

BeST (Benefits of SuDS Tool)

W045d BeST – User Manual

**Release version 2
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need help? email: best@susdrain.org





BeST (Benefits of SuDS Tool) User Manual

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Sustainable drainage systems, drainage, sewers, SuDS, multiple benefits, monetary values,		
Reader interest	Classification	
	AVAILABILITY	Unrestricted
	CONTENT	Advice/guidance
	STATUS	Committee-guided
	USERS	Drainage engineers, highway engineers, flood risk managers, landscape architects, spatial planners, consultants
Assessing the benefits of SuDS and other drainage enables conversations with interested stakeholders and identify other potential funding routes. Understanding the wider value of different drainage options provides greater information to support decision makers make choices.		

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Front Cover Image: The Triangle, Swindon courtesy of Studio Engleback, Curtins Consulting & Kevin McCloud



Components of BeST

W045a BeST: Evaluation Tool:
supporting practitioners evaluate benefits for a drainage proposal

W045b BeST: Options Comparison Tool:
Tool to compare more than one drainage proposal

W045c BeST Technical Guidance:
Provides technical information behind the tool

W045d BeST User manual:
Provides an overview of how to use the tools W045a and W045b

Funders



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Introducing BeST: What it can and can't do

It can	It can't
✓ Play a valuable role as a decision support tool - informing decision makers of the potential benefits of different courses of action	✗ Account for every individual content or site specific nuance. It requires the user to think how their individual site or catchment information can be entered into the tool.
✓ Estimate monetary value of benefits based upon information provided by the user	✗ Estimate the benefits without user input to translate the context of the scheme into the framework of the tool
✓ For new development compare the benefits of a SuDS option with a conventionally drained option	✗ Provide great accuracy without local evaluation or similar scoping studies being undertaken
✓ For retrofit compare an option against the existing baseline	✗ Indicate benefits without some form of drainage design and performance assessment
✓ Provide support to help evaluate some benefits in a simplified manner	✗ Be a design tool or decision making tool and tell you which SuDS to use and how your drainage will specifically perform
✓ Investigate the impact of uncertainty in the values being used and applied	✗ Provide a detailed distributional analysis of benefits
✓ Provide summaries, graphs and comparisons (if more than one option considered)	✗ Guarantee that the benefits indicated by the tool will be delivered in practice
✓ Provide an indication of the kinds of benefits that are likely to occur from a given drainage scheme	✗ Guarantee that beneficiaries will want to (or are able to) support funding of SuDS
✓ Provide an indication of which groups may benefit from a given drainage scheme	✗ Determine the costs (capital, operational, whole-life) of the drainage scheme
✓ Suggest where more detailed analysis or assessment of impacts may be needed	✗ Eliminate any potential overlap between different benefits
✓ Produce simple dataset and graphics to substantiate output information	✗ Provide a full life-cycle assessment of all potential drainage solutions



Functionality and navigating through the tool W045a

NOTE: some work sheets/cells in W045a are protected to avoid accidental changes

Screen refresh button in case the tool stops working

Quick navigation to important tabs

CIRIA SuDS Menu

Will provide links to the user and technical guidance on susdrain

What the colours/borders mean for the cells

User to enter data/text



User selects information from drop down menu or double click to enter menu

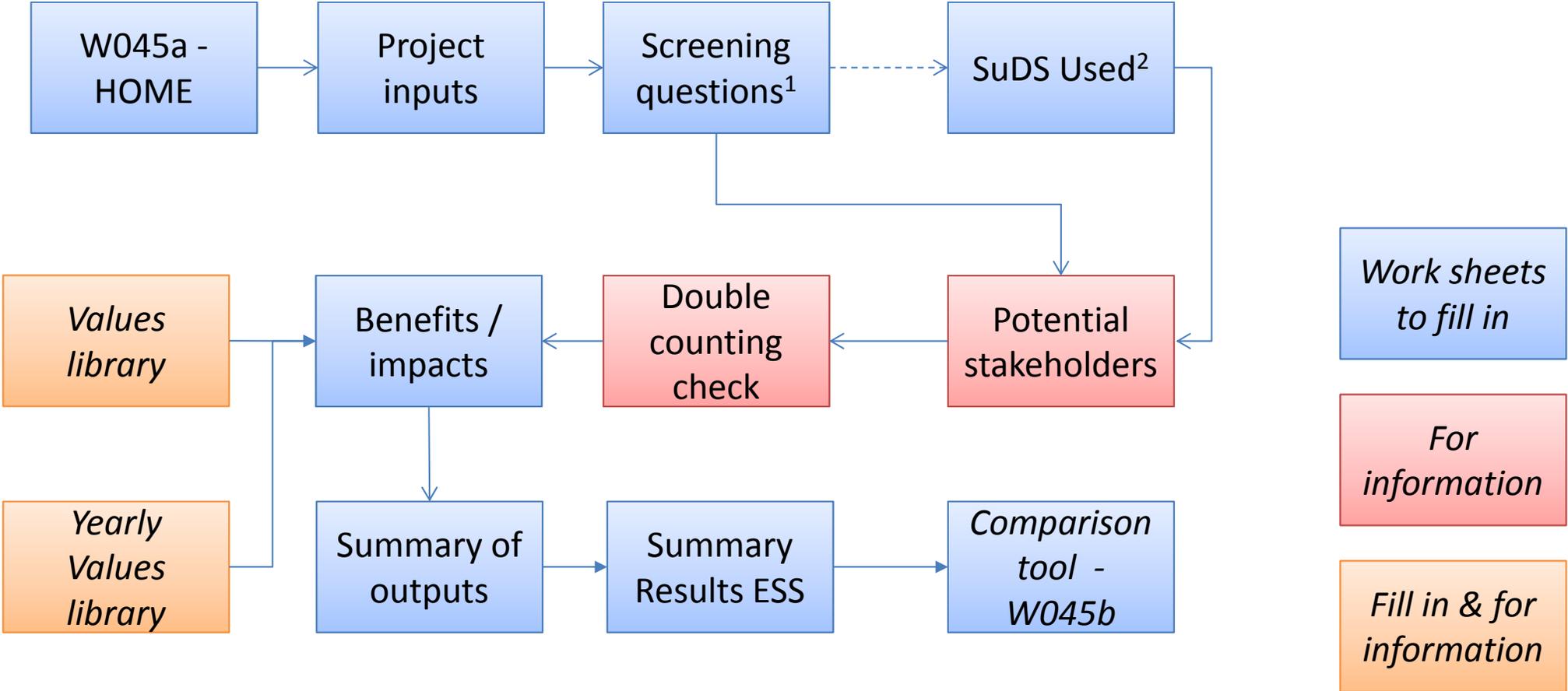


Tool automatically calculates values / outputs





Expected order to complete/use the tools



NOTES:

¹Opens up selected impacts

²Only opens based on benefits enabled from screening questions



HOME tab asks the user to input general project data

Estimating The Impacts of SuDS
Version: 1.000, July-2015

PROJECT DETAILS - No.: 0, Name: 0, Assmt. Version: 0, Date: Jan 1900.

BASIC Instructions . . .

- Use the menu to navigate and perform some management tasks.
- If the CIRIA menu isn't working.. either Navigate away then back again, or press the sort Screen Button.
- Single click a point on the chart...to enter text Might need to do it twice before it will show data.
- Double click to select and pick/enter information in the page

ENTER Basic Project details below.
for more Instructions please press help.

PROJECT DETAILS

Author

Date

Project Name

Project Reference Number

Assessment version

Enter the general project data to help with quality control

CIRIA W045 | HOME | Version Info | Project Inputs | Screening questions | Potential Stakeholders | Potential double counting | Summary ...



Project inputs: captures general information about the project

Enter the name of the site

Select the scheme type

Enter briefly the baseline situation / option

Select stakeholders who are supporting the project

Enter discount rate to be used in the tool

Enter information about the assessment

Enter the size of the development or area of retrofit

Double click the blue boxes to bring up selections

Enter briefly the name of your proposed scheme/option

Enter the costs for baseline / proposed option

Select the scheme drivers and add your own specific ones

Select funders who are supporting the project

Screening questions and initial qualitative assessment helps the user to assess which benefits to consider

To hide or open the benefits in BeST press the button

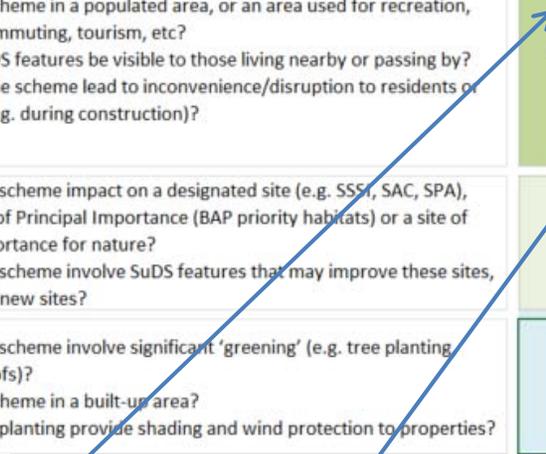


Screening Questions and initial qualitative assessment ENABLE PAGES						
PROJECT DETAILS - No.: tbc, Name: tbc, Assmt. Version: tbc, Date: tbc.						
Impact	Question	Further aspects to consider	Likely Impact	Open impact sheet?	Reasons /evidence for choosing the scale of the impact	LINKS
Air quality	Will the drainage / SuDS also change the level of air pollution?	<ul style="list-style-type: none"> - Is the site in an air quality management area? - Will the scheme involve significant 'greening' (e.g. tree planting, green roofs)? - Is the scheme in a populated area or a transport corridor? 	++	YES		LINK
Amenity	Will the drainage / SuDS also change the attractiveness of the place	<ul style="list-style-type: none"> - Does the scheme involve significant landscaping or greening? - Is the scheme in a populated area, or an area used for recreation, work, commuting, tourism, etc? - Will SuDS features be visible to those living nearby or passing by? - Could the scheme lead to inconvenience/disruption to residents or others (e.g. during construction)? 	++	YES		LINK
Biodiversity and Ecology	Will the drainage / SuDS also lead to a change in habitats for plants and animals	<ul style="list-style-type: none"> - Will the scheme impact on a designated site (e.g. SSSI, SAC, SPA), Habitats of Principal Importance (BAP priority habitats) or a site of local importance for nature? - Will the scheme involve SuDS features that may improve these sites, or create new sites? 	+	YES		LINK
Building temperature	Will the drainage / SuDS also change the potential for high temperatures in summer and cold temperatures in winter	<ul style="list-style-type: none"> - Will the scheme involve significant 'greening' (e.g. tree planting, green roofs)? - Is the scheme in a built-up area? - Will the planting provide shading and wind protection to properties? 	+	NO		LINK

Consider the questions and estimate the potential magnitude of the impact using the drop down selection

Based on your initial assessment select whether to open the impact sheet in the tool

Document your reasoning / evidence in these cells



SuDS Used captures information about the SuDS and where they will be built (only opens if certain benefits are selected in the screening)

Enables values from selected orange cells to be cleared

Summarises the total area for swales where the length and width are entered on the same row

Summarises the totals

Enables you to describe the location where SuDS measures are

Add in the values (length, width, size, number as appropriate)

PROJECT DETAILS - No: 1, Name: Test Project, Assmt. Version: A, Date: 27th April 2015.

KEY: Input Data Select Information Calculation / Output

NOTE: Complete this section outlining the types of SuDS in the scheme overall or in defined locations if you are assessing Air Quality, Building Temperature and Carbon Sequestration
Light grey cells contain extra notes when you select the cell

Clear Selected Cells

Location reference / name		Location summary	Green Roof Intensive (size (m2))	Green Roof Extensive (size (m2))	Rain garden (total size) (m2)	Trees (number)	Vegetation swale (length (m))	Vegetation swale (typical width (m))	Grass (m2)
		TOTAL	2000	2000	2000	2500	100	5	650
			1000	1000	1000	1000	100	5	



Double counting check highlights which benefits may overlap and where care is required

(Project Details Incomplete)	
This worksheet is for information only to help you understand where double counting may occur between benefit categories	
Impact	Benefit Category
	Air quality
	Amenity
	Biodiversity (habitats)
	Carbon sequestration
	Crime
	Economic growth
	Education
	Enabling development
	Flexible infrastructure / CCA
	Flood risk
	Groundwater recharge
	Health
	Noise
	Public relations / Corporate Social Responsibility
	Pumping wastewater
	Recreation
	Temperature (air / building)
	Tourism
	Traffic calming
	Treating wastewater
	Water quality of receiving water
	Water resource
Air quality	
Amenity	
Biodiversity (habitats)	
Carbon sequestration	
Crime	
Economic growth	
Education	
Enabling development	
Flexible infrastructure / CCA	
Flood risk	
Groundwater recharge	
Health	
Noise	
Public relations / Corporate Social Responsibility	
Pumping wastewater	
Recreation	
Temperature (air / building)	
Tourism	
Traffic calming	
Treating wastewater	
Water quality of receiving water	
Water resource	

Identifies where there is potential for double counting.



Each impact has a space to make notes or add reference to other studies information etc. Only fill in one section of each impact (except flooding).

Pumping wastewater

PROJECT DETAILS - No: 0, Name: 0, Assmt. Version: 0, Date: Jan 1900

KEY

Input Data

Select Information

Calculation / Output

Evidence: Qualitative summary and written evidence

1	
2	
3	
4	
5	

Notes
 Overview of the sections to help choose which section to capture the impact on pumping (including carbon)
 Only complete one section.
 Further help (to be developed) is provided in the guidance

Section P1

Use this section if you already assessed the impact on pumping stations

Section P2

Use this section if you need support to estimate the impact on pumping stations if you know information about the pumps and run times

Section P3

Use this section if you need support to estimate the impact on pumping stations if you only know information about the pumped flows and run times

SECTION P1

Note:
 If you have undertaken an assessment of the financial impact of the changing the flows to pumping stations enter the data here. If not, proceed to P2 or P3.

For solutions where the grey infrastructure was to build storage, and increase the flow entering the sewer network (e.g. in the case of where CSO storage is required) then the increase should be recorded in the impact the grey infrastructure has on the network, negatively. Similar questions can be asked for the grey infrastructure approach.

Record evidence or reference information

Notes give some general information about each impact

Tells you about each section to guide you to which one to fill in depending upon the information you have

Specific notes relate to each impact and assessment section

Each impact enables a self assessment of benefits before providing more simplified methods of estimating the impact.

SECTION WQ1

Notes:

If you have calculated the impact of the proposals on water quality enter the present values here.
For a retrofit, you only need to enter the present value for the proposed scenario

Scenario		Present value before certainty / confidence applied	Level of certainty of the quantity calculated (select from list)	Level of confidence of the monetary value selected/used	Present value damage after certainty / confidence applied	Confirm the start and end year of the evaluation	
Baseline scenario	Needs	£ -			£ -	Start	End
Proposed scenario	Proposed	£ -			£ -		
		<i>Average confidence values</i>					
Sum of benefits		£ -			£ -		

Each benefit starts where you can enter information from your own evaluation.

Enter information in this section if you have already undertaken an assessment of the present value of the impact.

SECTION WQ2

Notes:

Use this section to estimate the impact of the proposals on the water quality of the receiving water.
For a retrofit, you only need to enter the present value for the proposed scenario.
Refer to the guidance (under development) to help you calculate the impact the SuDS may have, based upon the available information

Confirm the start and end year of the evaluation

Start End

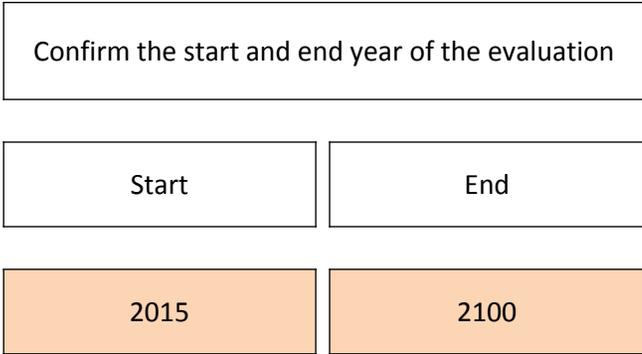
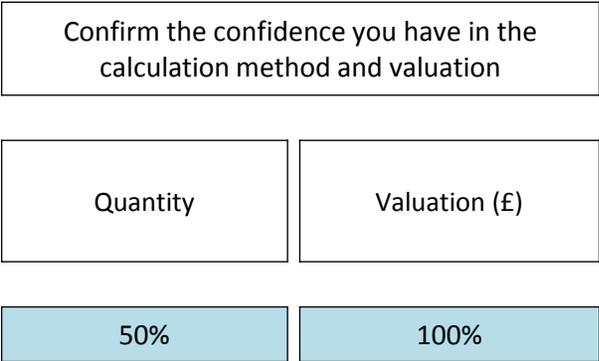
Scenario		Select the change in water quality classification (from - to)	Select region	Select the monetary value of change per km	Monetary value selected (£)	Length of the water course (km)	Present value before certainty / confidence applied	Level of certainty of the quantity calculated (select from)	Level of confidence of the monetary value	Present value after certainty / confidence applied
Baseline scenario	Needs				0		£ -			£ -
Proposed scenario	Proposed				0		£ -			£ -
							Difference between base and proposal			£ -

1stWaterGrade 1stWaterRegion 1stWaterSubGrade

Enter information in this section following the guidance which indicates where this information may come from and how to undertake the assessment



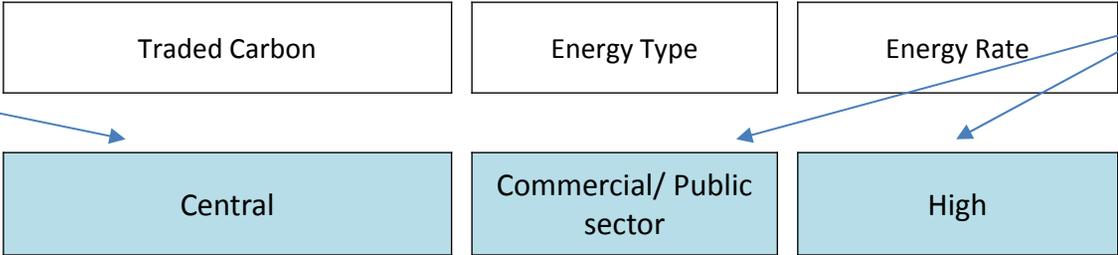
A number of boxes are similar across a number of the benefits



Allows you to amend the final values by assigning a confidence score for the quantity predicted and the monetary values applied (25%, 50%, 75% and 100%)

Allows you to select the start and end year of the evaluation period, for when the benefits will start to be realised. This is important to calculate the present value correctly.

Allows you to choose the traded carbon price



Allows you to choose the energy type and the energy rate

Benefits that are hard to quantify can be summarised in the qualitative pages (but if you can monetise, it is available).

SECTION Edu1

Notes
Use the matrix to evaluate the impact that the SuDS may have in contributing to education

Evidence and Qualitative summary

1	
2	
3	
4	
Summary	

Magnitude of the contribution to enhance education	High	3	4	5
	Medium	2	3	4
	Low	1	2	3
		Small	Medium	Large
Population impacted				

1. Negligible improvement
2. Little improvement
3. Medium improvement
4. High improvement
5. Significant improvement

Record the estimated impact

Magnitude	Size of area	Potential Impact value	Confirm the confidence you have in the estimation method	Revised impact value

Use the simple matrix to undertake qualitative scoring of the magnitude and impact of the drainage scheme

Allows you to enter in lump sum or present value benefit if a local study has been completed.

SECTION Edu2

Note:
Use this section where evidence is available to support that SuDS create an impact.

					Confirm the start and end year of the evaluation	
Scenario	Lump sum or present value benefit from a local study	Level of certainty of the quantity calculated (select from list)	Level of confidence of the monetary value used	Lump sum / present value after confidence applied	Start	End
Proposed scenario 10	£			£		



Results will automatically appear in the summary table. No direct data entry should be required.

Summary of Outputs - Monetised

(Project Details Incomplete)

Discount	3.50%
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Automatic colour coding to highlight the benefits that are greater than 20% (green) or 10-20% (amber) of the total.

Monetised Impacts

Significant proportion	Main impacts	Monetised sub-impact	Year start	Year end	Present value	Level of certainty of the quantity calculated	Level of confidence of the monetary value selected/used	Present value after uncertainty adjustment
Air quality	Air quality	External assessment	0	0	£ -	0%	0%	£ -
	Air quality	SO2	2020	2060	£ 63,825	50%	100%	£ 31,912
	Air quality	NO2	2020	2060	£ 29,336	50%	100%	£ 14,668
	Air quality	PM-10	2020	2060	£ 876,114	50%	100%	£ 438,057
Amenity	Amenity - Quality of space	External assessment	0	0	£ -	0%	0%	£ -
	Amenity - Quality of space	Street improvements	2020	2060	£ 40,326	50%	50%	£ 10,082
	Amenity - Quality of space	Permanent body of works	2020	2060	£ 3,895,129	50%	50%	£ 973,782
	Amenity - Quality of space	Property increase	n/a	n/a	£ -	50%		£ -
Biodiversity	Biodiversity (Habitats)	External assessment	0	0	£ -	0%	0%	£ -

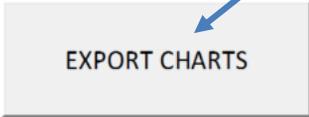


Monetised results automatically come into the summary table (ESS and TBL) including the sensitivity results. This data creates the graphs (next page)

Summary Results - Triple Bottom Line						
Present Value Assessment Stage	Total PV Benefits	Total PV Costs	Net Present Value	Benefit Cost Ratio	Flexibility score	
Present Value before confidence applied	£ 3,456,820	£ 1,000,000	£ 2,456,820	3.5	72%	EXPORT CHARTS
Present Value after confidence applied	£ 1,686,090	£ 1,000,000	£ 686,090	1.7	73%	
Present Value sensitivity - low	£ 737,303	£ 1,000,000	£ -262,697	0.7	73%	
Present Value sensitivity - high	£ 3,167,835	£ 1,000,000	£ 2,167,835	3.2	72%	

Triple Bottom Line Category	Impact	Present Value before confidence applied (£)	Present Value after confidence applied	Notes	Present Value sensitivity - low (£)	Present Value sensitivity - high (£)
Financial	Building temperature	£ 31,960	£ 22,917		£ 1,856	£ 44,500
	Economic growth	£ -	£ -		£ -	£ -
	Enabling development	£ 1,200	£ 900		£ 450	£ 1,500
	Flexible infrastructure/climate change adaptation			Not currently applied		Not applicable
	Pumping wastewater	£ 24,160	£ 18,123		£ 9,030	£ 30,199
	Rainwater harvesting	£ 164,961	£ 92,791		£ 41,240	£ 164,961
	Tourism	£ -	£ -		£ -	£ -
	Treating wastewater	£ 734,433	£ 413,531		£ 183,053	£ 732,233
	Groundwater recharge	£ 13,748	£ 7,962		£ 5,155	£ 17,185
	User-defined	£ -	£ -		£ -	£ -
	User-defined	£ -	£ -		£ -	£ -
	User-defined	£ -	£ -		£ -	£ -
Environmental	Air quality	£ 243,988	£ 181,169			
	Biodiversity and ecology	£ 118,186	£ 44,320			
	Carbon reduction and sequestration					
	Flooding					
	Water quality					
Social	User-defined	£ -	£ -		£ -	£ -
	User-defined	£ -	£ -		£ -	£ -
	User-defined	£ -	£ -		£ -	£ -
	User-defined	£ -	£ -		£ -	£ -
	User-defined	£ -	£ -		£ -	£ -
Quality of Life	Amenity	£ -				
	Crime	£ -				
	Education	£ -				
	Health	£ 624,024	£ 318,020		£ 121,880	£ 607,113
	Recreation	£ 142,007	£ 77,653		£ 31,985	£ 134,974
	Traffic calming	£ -			£ -	£ -
	User-defined	£ -	£ -		£ -	£ -
	User-defined	£ -	£ -		£ -	£ -
	User-defined	£ -	£ -		£ -	£ -
	User-defined	£ -	£ -		£ -	£ -

Export button creates word document with charts



Overall summary table pre and post confidence, low and high sensitivity.

Includes flexibility score to indicate the distribution of the benefits

User-defined only:

Link to other cells or define the benefit name

Present value before and after confidence applied

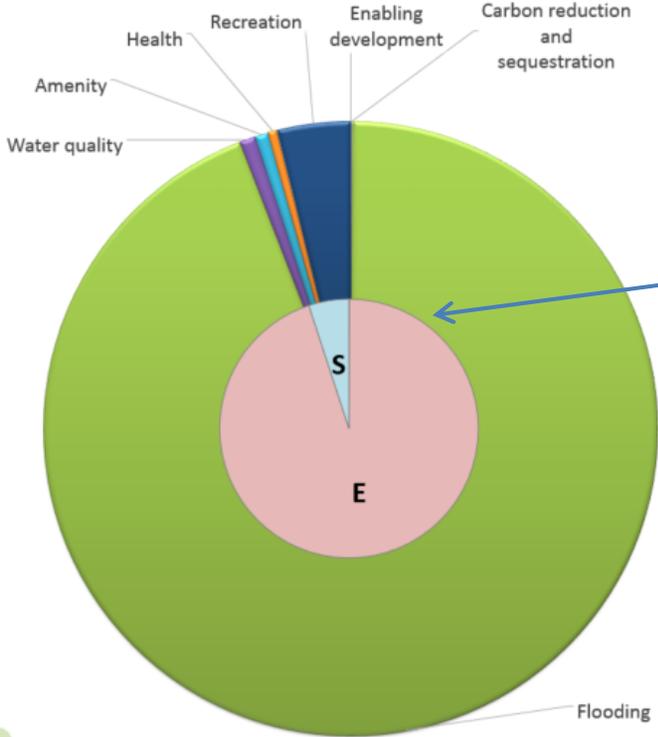
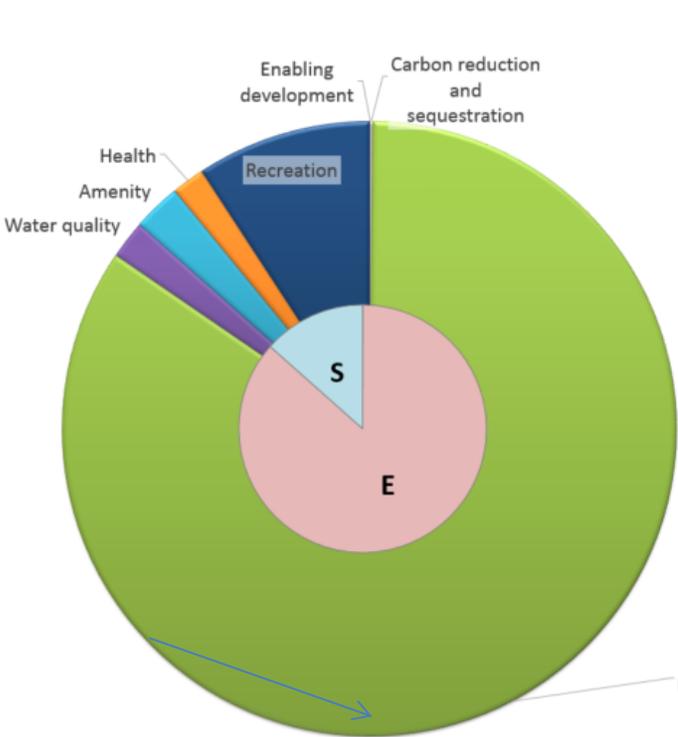
Present value with low and high sensitivity analysis completed

User defined only: Link cells or enter values for present values pre and post confidence and for low and high sensitivity



Graphs are automatically created based upon the data, for pre-confidence (left) and post confidence (right)

Individual Benefits (Present Value) (Pre-Confidence) Individual Benefits (Present Value) (Post-Confidence)



Pie chart shows the proportion of the impacts along with the ecosystem service type or Triple Bottom Line category in the centre

Financial
Environmental
Social

- Enabling development
- Flooding
- Amenity
- Recreation
- Carbon reduction and sequestration
- Water quality
- Health
- Enabling development
- Flooding
- Amenity
- Recreation
- Carbon reduction and sequestration
- Water quality
- Health



Values library catalogues values, shows which are built into the tool and include a column where user defined values (which then appear in the benefits worksheets) may be entered.

Values Library		Suggested values (2014 prices unless user updated in Yearly Values Library)			User defined Values (units as in units column)	Source	Title
		Low	Central / Average	High			
<p>KEY</p> <ul style="list-style-type: none"> Rows directly used in the tool User can define values Values (on the row) provided for information <p>Monetary Values</p>							
1. AIR QUALITY							
NOX	£	802	£ 1,029	£ 1,169	User not defined	https://www.gov.uk/air-quality-economic-analysis	Air quality:ec
SOX	£	1,422	£ 1,760	£ 2,000	User not defined	https://www.gov.uk/air-quality-economic-analysis	Air quality:ec
Ammonia	£	1,657	£ 2,125	£ 2,415	User not defined	https://www.gov.uk/air-quality-economic-analysis	Air quality:ec
PM domestic	£	23,743	£ 30,324	£ 34,459	User not defined	https://www.gov.uk/air-quality-economic-analysis	Air quality:ec
PM agriculture	£	8,188	£ 10,456	£ 11,883	User not defined	https://www.gov.uk/air-quality-economic-analysis	Air quality:ec
PM waste	£	17,603	£ 22,481	£ 25,548	User not defined	https://www.gov.uk/air-quality-economic-analysis	Air quality:ec
PM industry	£	21,286	£ 27,187	£ 30,894	User not defined	https://www.gov.uk/air-quality-economic-analysis	Air quality:ec
PM ESI	£	2,047	£ 2,614	£ 2,971	User not defined	https://www.gov.uk/air-quality-economic-analysis	Air quality:ec
PM transport average	£	40,935	£ 52,282	£ 59,411	User not defined	https://www.gov.uk/air-quality-economic-analysis	Air quality:ec
PM transport central London	£	187,072	£ 238,931	£ 271,513	User not defined	https://www.gov.uk/air-quality-economic-analysis	Air quality:ec
PM transport Inner London	£	192,384	£ 245,728	£ 279,237	User not defined	https://www.gov.uk/air-quality-economic-analysis	Air quality:ec
PM transport outer London	£	125,671	£ 160,507	£ 182,395	User not defined	https://www.gov.uk/air-quality-economic-analysis	Air quality:ec

These values appear directly in the tool, e.g. in the Air quality worksheet

User can enter their own values, or substitute from a different category in the table here, e.g. in this case for an alternative PM transport category.



Yearly values library contain values such as energy and also enable you to update the base year to take account of inflation without waiting for a new version of the tool.

Values Library - Yearly Values

Gross Domestic Product Deflators at Market Prices (calendar year)	
Note: Update orange cells with data from appropriate base year.	
Data taken from: GDP deflators at market prices, and money GDP: December 2015 (Quarterly National Accounts)	
Year	Gross Domestic Product Deflators
1990	54 821
1991	58 418
1992	60 327
1993	61 882
1994	62 638
1995	64 191
1996	66 772
1997	68 324
1998	69 426
1999	70 199
2000	71 819
2001	72 575
2002	74 392
2003	76 424
2004	78 543
2005	80 932
2006	83 355
2007	85 736
2008	88 204
2009	90 000
2010	92 799
2011	94 746
2012	96 284
2013	98 193
2014	100 000

These values can be updated with the latest Government's GDP deflator.



Note the values beyond 2100 have been estimated as they are not available currently. This set of tables supports the September 2015 version of the DECC/HM Treasury Green Book supplementary appraisal guidance on valuing energy use and greenhouse gas (GHG) emissions. These tables were last revised on: Sep

Electricity costs p/kWh

The prices in the tables are projected retail prices and are based on projected wholesale prices, on averaged historical non-fuel costs and are uplifted by taxes, fuel duties and policy cost recovery, including any announced future changes (5%). Industry and services prices do not include VAT.

You should select the most appropriate price (residential, services or industrial) for the energy used in your assessment. Note beyond 2030, prices have been fixed.

Year	Commercial/ Domestic			Commercial/ Domestic			Commercial/ Domestic			User defined	Commercial/ Domestic		
	Domestic	Public sector	Industrial	Domestic	Public sector	Industrial	Domestic	Public sector	Industrial		Domestic	Public sector	Industrial
	Low	Low	Low	Central	Central	Central	High	High	High		User	Low	Low
2008													
2009													
2010													
2011													
2012													
2013	15.2	9.4	8.2	15.2	9.4	8.2	15.2	9.4	8.2		4.9	3.1	2.7
2014	15.8	9.8	8.2	15.8	9.8	8.2	15.8	9.8	8.2		5.1	3.0	2.4
2015	14.9	9.2	7.8	14.8	9.9	8.5	14.9	10.6	9.2		4.1	2.2	1.7
2016	14.7	9.7	8.3	15.3	10.8	9.3	15.9	11.8	10.3		3.7	2.1	1.6
2017	15.2	10.0	8.6	16.3	11.3	9.9	17.3	12.6	11.1		3.7	2.1	1.5
2018	15.8	9.8	8.4	17.1	11.3	9.8	18.3	12.7	11.2		3.6	2.0	1.4
2019	16.0	10.5	8.9	17.6	12.0	10.4	19.0	13.5	11.9		3.5	1.9	1.4
2020	16.8	11.4	9.8	17.9	12.5	10.8	19.3	13.8	12.1		3.4	2.0	1.4
2021	16.4	11.3	9.9	18.0	13.1	11.6	19.3	14.7	13.2		3.4	2.0	1.5
2022	17.3	12.0	10.6	18.4	13.3	11.8	20.1	14.7	13.2		3.5	2.1	1.6
2023	16.7	12.0	10.6	18.3	13.6	12.1	19.8	15.2	13.7		3.3	2.2	1.6
2024	17.2	12.8	11.4	18.7	14.4	12.9	20.2	15.9	14.4		3.4	2.2	1.7
2025	18.1	13.4	12.0	19.6	15.0	13.5	21.0	16.5	14.9		3.5	2.3	1.8
2026	17.9	13.3	11.8	19.6	15.1	13.6	20.9	16.1	14.6		3.5	2.3	1.8
2027	18.6	13.8	12.3	20.1	15.2	13.7	21.4	16.5	15.0		3.6	2.4	1.9
2028	18.5	13.7	12.2	19.8	14.7	13.2	21.1	15.8	14.3		3.6	2.5	1.9
2029	18.4	13.8	12.3	19.4	14.6	13.2	20.3	15.6	14.1		3.7	2.5	2.0
2030	18.5	13.9	12.5	19.5	14.8	13.3	20.2	15.6	14.1		3.7	2.6	2.1
2031	18.5	13.9	12.5	19.5	14.8	13.3	20.2	15.6	14.1		3.7	2.6	2.1
2032	18.5	13.9	12.5	19.5	14.8	13.3	20.2	15.6	14.1		3.7	2.6	2.1
2033	18.5	13.9	12.5	19.5	14.8	13.3	20.2	15.6	14.1		3.7	2.6	2.1
2034	18.5	13.9	12.5	19.5	14.8	13.3	20.2	15.6	14.1		3.7	2.6	2.1
2035	18.5	13.9	12.5	19.5	14.8	13.3	20.2	15.6	14.1		3.7	2.6	2.1
2036	18.5	13.9	12.5	19.5	14.8	13.3	20.2	15.6	14.1		3.7	2.6	2.1
2037	18.5	13.9	12.5	19.5	14.8	13.3	20.2	15.6	14.1		3.7	2.6	2.1



Allowing for variable discount rates to accommodate funding organisation requirements

ciria Present Value Calculation

(Project Details Incomplete)

Discount Rate from inputs
3.50%

Shows the value directly entered into the 'Project Inputs' page.

Year	Discount Value factor	Discount rate
2013	1	3.50%
2014	0.97	3.50%
2015	0.93	3.50%
2016	0.90	3.50%
2017	0.87	3.50%
2018	0.84	3.50%
2019	0.81	3.50%
2020	0.79	3.50%
2021	0.76	3.50%
2022	0.73	3.50%
2023	0.71	3.50%

Discount rate below: the %s can be overwritten with user defined for different years.
NOTE: this removes the link to the project inputs rate

Values can be altered within the orange cells, including different rates for different years if required.



Sensitivity analysis enables you to vary the confidence levels for each present value calculation.

Sensitivity analysis

PROJECT DETAILS - No.: 0, Name: 0, Assmt. Version: 0, Date: Jan 1900.

Notes:
 This sheet enables you to alter a number of parameters such as the confidence scores or start and end years, to see the impact on the present values entered or calculated.
 This sheet is not complete - will request feedback in the PSG meeting to discuss its usefulness and the level of detail required by the PSG.
 Column B highlighted depending upon the proportion the impact has overall: Green (>20%), Amber (10-20%) and Red (<10%).

Existing option values will automatically appear.

Monetised impacts	Sub impact	State	Quantity confidence	Monetary confidence	Present value pre-confidence	Present value after confidence	Justification for change	
AMENITY	Amenity	Existing	0%	0%	£ -	£ -		
		Low			£ -	£ -		
		High			£ -	£ -		
	Amenity	Existing	75%	75%	£ 538,578	£ 302,950		
		Low	50%	50%	£ 538,578	£ 134,645		
		High	100%	100%	£ 538,578	£ 538,578		
	Amenity	Property price increase - city park	Existing	0%	0%	£ -	£ -	
			Low			£ -	£ -	
			High			£ -	£ -	
	Amenity	Property price increase - local park	Existing	0%	0%	£ -	£ -	
			Low			£ -	£ -	
			High			£ -	£ -	
Property price increase - green space enhancement	Existing	0%	0%	£ -	£ -			
	Low			£ -	£ -			
	High			£ -	£ -			
TOTAL	Existing			£ 538,578	£ 302,950			
	Low			£ 538,578	£ 134,645			
	High			£ 538,578	£ 538,578			

Low and high sensitivity can be completed

The confidence values can be altered



Use W045d BeST Options Comparison Tool to help compare the benefits of different options.

ciria Ecosystem Services Scheme Comparisons

(Project Details Incomplete)

Note: Paste in data from the tool to enable a comparison.

Include option in chart?		YES	YES	YES	NO
Scheme Reference		Option 1	Option 2	Option 3	Option 4
Scheme Summary		Conventional solution	SuDS Minimum	SuDS Extra	
Scheme present value cost		£350,000	£450,000	£489,000	£0
Scheme present value benefits		£287,500	£443,000	£493,000	£0
Overall scheme net present value		£62,500	£7,000	£4,000	£0
Impact		Present Value (£)	Present Value (£)	Present Value (£)	Present Value (£)
Provisioning services	Economic growth				
	Enabling development				
	Flexible infrastructure/climate change adaptation				
	Pumping wastewater	-2500			
	Rainwater harvesting				
	Tourism				
	Treating wastewater				
	Groundwater recharge		4000	4000	
	User-defined				
	User-defined				
Regulating services	Air quality				
	Building temperature				
	Carbon reduction and sequestration				
	Flooding	290000	290000	340000	
	Water quality		45000	45000	
Cultural services	Amenity		42000	42000	
	Crime				
	Education				
	Health		62000	62000	
Supporting services					

Results can be copied from the tool into the comparison table

Compares the proportion of benefits for each option

Compares the cost, benefits and net present value

