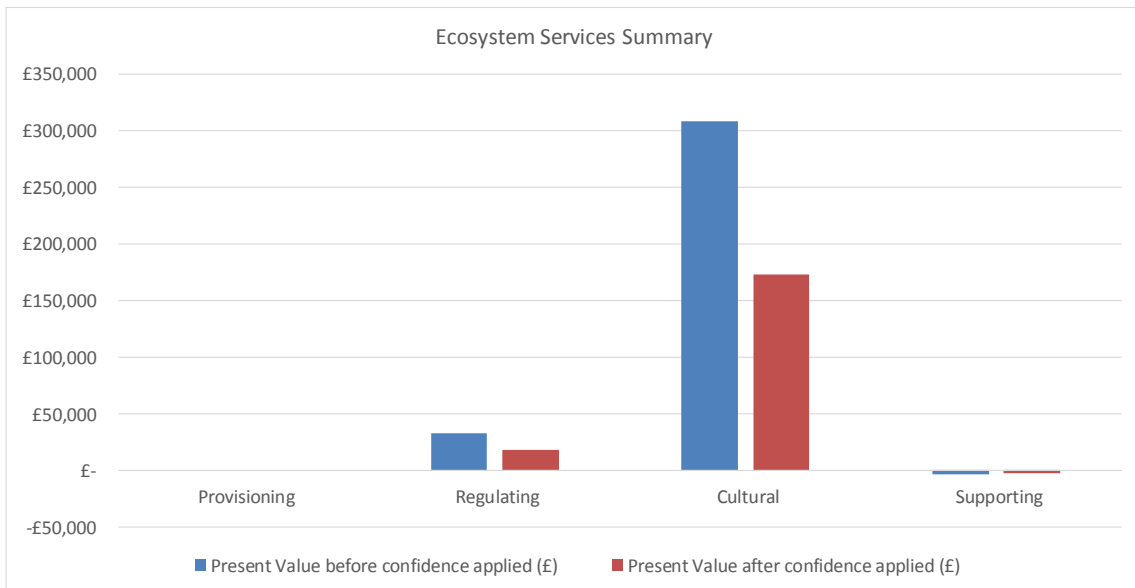


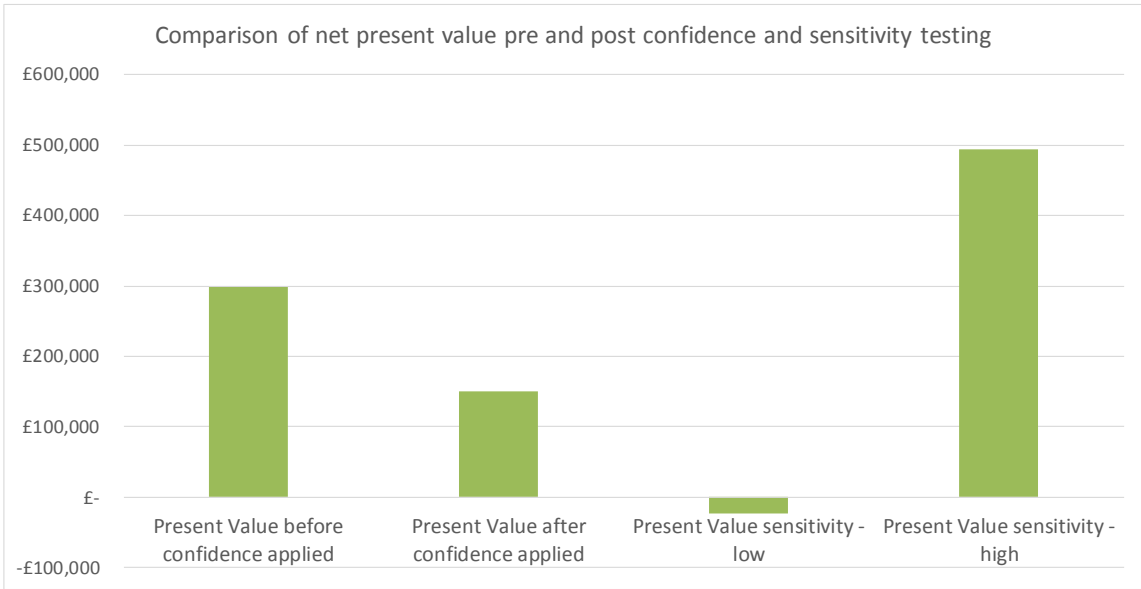
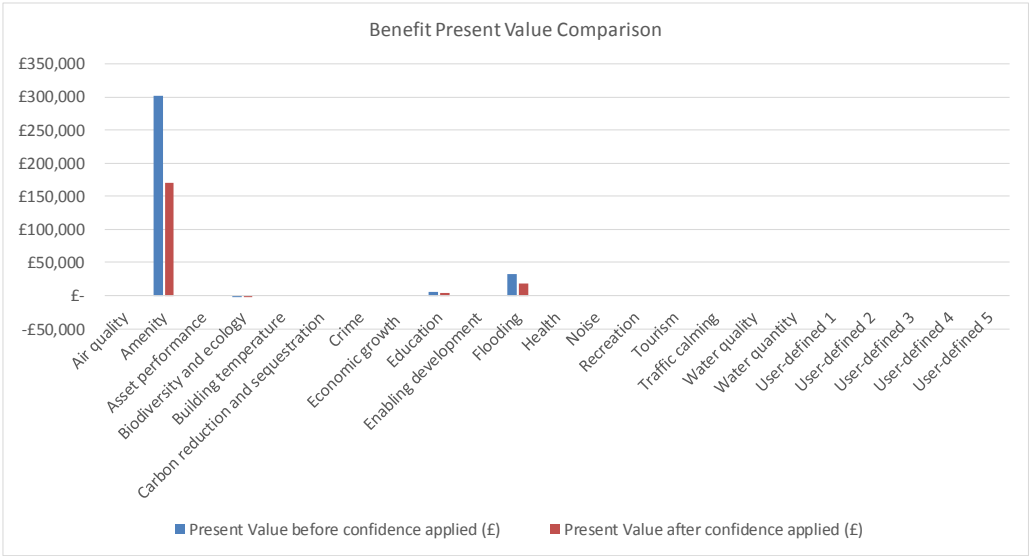
Select the number of benefits (1-10)

3

Select the present values results

Present Value before confidence applied





PV Assessment

Present Value Assessment Stage	Total PV Benefits	Total PV Costs	Net Present Value	Benefit Cost Ratio	Benefit distribution score
Present Value before confidence applied	£337,856	£38,900	£298,956	8.7	F
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Benefit Category

Benefit category	Present Value before confidence applied (£)	Present Value after confidence applied (£)	Present Value sensitivity - low (£)	Present Value sensitivity - high (£)
Air quality	£0	£0	£0	£0
Amenity	£301,972	£169,860	£18,873	£471,832
Asset performance	£0	£0	£0	£0
Biodiversity and ecology	-£3,026	-£2,269	-£4,727	-£189
Building temperature	£0	£0	£0	£0
Carbon reduction and sequestration	£0	£0	£0	£0
Crime	£0	£0	£0	£0
Economic growth	£0	£0	£0	£0
Education	£6,029	£3,391	£377	£9,421
Enabling development	£0	£0	£0	£0

Benefit category	Present Value before confidence applied (£)	Present Value after confidence applied (£)	Present Value sensitivity - low (£)	Present Value sensitivity - high (£)
Flooding	£32,880	£18,495	£2,055	£51,375
Health	£0	£0	£0	£0
Noise	£0	£0	£0	£0
Recreation	£0	£0	£0	£0
Tourism	£0	£0	£0	£0
Traffic calming	£0	£0	£0	£0
Water quality	£0	£0	£0	£0
Water quantity	£0	£0	£0	£0
User-defined 1	£0	£0	£0	£0
User-defined 2	£0	£0	£0	£0
User-defined 3	£0	£0	£0	£0
User-defined 4	£0	£0	£0	£0
User-defined 5	£0	£0	£0	£0

EcoSystem Service

Ecosystem service	Present Value before confidence applied (£)	Present Value after confidence applied (£)	Present Value sensitivity - low (£)	Present Value sensitivity - high (£)
Provisioning	£0	£0	£0	£0
Regulating	£32,880	£18,495	£2,055	£51,375
Cultural	£308,002	£173,251	£19,250	£481,253
Supporting	-£3,026	-£2,269	-£4,727	-£189
TOTAL	£337,856	£189,477	£16,578	£532,439

Evidence Summary

Evidence from Am - Amenity page

- 1: Improvements to existing woodland will have a positive impact on local residents
- 2: Improvements to existing woodland, including a permeant body of water. There will be approx. 10 homes overlooking the pond.
- 3: Improvements to existing woodland is likely to encourage more people in the local area to visit the area.
- 4: As per the guidance. The monetary value of each visit to a green space is per month, therefore £3.92 x 12 = annual value

Evidence from BE - Biodiversity & Ecology page

- 1: Part of this scheme includes a new section of engineered channel. Currently, the site is woodland, so any alteration of this kind would yield a negative benefit.

Evidence from Edu - Education page

- 1: Large number of local schools, including primary within close vicinity of the construction, and therefore good access. Simple estimate of the number of children benefitting.

Evidence from F - Flooding page

- 1: There will be a reduction in flooding
- 2: McCloy Consulting used flooding benefit figures from NFM guidance and assumed £120/m³ of storage. These figures are used here.