

Introducing the New Standards for Life Cycle Costing in Construction

BS ISO 15686-5:2008 for LCC and the New UK Supplements

Stockholm Conference
Friday 27th November 2009

Presented by
Andrew Green



New standards for LIFE CYCLE COSTING

Overview of the presentation

- 1 Introduction the BS ISO standard for LCC and the UK supplements
 - Why are they needed?
 - What do they contain?
 - When should they be used?
 - Benefits of using the documents
- 2 Helping to eliminate confusion over scoping LCC commissions
- 3 Practical guidance and instructions on how to undertake LCC at key stages of the construction procurement and during in use (lifetime) ...
- 4 Industry support to enable LCC to become widely used in practice.
- 5 Costing the future – achieving VFM through sustainable development

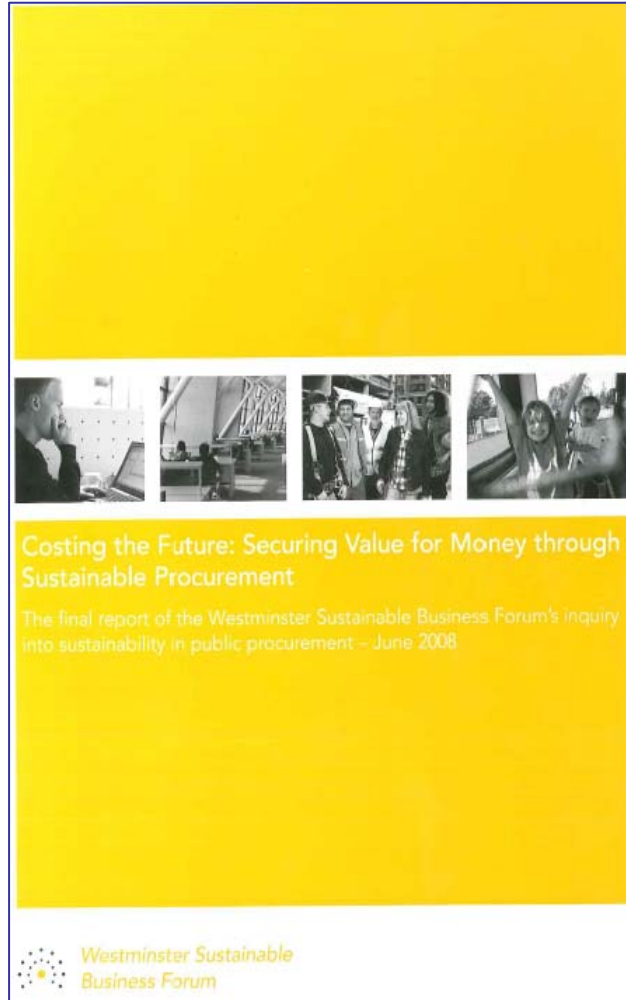
'Whole Life Costing' in the public sector

WESTMINSTER REPORT – 2008

COSTING THE FUTURE; Securing Value for Money through Sustainable Procurement

INDUSTRY CONSULTATION.... Conclusions and Recommendations:

1. Defining sustainable procurement
2. Whole life budgeting
3. Whole life costing
4. Leadership and guidance
5. Measuring success
6. Best procurement practice



Why we need WLC Industry Standards

NAO 2005 Report on 'Improving Public Services through Better Construction'

*"Whilst the majority of the industry now recognise that **whole life costing** is the basis for getting best value for money in public sector construction procurement – there are **4 key barriers to making this happen in practice**" :*

- 1 Confusion over **scoping and terminology** – i.e. WLC, LCC and LCA
- 2 Lack of a **common methodology and UK standard cost data structure**
- 3 Lack of ability to **present information** to enable project stakeholders to understand the inter relationship between **costs (over the whole life), time and design quality** and also take account of wider **environmental** (*notably energy performance and CO2 emissions*) and also **social aspects**
- 4 Lack of **tangible evidence** and the **know-how (skills)** to make it happen!

What is the ISO 15686 SERIES of STANDARDS

ISO 15686 Service life planning - Buildings and constructed assets

Part 1 – General principles – technical assessments

Part 2 - Service life prediction procedures

Part 3 – Performance audits & reviews

Part 4 - Data structure

Part 5 - Life cycle costing

Part 6 - Environmental impact assessments

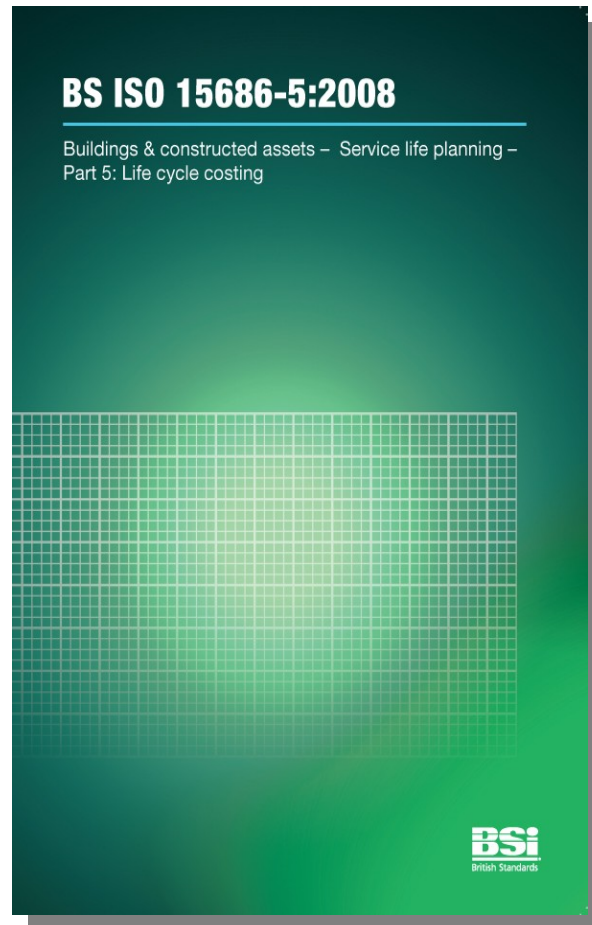
Part 7 - Service life data evaluation from practice

Part 8 - Reference service life data and estimation

Part 9 - Guidance on assessment of service life data

Part 10 Functionality requirements and serviceability

BS ISO 15686 – 5 for LIFE CYCLE COSTING



What does it contain?

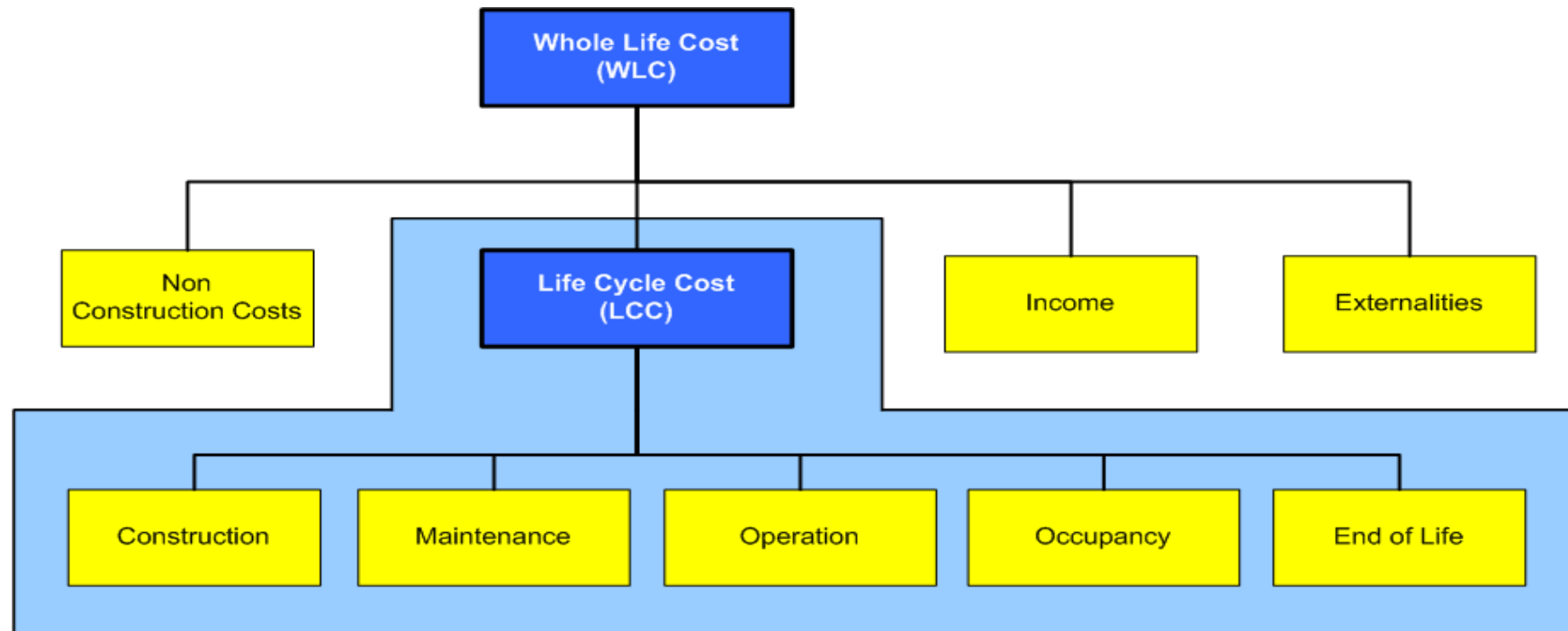
Part 5 covers life cycle costing;

- **Definitions**, terminology and abbreviations
- **Principles** of life cycle costing – i.e. purpose and scope; what costs to include/exclude; typical forms and level of LCC analysis at key stages; outputs
- **Forms of LCC calculations** and six methods of economic evaluation (with informative examples)
- **Setting the scope for LCC studies** including how to deal with risks and uncertainty
- **How LCC forms part of the whole life costing** business investment option appraisal process
- **Reporting and analysis techniques**

BS ISO 15686 – 5 for LIFE CYCLE COSTING

Clarifying scope and terminology

ISO addresses the confusion over terminology – regarding the difference between whole life cost (WLC) and life cycle cost (LCC)



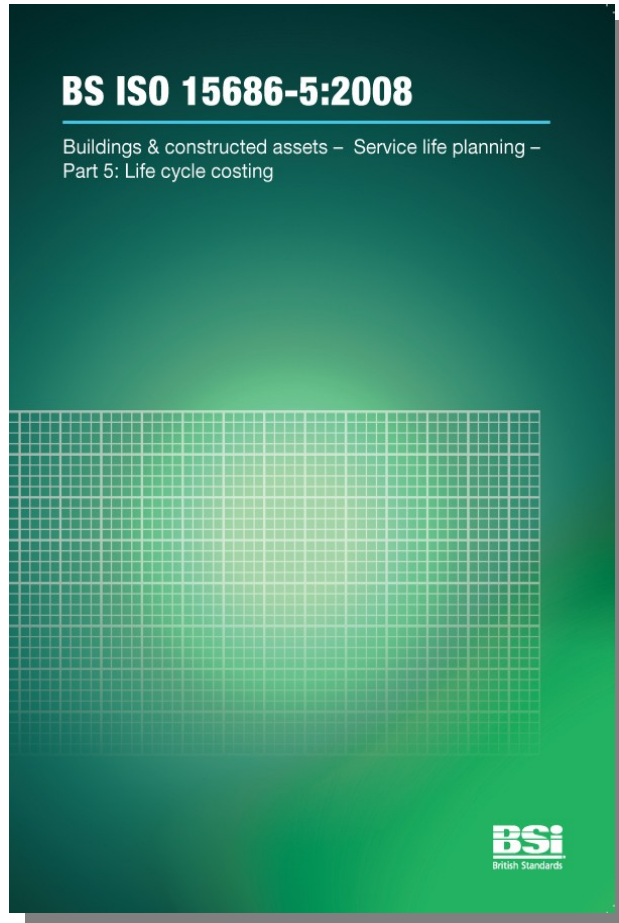
Note – Occupancy costs included in non construction costs in BS ISO 15686-5

Scoping- extract of the menu of WLC/LCC

Menu of life cycle costs and whole life cycle costs

	LIFE CYCLE COSTS	INCLUDE/EXCLUDE	COMMENT
1	Construction costs		
1.1	Construction works costs (see Annex A2 SFCA)		
1.2	Other construction related costs	X	
1.3	Client definable costs		
2	Maintenance costs		
2.1	Major replacement costs		
2.2	Subsequent refurbishment and adaptation costs	X	
2.3	Redecorations		
2.4	Minor replacement, repairs and maintenance costs	X	
2.5	Unscheduled replacement, repairs and maintenance costs		
2.6	Grounds maintenance	X	
2.7	Client definable costs		
3	Operation costs		
3.1	Cleaning costs		
3.1.1	Windows and external surfaces	X	
3.1.2	Internal cleaning		
3.1.3	Specialist cleaning		
3.1.4	External works cleaning		
3.2	Utilities costs		
3.2.1	Fuel		
3.2.2	Water and drainage	X	
3.3	Administrative costs		
3.3.1	Property management		
3.3.2	Staff engaged in servicing the building		
3.3.3	Waste management/disposal	X	
3.4	Overheads costs		
3.5	Taxes (if applicable)		
3.6	Client definable costs		
4	Occupancy costs		
4.1	Internal moves (churn)		
4.2	Reception and customer hosting		

BS ISO 15686 – 5 for LIFE CYCLE COSTING



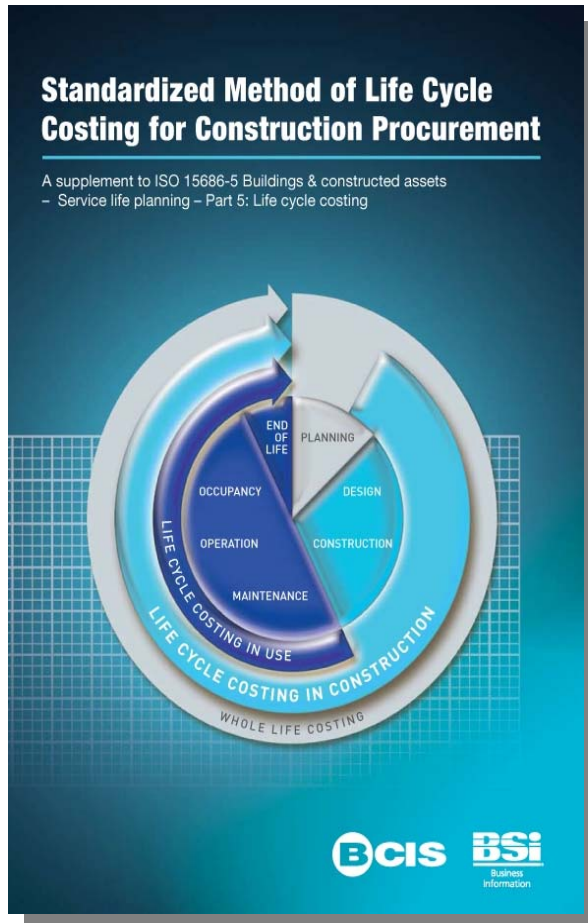
What is life cycle costing?

Definitions in the BS ISO 15685:5 is:

Life cycle costing ...is a methodology for the systematic economic evaluation of the life cycle costs over the period of analysis, as defined in the agreed scope ...

Whole life costing .. is a methodology for the systematic economic consideration of all the whole life costs and benefits over the period of analysis, as defined in the agreed scope ...

UK Supplement to the ISO for LIFE CYCLE COSTING



Why a UK supplement was produced?

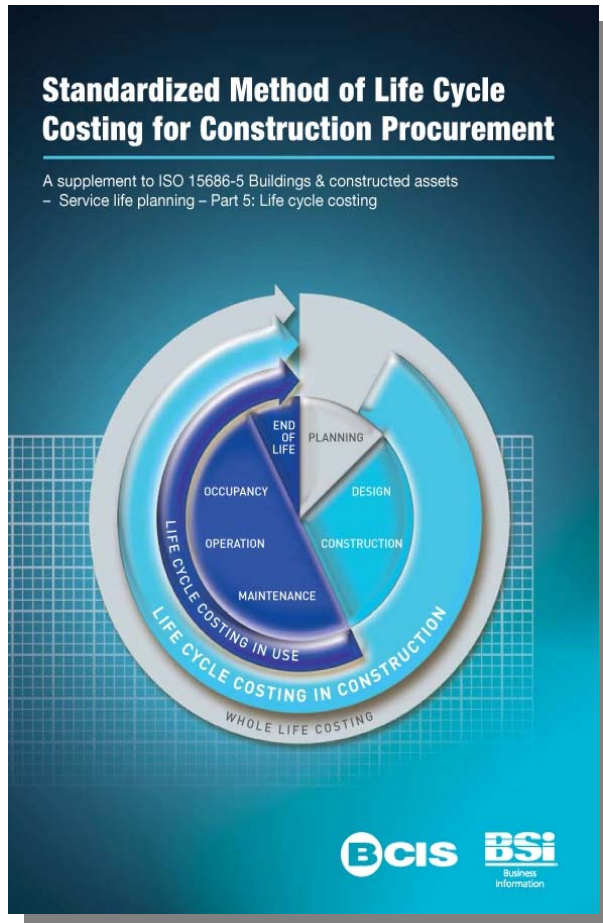
To enable LCC to become widely used in the UK CONSTRUCTION INDUSTRY!

- 1 Develop a **UK standard cost data structure** for LCC that aligns the ISO data structure with the **BCIS standard form of cost analysis** – and with international total occupancy costs (ITOC) (*Section 3 and Annex B & Annex C*)
- 2 **Instructions** on how to define the **client's specific requirements** for LCC studies: forms of outputs & evaluation method (*Section 2&4*)
- 3 Provides **worked examples** of how to apply LCC at key stages in construction procurement *i.e. budget setting; whole building option level and at system or component level appraisals.* (*Section 4 and Annex D1,D2 and D3*)

Principal supporting organizations:



UK Supplement to the ISO for LIFE CYCLE COSTING



Why a UK supplement was produced

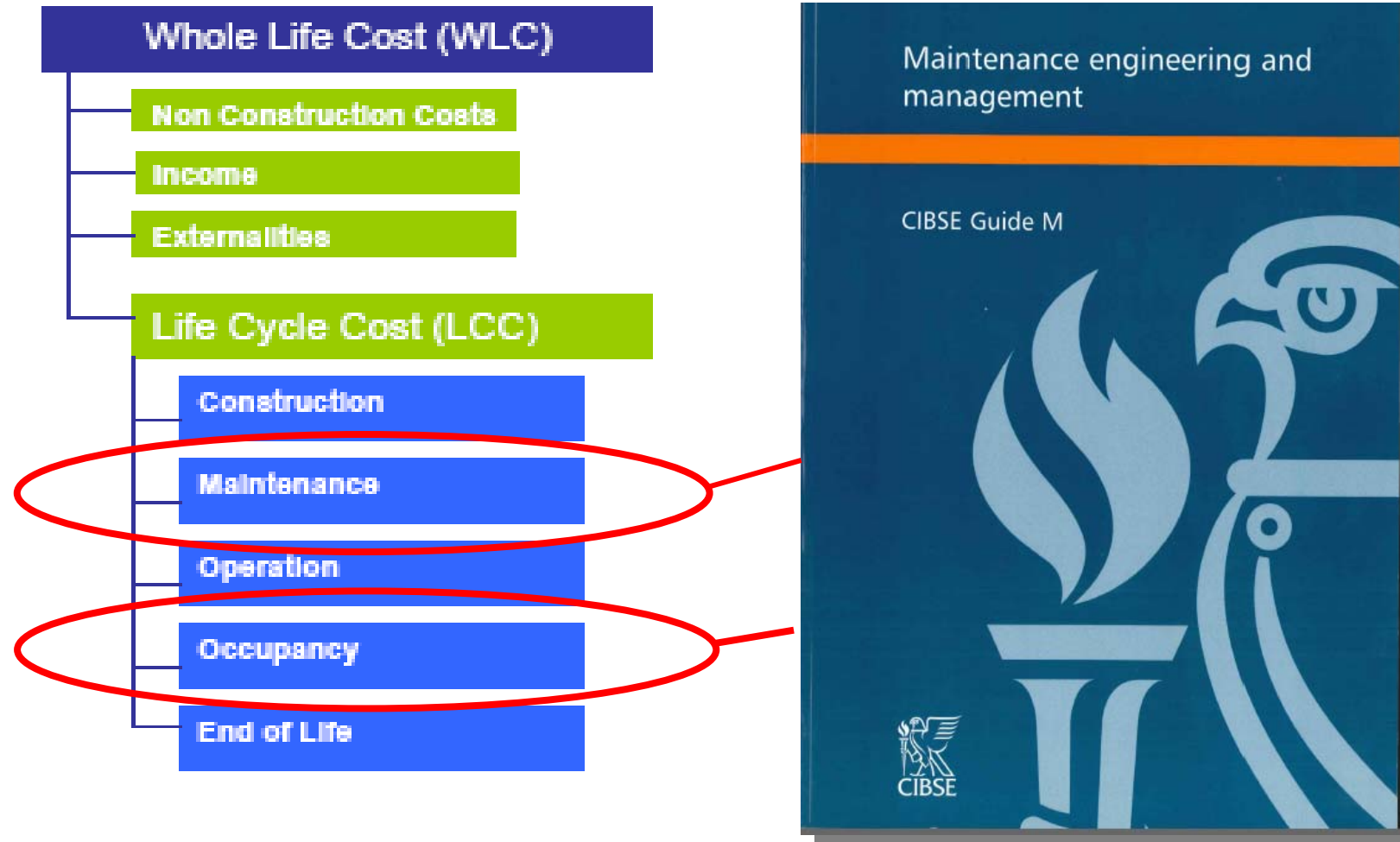
To enable LCC to become widely used in the UK CONSTRUCTION INDUSTRY!

- 4 What **risks and uncertainties** need to be addressed – including an example LCC **risk log** and guidance on various **sensitivity analysis** and factoring techniques
(Section 6 and ANNEX E)
- 5 **Menu** of the WLC/LCC - in/out (ANNEX A)
- 6 Forms for **life cycle costing analysis**- to facilitate a more accurate, consistent and robust application of future LCC estimations and option appraisals (ANNEX F).
- 7 Information and data assumptions (s7) **Sources of information** (ANNEX G)

Principal supporting organizations:



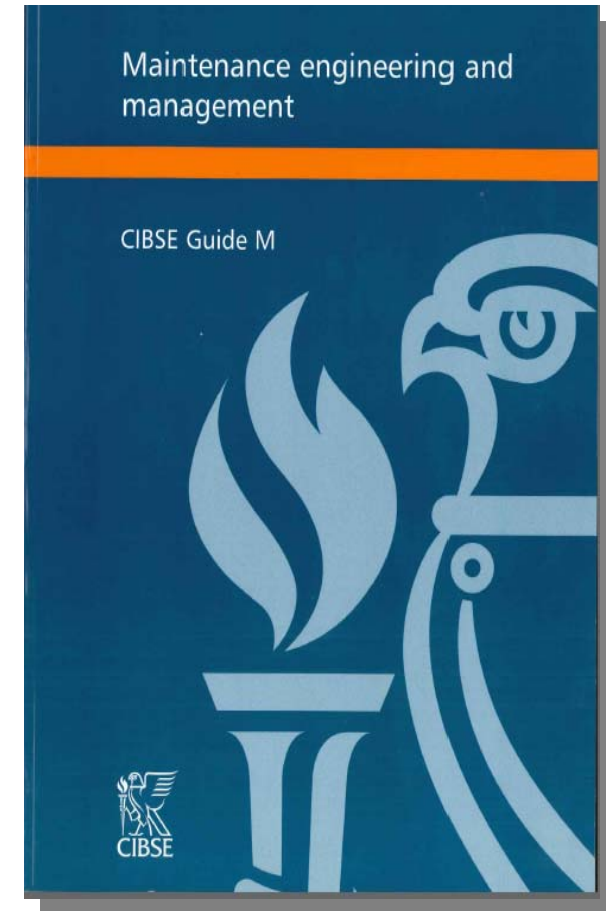
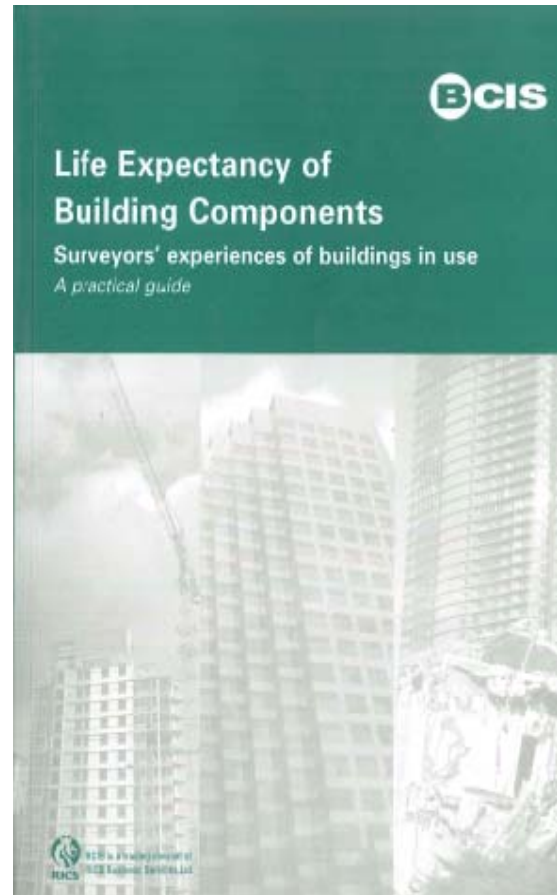
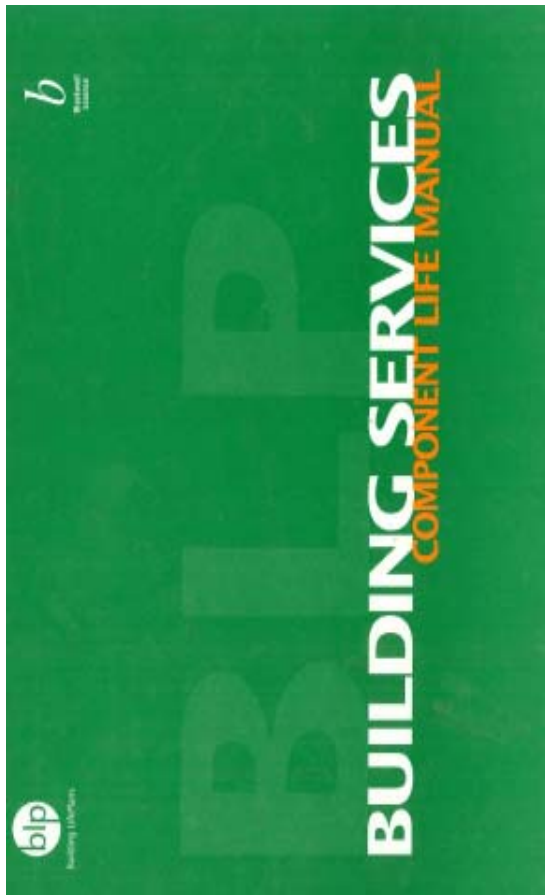
UK Standard LCC Data Structure



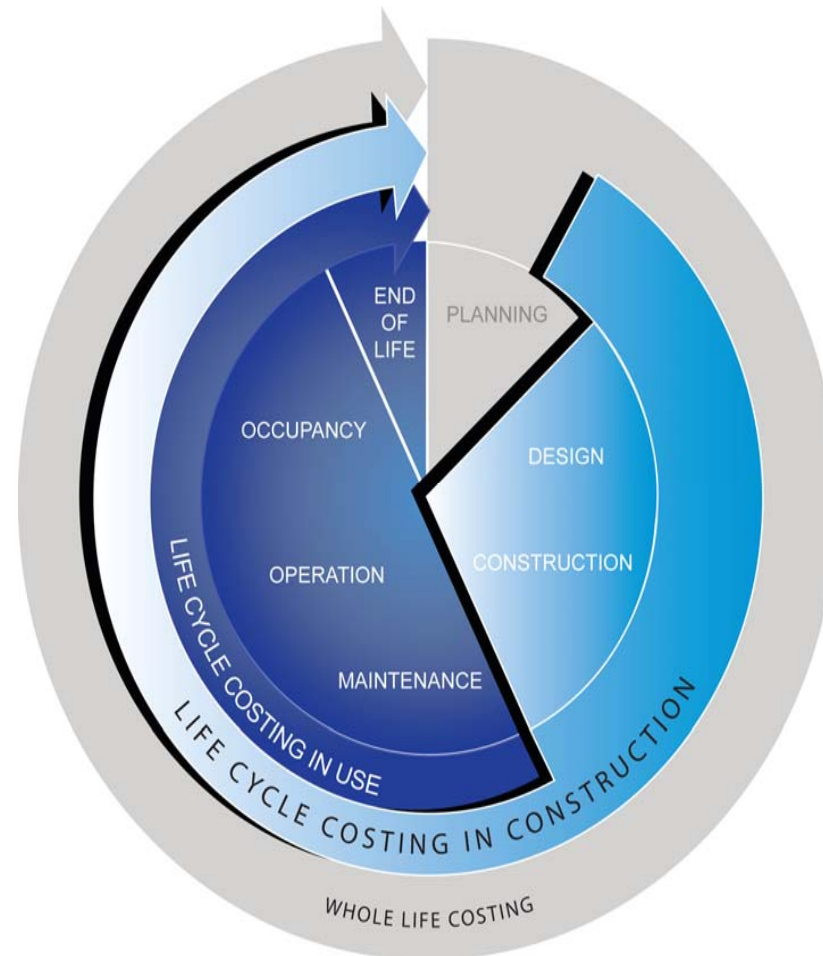
Principal supporting organizations:



Information and data sources



When to do WLC and LCC at key stages of a building or constructed asset's life cycle

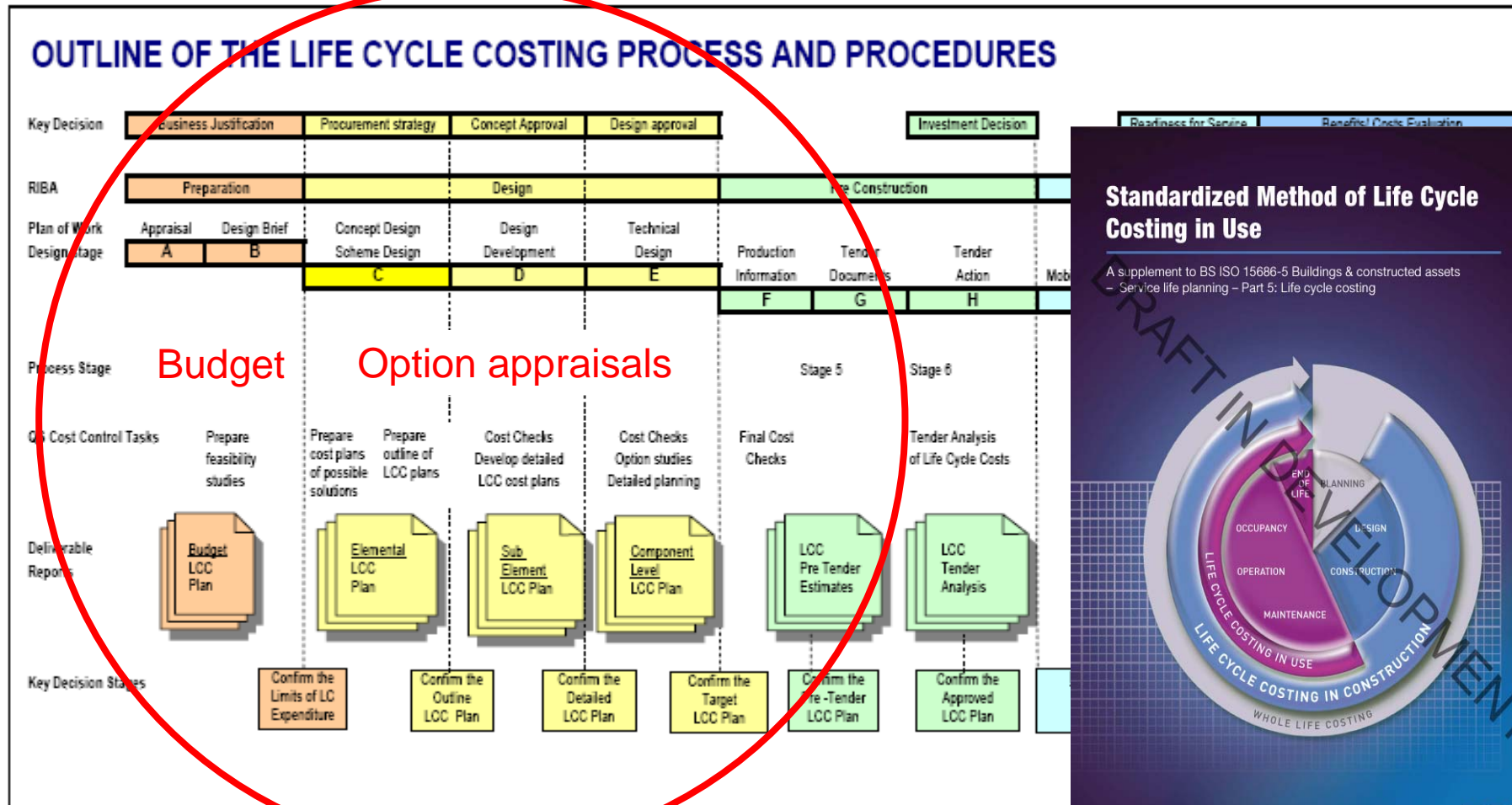


Principal supporting organizations:



UK Supplement to the ISO for LIFE CYCLE COSTING

Applications



Standardized Method of Life Cycle Costing in Use

A supplement to BS ISO 15686-5 Buildings & constructed assets
- Service life planning - Part 5: Life cycle costing

DRAFT IN DEVELOPMENT

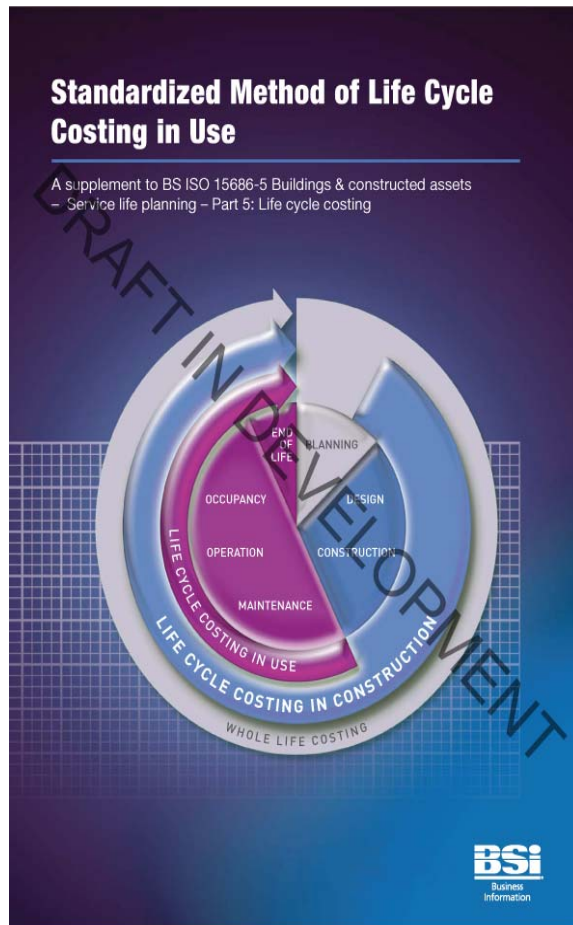
BSI
Business Information

Principal supporting organizations:



2nd Supplement to the ISO for LIFE CYCLE COSTING

'Cost In Use' document



What does it contain?

- **Business case**, - for doing LCC in use
- **Process** – generic framework and guidance
- **Asset structures** – facilities assessments
- **Cost accounting** – finance and budgeting
- **Environmental factors** – carbon reduction commitment and wider sustainability issues
- **Risks and uncertainty** – guidance
- **Sources of information** - reference data
- **Reporting and analysis techniques**

Principal supporting organizations:



How LCC links to Sustainability

Key point to note!

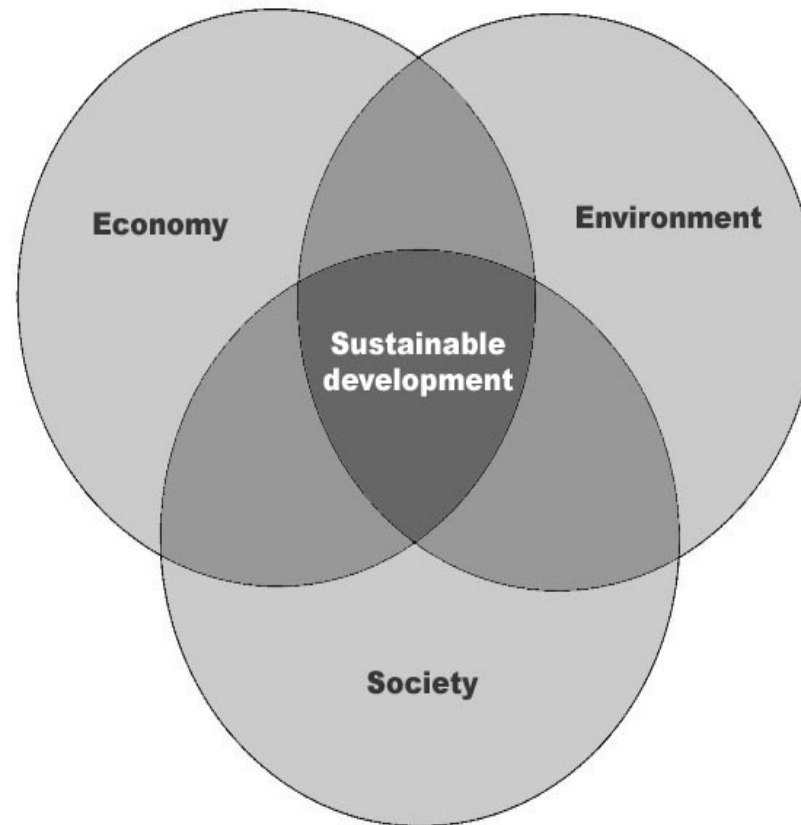
Links with wider sustainability assessments ; - the SMLCC provides clear boundaries of what the LCC economic evaluation covers and explains how this fits with other forms of assessments

LCC is about costs:

LCC may form part of a wider whole life costing and costing a sustainable development assessment
(**the triple bottom line**)

Common issue and conflict is the balance between

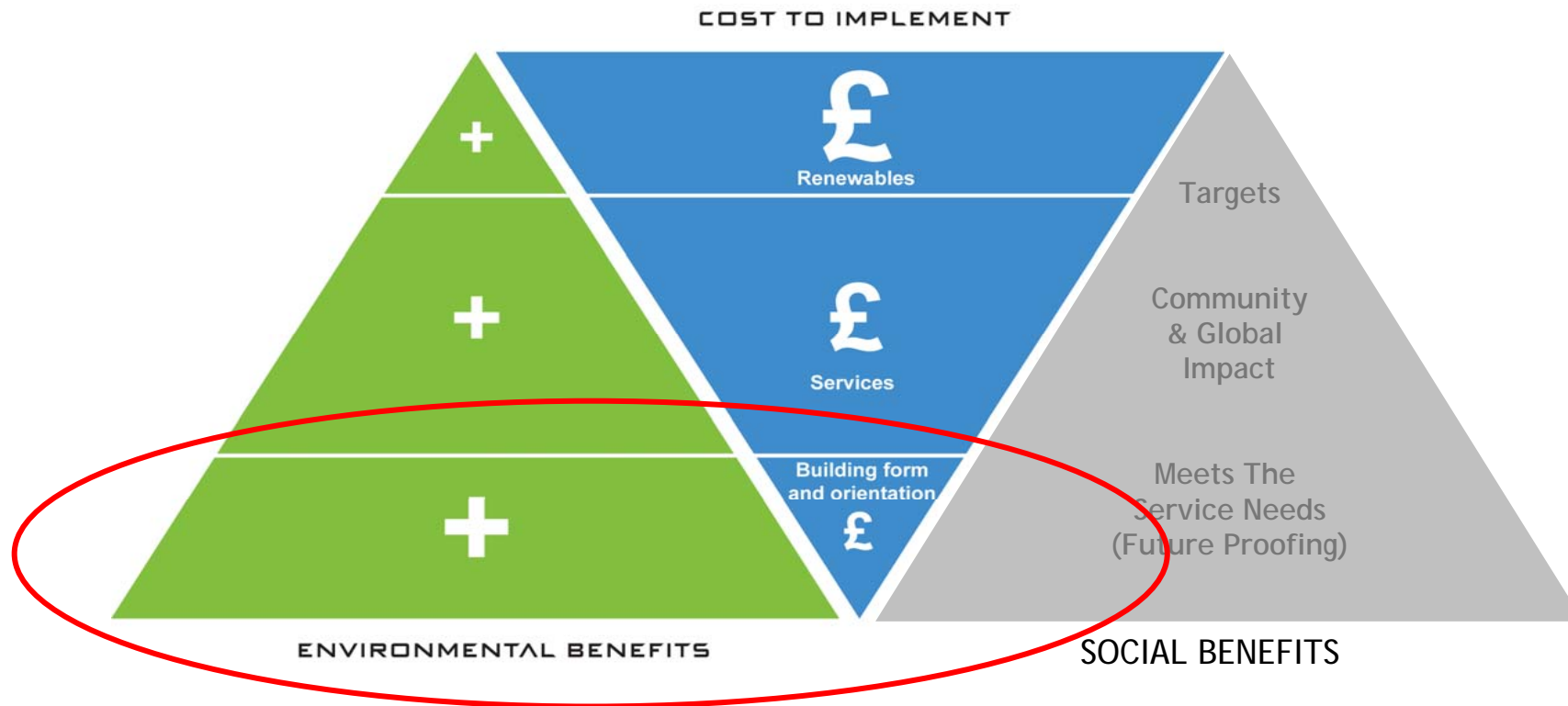
'affordability and sustainable development'



Costing the Future: Pricing Sustainability

PUTTING A COST TO KEY ASPECTS FOR SUSTAINABLE DEVELOPMENT

The figure below shows key decisions about the concept of the building form and orientation can achieve real sustainable environmental benefits without major additional capital costs - and positively impact on the costs in use!



Practical Application Costing Sustainability

PUTTING A PRICE TO A BREEAM ENVIRONMENTAL ASSESSMENT

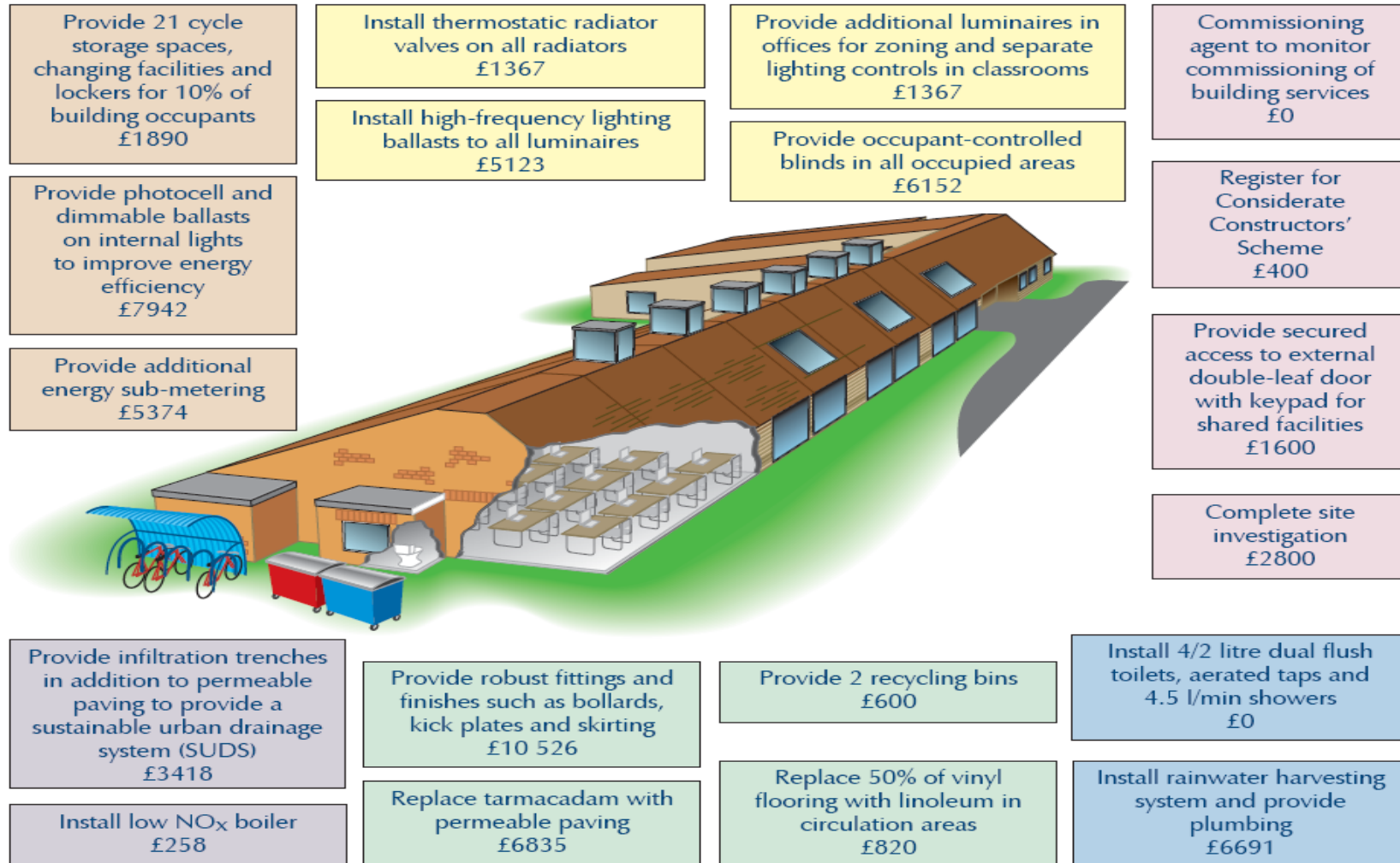
ENVIRONMENTAL ASPECTS - Checklist Optimising the service life cycle performance

'BREEAM Assessment'

- Management
- Health & Wellbeing
- Energy
- Transport
- Water
- Materials & Waste
- Land Use & Ecology
- Pollution

Credit	Credit Title	Inception	Feasibility	Outline Proposals	Scheme Design	Detail Design	Production Information	Bills of Quantities	Tender Action	Project Planning	Operations on Site	Completion	Feedback
ENERGY		A	B	C	D	E	F	G	H	J	K	L	M
E01	Reduction of CO ₂ emissions		Yellow	Orange	Red								
E02	Sub-metering of substantial energy uses					Yellow	Red						
E20	Free cooling	Yellow	Orange		Yellow	Orange	Red						
TRANSPORT		A	B	C	D	E	F	G	H	J	K	L	M
T01	Provision of public transport	Red	Red										
T05	Cyclists facilities			Yellow	Orange	Orange	Red						
T06	Pedestrian/cyclist safety			Yellow	Orange	Orange	Red						
T08	Travel plan			Yellow	Orange								
WATER		A	B	C	D	E	F	G	H	J	K	L	M
W01	Water consumption			Yellow	Orange	Orange	Red						
W02	Water meter					Yellow	Orange						
W03	Major leak detection				Yellow	Orange	Red						
W04	Sanitary supply shut-off				Yellow	Orange	Red						
W05	Water recycling		Yellow	Yellow	Orange	Orange	Red						

Presenting the Cost of Sustainability

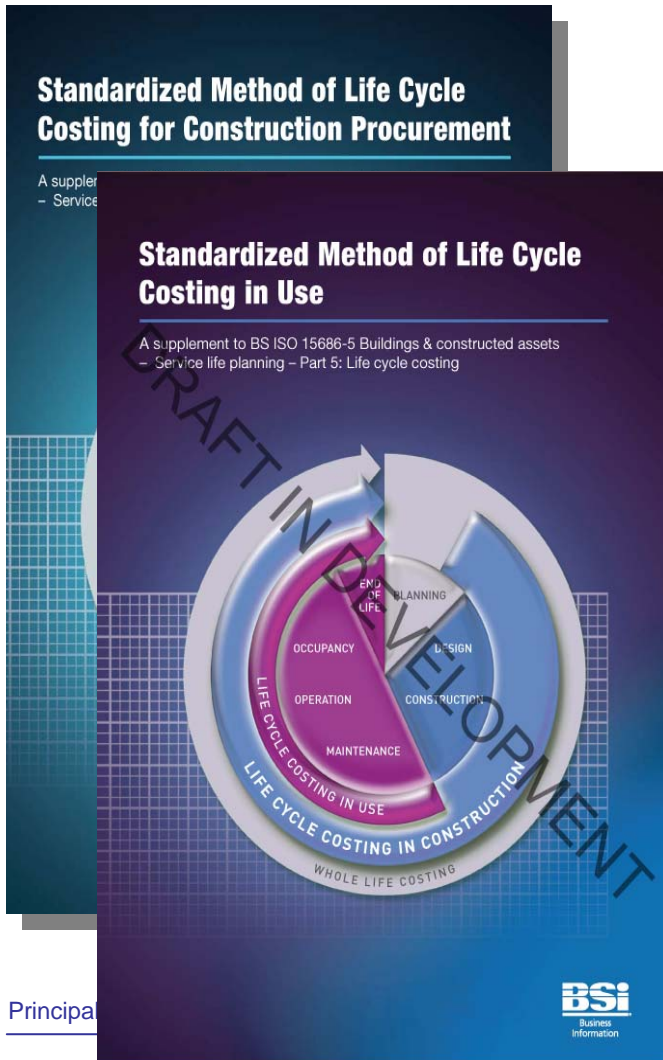


UK Supplement to the ISO for LIFE CYCLE COSTING

Cross Industry Collaboration

Published Document – Fantastic result of cross industry collaboration and consultation (**6P's**):

- 1 Policy** - HM Treasury/ Office of Government Commerce
- 2 Professions** - RICS/ BCIS and CIBSE, plus CIOB and Construction Confederation and the Construction Products Association + HVCA others
- 3 Procurers**
Defence Estates, DCSF, Home Office and the Department of Communities & Local Government
- 4 Providers**
Consortia reps – and major PFI/PPP service providers
- 5 Practitioners** - major cost consultancy organisations and independent LCC experts and insurance advisors
- 6 Pan Industry bodies** - Academia
BSI and the B 500/3 Durability committee
BRE
Constructing Excellence



Practical Application LIFE CYCLE COSTING

Plans to disseminate and encourage widespread use of the LCC standards:

MAKING THINGS HAPPEN!

Promotion campaign *Rethinking Standards in Construction (Constructing Excellence) + BCIS, BSi and the working group champions*

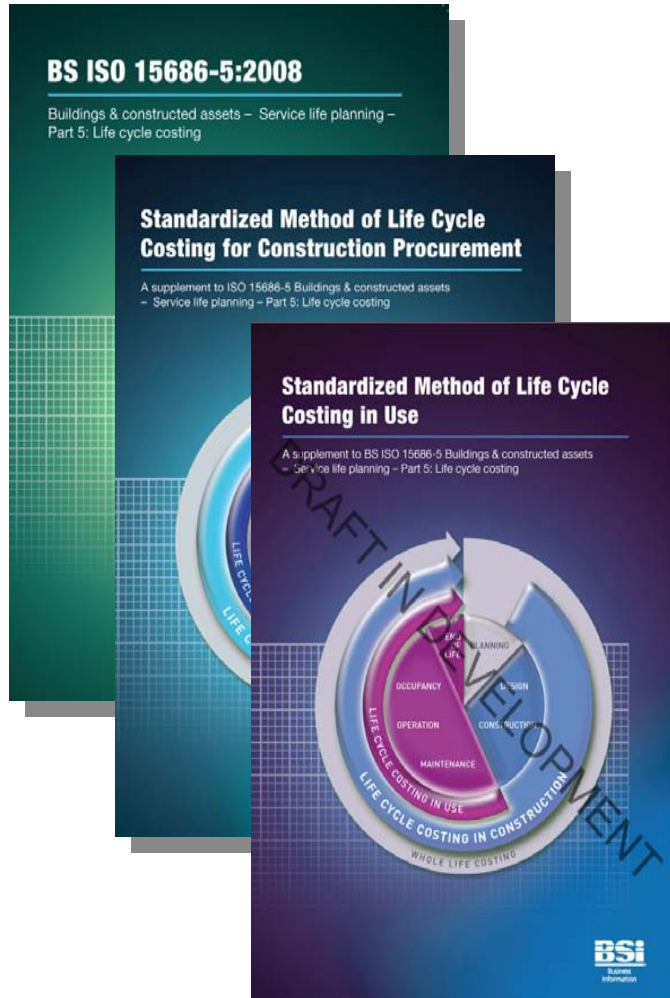
Procurers *skilling and training programmes*

Practitioners – *living the standards in use*

Providers *PFI/PPP + traditional constructors*

Profession – *BCIS cost intelligence service
RICS measurement rules, aligned to SMLCC*

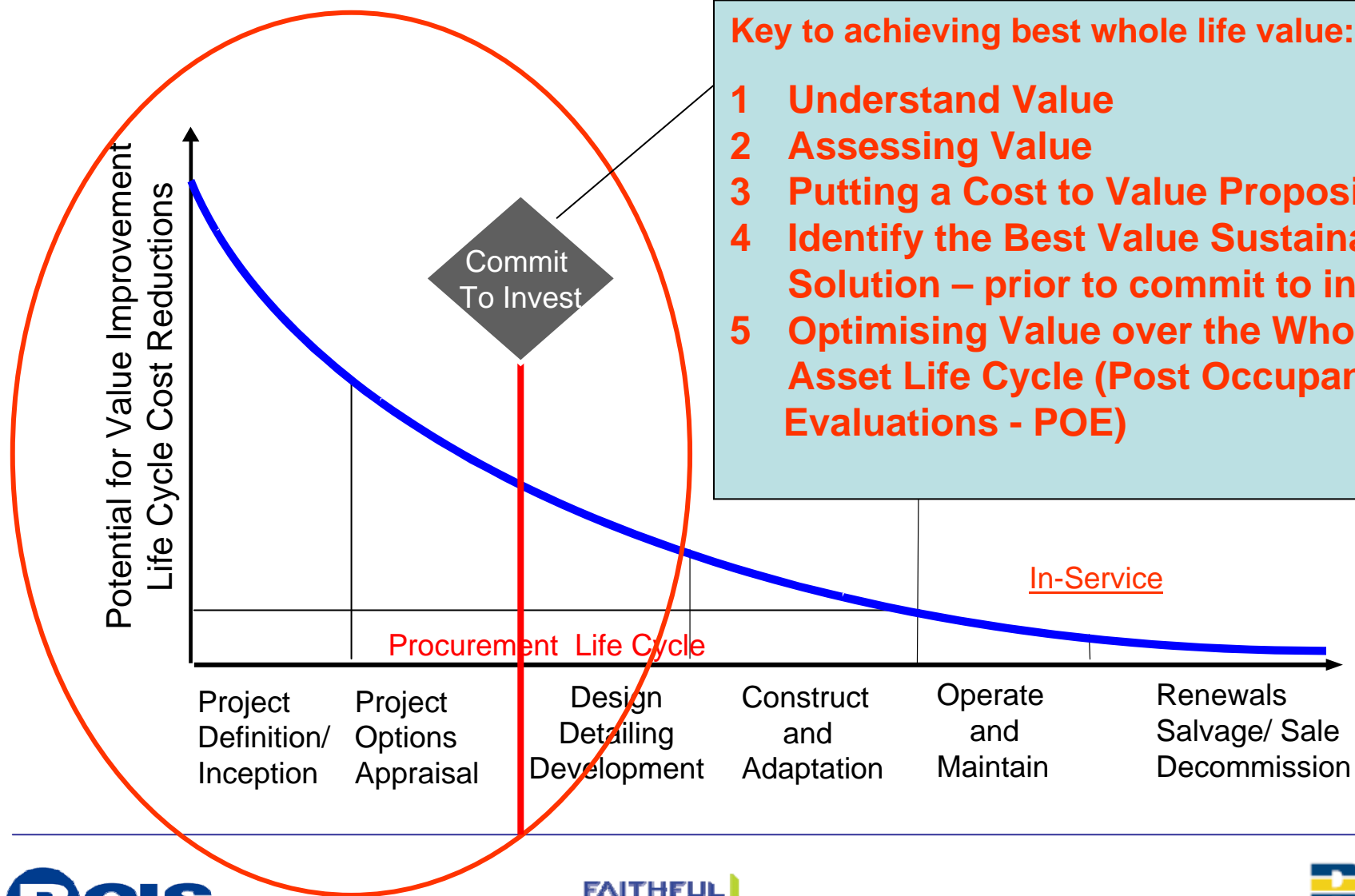
Policy makers – *Westminster Sustainable Business Forum Report – June 2008*



Practical Application WHOLE LIFE VALUE

SUSTAINABLE PROCUREMENT

Achieving Best Whole Life Value in Practice



Key to achieving best whole life value:

- 1 Understand Value**
- 2 Assessing Value**
- 3 Putting a Cost to Value Propositions**
- 4 Identify the Best Value Sustainable Solution – prior to commit to invest**
- 5 Optimising Value over the Whole Asset Life Cycle (Post Occupancy Evaluations - POE)**

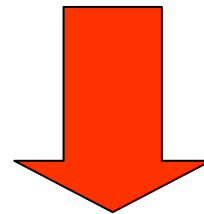
Practical Application WHOLE LIFE VALUE

SUSTAINABLE PROCUREMENT; Whole Life Value – Highways Pavements

Minimise costs over time

Minimise disruption to road users

Minimise impact on the environment



Whole Life Value

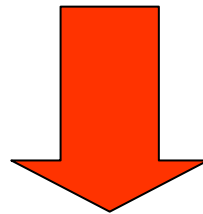
Practical Application WHOLE LIFE VALUE

SUSTAINABLE PROCUREMENT; Whole Life Value – Education Sector

Educational transformation

Meet defined sustainability targets

Minimise whole life costs over time

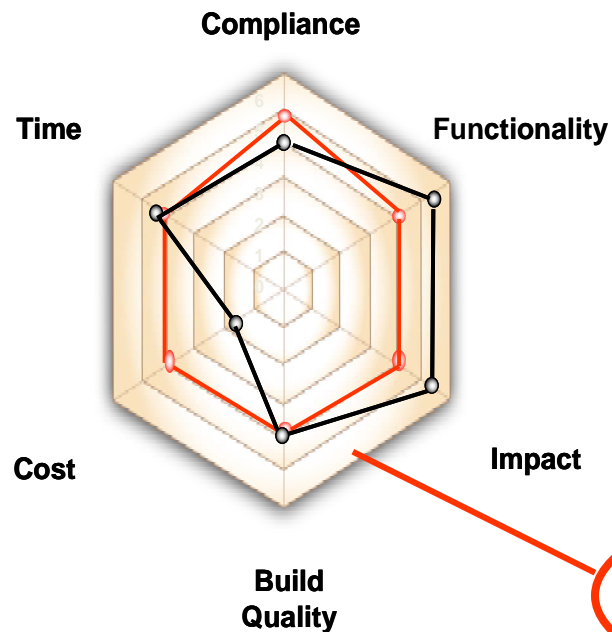


Whole Life Value

Practical Application WHOLE LIFE VALUE

ACHIEVING WHOLE LIFE VALUE

COSTING THE FUTURE; Securing Value for Money through Sustainable Procurement



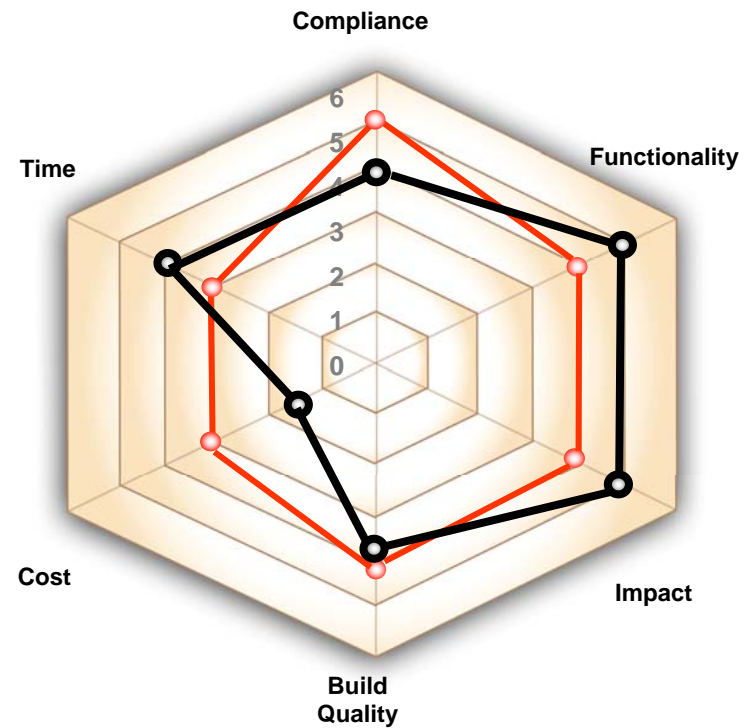
INDUSTRY CONSULTATION

1. Defining sustainable procurement
2. Whole life budgeting
3. Whole life costing
4. Leadership and guidance
5. Measuring success
6. Best procurement practice

Practical Application WHOLE LIFE VALUE

SUSTAINABLE PROCUREMENT; Whole Life Value – Schools Option Profiling

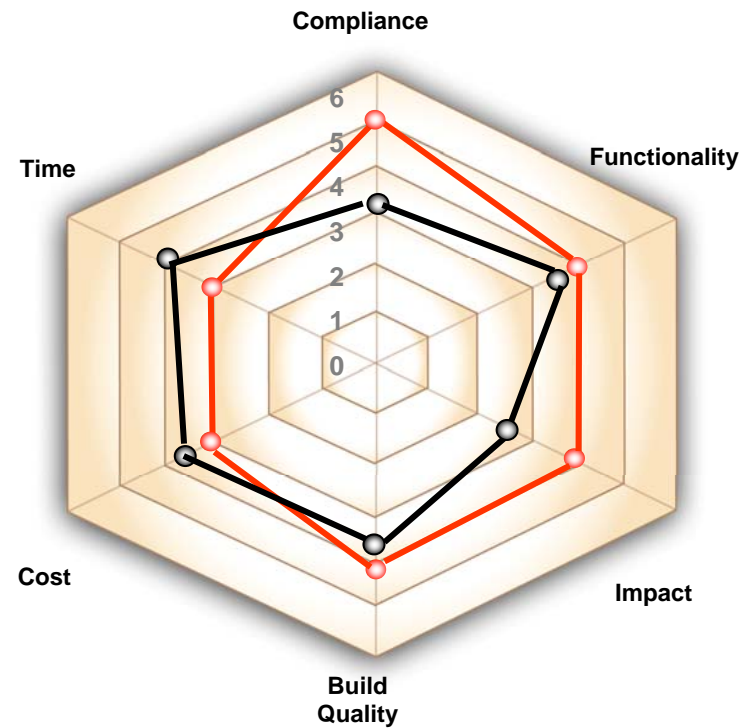
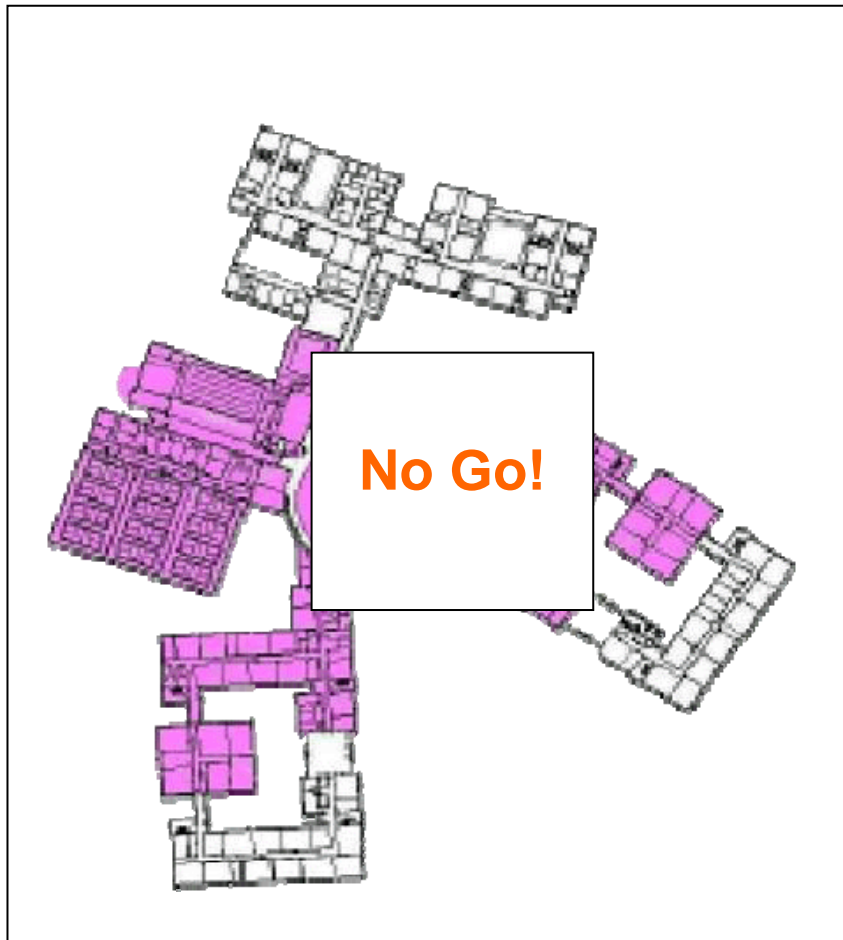
Option A – Aspiration Solution



Practical Application WHOLE LIFE VALUE

SUSTAINABLE PROCUREMENT; Whole Life Value – Schools Option Profiling

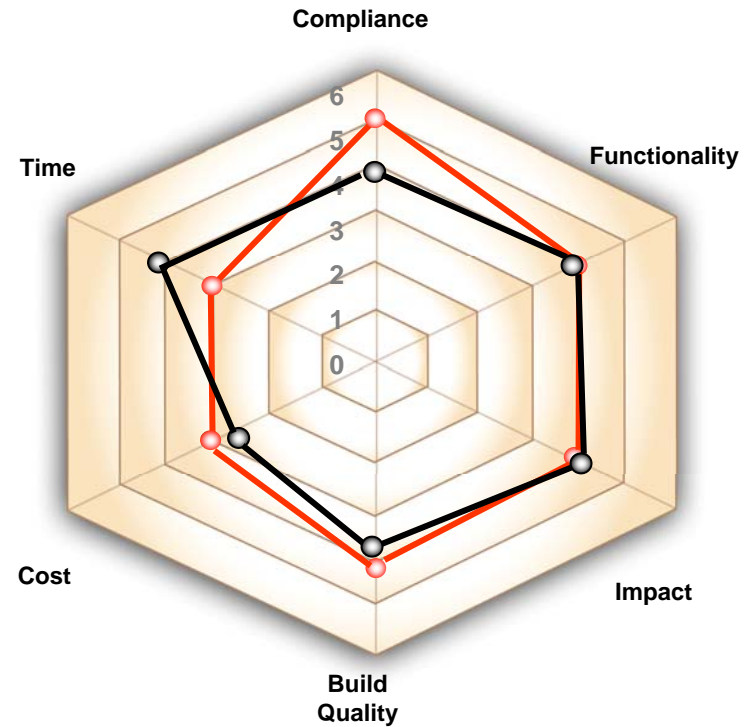
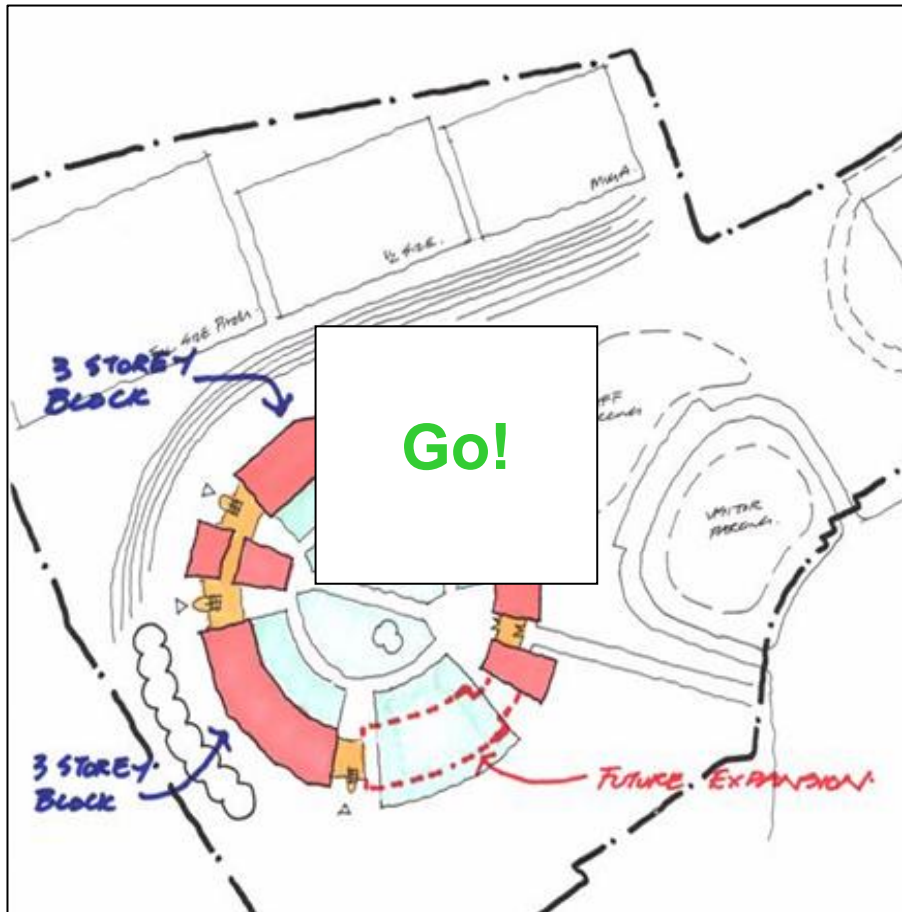
Option B – Cost Cutting Solution



Practical Application WHOLE LIFE VALUE

SUSTAINABLE PROCUREMENT; Whole Life Value – Schools Option Profiling

Best Value Sustainable Solution



In Conclusion ...

1. Policy into **practice** ... is not a too difficult box!
2. Embrace the new ISO and **UK standards** for 'Life Cycle Costing in Construction Procurement' and 'In Use'!
3. Skilling the team to unlock whole life sustainable value
- 4 **YOU** can help to make it happen !

Introducing the New Standards for Life Cycle Costing in Construction

IN CONCLUSION

THANK YOU

For more information contact
andy.green@fgould.com

