

A quantification and valuation of the estimated economic benefits of the Heritage Lottery Funded programme of improvements at Stanley Bank funded through the Heritage Lottery Fund and the A570 improvement partnership.



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Executive Summary

Over the last 3 years improvements to the green infrastructure of Stanley Bank have been implemented, funded through a range of sources including HLF, Objective One Mersey Forest Grant, DfT and others.

A new sustainable drainage system, areas of biomass, improved woodland and grassland management, new trees and access have been put in place alongside an award winning new road scheme, education and archaeological interpretation – a truly holistic green infrastructure scheme. The road scheme won both public project of the year and Green construction Civil Engineering Project of the Year in 2008.

In eight years and 1,500 site visits as a Considerate Constructors' Scheme Monitor, this is by far the best highways project I have ever seen.
Brian Williams, Considerate Constructors' Scheme Monitor

Using the prototype Green Infrastructure Valuation Toolkit, this study provides a preliminary assessment of the economic value of the work undertaken.

Overall the toolkit shows a net present value for the project of **£15.2m**. Making the initial investment of £1.6m a sound one based on this assessment



Economic value is shown in the case study as one of two types:

- Contribution to GVA this is a contribution to the economy through increased profit, reduced costs, salary etc. for Stanley Bank the toolkit identified value of £2.3m
- Other economic benefit contribution to the broader economic context such as the value in terms of improved health, or the value that society puts on biodiversity – areas where there is no "market" that provides a pricing mechanism. For Stanley Bank the toolkit identified value of £12.9m

Sources of value came from 8 benefits assessed, greatest values related to Health and Wellbeing, Land and Property and Biodiversity. See Figure 1 below.



Figure 1Distribution of economic value from GI investestments at Stanley Bank

Introduction

Increasingly project managers have to provide evidence that environmental projects deliver economic benefits.

Whilst the intrinsic value of a rare species, a cultural landscape or a tranquil area in the heart of a town or city may be considered as "priceless", there is a danger that priceless can be then lead to them being "valueless" in economic assessment.

There has been a great deal of work carried out to try to value the benefits of the natural environment, using a wide range of techniques. Many of these are academic and not accessible to project managers who need to be able to rely on sound data, from easily found sources, to provide a robust valuation that they can justify to funders and/or developers. However, to date there has not been a single source that enables a valuation to be carried out.

Over the past six years there has been a great deal of work to develop a green infrastructure approach to embed the natural environment in decision making. This work has involved a wide range of organisations and has seen the rapid development of a range of policies, research projects, reports and a Green Infrastructure Valuation Toolkit.

The Natural Economy Northwest project developed this toolkit in conjunction with other regions across England and with national bodies such as DEFRA. The toolkit and an explanatory guide can be downloaded from <u>www.bit.ly/givaluationtoolkit</u>. A network of users is also emerging. The network shares ideas and information about the development of the Toolkit. For information on how to join the network e-mail <u>givaluation.network@merseyforest.org.uk</u>.

The toolkit has been released as a prototype, in a Creative Commons format that can be accessed by all for free. The toolkit is not complete, there are areas for which there are no tools available and toolkit has a number of caveats to ensure that that information is used in the right way. The intention is that the toolkit is used to help show the value of projects, either pre or post project, and that it is improved and shared with other project managers so that over time the toolkit becomes a robust model, recognised by decision makers and funders.

The toolkit cannot count everything. What it does count is designed to be robust enough for initial, indicative project appraisal, providing a range of figures indicating the potential impact of a green infrastructure intervention or even an existing green asset.

It is also important at the outset to highlight that valuations such as this also need to be seen as part of a much bigger picture. There are dangers of using "market mimicking" techniques as well as positive benefits that need to be kept in mind.

This report uses the toolkit to value the programme or improvements funded by HLF and a wide range of partners involved in the work to improve the A58 at Stanley Bank in St.Helens, Merseyside.



Figure 2 Project location

Green Infrastructure Benefits

A framework of 11 benefits has been found to be useful in describing and valuing green infrastructure, The list of 11 below are not perfect, there will be some who would split and some who would lump categories, but the framework is a good starting point and has been tested widely.



Figure 3 Gi Benefits Framework

The toolkit organises the calculator tools under each of the 11 benefits.

What does the toolkit do?

The toolkit provides a set of calculator tools, to help assess an existing green asset or proposed green investment. It looks at how the range of green infrastructure benefits deriving from an asset or investment can be valued:

- in monetary terms applying economic valuation techniques where possible
- quantitatively for example with reference to jobs, hectares of land, visitors
- qualitatively referencing case studies or important research where there appears to be a link between green infrastructure and economic, societal or environmental benefit, but where the scientific basis for quantification and/or monetisation is not yet sufficiently robust.

The toolkit does not assess the quality of the design or detailed management requirements of green infrastructure.

Assessing the benefits

The toolkit uses standard valuation techniques to assess the potential benefits provided by green infrastructure within a defined project area. These benefits are assessed in terms of the functions the green infrastructure may perform, support or encourage, depending upon the type of project.

For example, Figure 4 shows how an urban tree planting scheme can result in improved air quality, carbon sequestration and reduced health costs, thereby illustrating green infrastructure function, resultant benefit and potential monetisation.

However, not all benefits can be given a monetary value. A rich body of evidence illustrates and demonstrates the different types of benefits deriving from quality green infrastructure. But for many, robust valuation techniques do not yet exist. For others, proving a direct causal link between green infrastructure and the potential benefits is not yet possible.

Figure 4 Toolkit logic chain - an example



In using the toolkit it is important that it is only the net additional benefit, and therefore value, is assessed and also that there is no double counting of the benefits.



Stanley Bank

Stanley Bank is an area of early industrial activity, which helped drive the industrial revolution in the St Helens area. Coal was extensively extracted leading to the construction of the Sankey Canal in 1757, built to transport the coal to the markets of Liverpool and Cheshire more efficiently. This transport infrastructure acted as a catalyst for the development of a copper works in 1772 and an iron-slitting mill the following year. Stanley Mill was converted to a corn mill around 1820 and was finally demolished around 1900. No remains of the copper works survive.

Nature gradually reclaimed the area and it became important for wildlife.

Latterly, much of the Stanley area has been part of the Sankey Valley Country Park but lacked identity and investment. The construction of Stanley Bank Way in 2006, designed to relieve the heavily congested West End Road district of Haydock, provided an opportunity to develop an Environmental Planning Framework, which encompassed broad Green Infrastructure planning principles and placed the new road into a sustainable landscape context.

Following an award of £865,500, the Stanley Bank project partnership has undertaken access improvements, conservation work on Stanley Mill site and Stanley Bank Meadows Site of Special Scientific Interest (SSSI), erosion control along Black Brook and extensive community participation through activities such as Community Archaeology. Facilities at the site's visitor centre have also been upgraded.

The adoption of principles of sustainability has led to Stanley Bank Way being an award-winning example of best practice in green/ grey infrastructure planning, which has improved to St Helens for commercial traffic, assisted in economic regeneration of the town, enriched biodiversity and improved recreational access.

The greening of the bypass is a leading example of the "St Helens Town in the Forest Vision" designed to encourage inward investment through an enhanced

image and quality of life, complimenting a road, which removes 20,000 vehicle movements per day from the West End Road district of Haydock

Stanley Bank Triangle Project was awarded a grant of £865,500 from the Heritage Lottery Fund. Principally, the grant funded improvements to the Sankey Valley Visitor Centre, access and interpretation and conservation of the Stanley Mill Site.



Project data

The toolkit includes a data collection sheet into which the project manager adds information on the project and also on the numbers of people that the project may impact upon.

Stanley Bank involved a wide range of different interventions, the toolkit looks only at the changes to the green infrastructure and the use that is made of it by local communities. It will not assess for example the heritage value of the wide range of archaeological investigations carried out, or the educational value.

The input table for Stanley Bank is shown in Table 1:

Table 1 Stanley Bank Project Data

	Current	Propose d	
Project area	7(0 77.45	ha
Total area of greenspace	(77.07	ha
New green space created	n.a	. 8.45	ha
Area of greenspace enhanced	n.a	. 63.78	ha
	Current	Propose d	
Trees/tree cover	() 3.9	nu mber /ha
Cycle routes	(0 1.162	km
Current cycle routes upgraded	n.a	. 2.047	km
Footpaths	(0 2.247	km
Footpaths upgraded	n.a	. 0	km
	<300m	<1200m	<450m
Number of households within 300m, 1200m and 450m	1551	8880	1248.7 5
Number of businesses within 300m and 1200m	67	348	
Number of residents within 300m and 1200m	3651	21190	
	Current F	Proposed	
Number of community groups involved	0	5	
Total number of users per year	0	0	
Of which number of local visitors	0	5000	

(recreation)				
Of which number of tourist visitors (tourism)	0	500		
Number of people involved in physical activity	0	1500		
Estimate of working population	<mark>2373.15</mark>	13774		
	Current P	roposed		
Area designated for nature and wildlife conservation (local designation)	0	1.163	На	
Area designated for nature and wildlife conservation (national designation)	0	30		
Area of woodland w/biodiversity value not captured above (ie: not protected through local or national designation)	0	4.88	1	
Area of wetland w/biodiversity value not captured above (ie: not protected through local or national designation)	ο	1.28		
	Curren P	roposed		
Number of jobs created/safeguarded for management/maintenance of site	n.a.	1		
Average residential property price in the area	£140,0 00	n.a.	£	

All tools are numbered as they appear in the Valuation Toolkit.

Describing value

The information entered for Stanley Bank Triangle generates values for many of the green infrastructure benefits. The toolkit identifies the marginal benefit¹, the additional value of the work completed.

The toolkit looks at both cost and benefit value, with cost including both the initial costs of the project and then the projected annual management and maintenance costs for 25 years into the future.

Due the nature of the benefits we are trying to value and the current state of our knowledge and research about the actual values and ways of identifying them, not every benefit can be valued.

For those that can the value can be one of two types:

- Contribution to GVA this is a contribution to the economy through increased profit, reduced costs, salary etc.
- Other economic benefit contribution to the broader economic context such as the value in terms of improved health, or the value that society puts on biodiversity – areas where there is no "market" that provides a pricing mechanism.

The monetisations are indicative only, sensitivities and ranges are not reflected in the single figure. Ranges have not proved possible to define for this toolkit and thus all values generated are subject to a +/- factor X which in future may be better understood.

For benefits that we are unable to provide a monetary value and can simply identify the amount of benefit in non monetary terms.

The aim of any project will be to balance these benefits with the capital, revenue and maintenance costs (see Figure 1).

¹ **Marginal benefit**: this is a way to measure change in benefits over the change in quantity. For example, it could refer to the value of the benefits of an additional recreational visit for a tourist site.

Figure 5 benefits versus costs



Results

The Green Infrastructure Toolkit produced the following results for the proposed green infrastructure improvements around the main development site at Stanley Bank.

Table 2 provides information on the quantities that have been used as the basis for the economic valuations shown in Table 3, and also those for benefits for which there is at present no tool included in the toolkit.

For instance, there is no tool in the toolkit to capture the recreational value of the projected 5,000 additional visits that may result from the improvements, nor the estimated 400 additional volunteers. This recreational and volunteer value is additional to that which is captured in the health improvement and "lives saved" tool. However, it is useful to have this additional quantified data as a rich source of information to help promote and sell the wider benefits of the investment.

Benefits Quantification

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Table 2 Benefits Quantification for Stanley Bank

BENEFITS			BENEFIT QU Amounts per	ANTIFICATION year
Benefits groups	Functions	Tools ²		
1 Climate Change Adaptation & Mitigation	Shelter from wind	1.1 Reduced building energy consumption for heating	9600	kWh/yr energy saved
		1.2 Avoided carbon emissions from building energy saving for heating	1948.8	kgCO2/yr not emitted
2 Water management & Flood Alleviation	Interception, storage and inflitration of rainwater	2.1 Energy and carbon emissions savings from reduced stormwater volume entering combined sewers	184968000	L/yr water diverted from sewers
		3.2 Increase in volunteering	400	new volunteers
4 Health & Well-being	Tool not vet			
	functional			
		4.2 Reduced mortality from increased walking and cycling	5.5	lifes saved per yr
		4.6 Avoided costs for air pollution control measures	0.06	t/yr of carbon monoxide removed
			0.21	t/yr of sulfur dioxyde removed
			0.19	t/yr of nitrogen dioxyde removed
			0.48	t/yr of PM10 removed
			0.54	t/yr of ozone removed
7 Labour Productivity	Attraction and retaintion of high quality staff	7.3 Savings from reduced absenteism from work	Between	

² This column refers to the tools in the toolkit, described under each benfit type by a specific tool number

			176	and
			940	work days lost avoided per yr
8 Tourism	Tourism attraction	8.1 Tourism expenditure	500	Visitor days
		8.2 Employment supported by tourism	0.22	FTE jobs
9 Recreation & leisure	Provision of recreation opportunities	9.1 Recreational value for use by local population	5000	Local users
10 Biodiversity	Provision of recreation opportunities	10.1 Willingness to pay for protection or enhancement of biodiversity	37.3	Ha of land w/ biodiversity value added
11 Land management	Land management	11.2 Employment supported by land management	1	FTE jobs

Using the data in Table 2, the Green Infrastructure Toolkit produced the following economic valuation results for Stanley Bank.

VALUE FOR MONEY TEST: NPV³ of overall net benefit or cost £15,212,000

The value for money test compares the discounted costs with the discounted estimated values, both GVA and other economic to give the Net Present Value of the project.

The toolkit discounts costs and the value of benefits over a period of up 50 years depending on the benefit type. Over a 50 year period the total value of the benefits in real terms is around 15 times the initial investment.

³ NPV – Net Present Value iS the sum of the <u>present values</u> (PVs) of the individual cash flows. The rate used to discount future cash flows to the present value is a key variable of this process and in this toolkit it has been based on Treasury Green Book guidance.

Table 4 provides the data on monetisation of the benefits, using the best available economic valuation data. The full details of the models used, the basis and limitations of the tools are provided in the toolkit guide.

The data is split between the GVA and other economic value by the various benefits that are assessed in the toolkit.

 Table 3 Net present value of the marginal benefits from HLF investment at Stanley Bank

Benefit	GVA (000)	Other Economic benefit (000)	Total (000)
Climate	£2	£40	£42
Change			
Adaptation &			
Mitigation			
Water	£113	-	£113
management			
& Flood			
Alleviation			
Health &		£10,804	£10,804
Well-being			
Land and	£1,670	-	£1,670
Property			
Values			
Labour	£158	-	£158
Productivity			
Tourism	£98	-	£98
Biodiversity		£2,145	£2,145
Land	£ 177	-	£177
management			

GVA is delivered through six benefits, with that for Land and Property Value providing the greatest value. This is not surprising nor out of step with similar reports of uplift to property value after improvement to green infrastructure. The work carried out by the Independent Valuation Office on the creation of the Community Woodland at Bold Moss found a similar significant increase in property values⁴.

The **Climate Change** benefit is due to reduced heating and cooling requirements in nearby areas, whilst the water management benefit comes from a reduction in the amount of runoff from the area and therefore a reduced need to treat the water. Table 5 shows how this additional benefit for water management is valued.

Water diverted from sewers	16,968,000
Equivalent energy saving (water treatment)	109,444
Equivalent carbon saving	58.77
Tool 2.1 output	£/yr value of carbon
Tool 2.1 output	4,378 £/yr value of energy

Table 4 Water management valuation⁵

Labour productivity value is derived from data on improved health and a reduction in absenteeism based on well documented research. Tourism value is the anticipated additional spend from visitors to the area. Finally Land Management **value** is derived from the presence of additional paid staff for the project, particularly focussed on the education programme. However, this value does assume that the post continues into the future.

⁴Case study report commissioned by Natural Economy Northwest

June 2008; http://www.naturaleconomynorthwest.co.uk/resources+case+studies.php

In terms of the water management benefits are only actualised if water is being removed from waste water treatment systems. If the discharge is to surface water drains it does not deliver the monetisation benefits

Figure 6 Distribution of GVA Benefits for Stanley Bank



For "other economic benefits" we get values from a wider range of benefits. The greatest benefit is seen from improved **Health and Well-being**. From the data gathered for the toolkit and using a conservative estimate of the likely increase in usage of the site due to the improvements the toolkit calculates reduced mortality of one every two years, the NHS "value" on a life is £1.6m. Over a long time period this can give a high value for improved health and wellbeing.

Unsurprisingly, **Biodiversity**⁶ also contributes a significant value too. This valuation is based on data that estimates people's "willingness to pay" for biodiversity.



Figure 7 Other Economic Value

⁶ Biodiversity values are based on "Willingness to Pay" studies. These do have some drawbacks, but are seen a part of the range of tools available to elicit value. WTP is used in the UK National Ecosystems Assessment.

Adding the GVA and Other Economic Benefits together provides the overall economic value. As discussed; this is likely to be an underestimate as we are not as yet able to assess all of the benefits. The Health and Wellbeing value is the highest, followed by biodiversity. Overall values have been provided for six of the 11 benefits.

Figure 8 Overall Value



The results from the use of the toolkit on the Stanley Bank Triangle were presented at the Greenbelts Conference in Toronto in March 2011.





Conclusion

The toolkit is another way to show that the investment in Stanley Bank has been a sound one, delivering a wide range of benefits, in addition to the cultural and educational value that has also been so important for the project.

The fact that health and well being is a critical issue for the area also suggests that a key mechanism for securing the value from the investment in the long term and even increasing it, will be to maintain high levels of visitors who use the site frequently and for extended periods (three hours plus). The presence of rangers and a programme of events as well as good signage, interpretation and communications with residents encouraging their use of the site will help to get as many people as possible using the site, gaining understanding of the heritage, but also gaining other benefits too.

The project can be seen to have an impact supporting the local economy in terms of jobs created, labour productivity and supporting property prices in the vicinity.

Not surprisingly there is also enhanced biodiversity value. The project is a good example of the type of integrated project that the Natural Choice White Paper is promoting, where intervention to develop and deliver green infrastructure can have wide ranging social, economic and environmental benefits.