

Keeping track

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Joe Martin explains how the BCIS is able to provide construction cost advice from project inception to delivery

When a client first approaches a quantity surveyor about a project, they will be seeking cost advice. This sounds obvious, but the initial response is what the client remembers. It is therefore important that this is defined in such a way that as the project evolves the costs develop in a structured way and the route from the initial estimate to the built cost can be clearly seen.

New Rules of Measurement ? order of cost estimating and cost planning for capital building works [\(NRM1\)](#) provides the structure. The key to NRM1 is that it is based on an elemental structure inherited from the RICS Standard Form of Cost Analysis [\(SFCA\)](#) . The SFCA defines an element as: "A major physical part of a building that fulfils a specific function or functions irrespective of its design, specification or construction". The elemental structure allows for cost advice to be provided before any design work is undertaken. It will allow the design team to design to a cost rather than the QS costing a design, or in current parlance provides the 'should cost' as opposed to the 'will cost'.

[BCIS](#) was set up to provide a database of such costs, and the preparation of elemental cost analyses of projects is standard practice for many QS firms and clients. Its online database contains details of 30,000 projects and provides more than 7,000 elemental cost analyses.

Costing the void

The initial request for cost advice may come with a variety of levels of detail. A developer looking at a site "that would be just right for x000m₂ of offices, x houses, etc." may want to know: "If we get planning permission, what would it cost to build." Apocryphally, this is the sort of call that comes in last thing on a Friday night with an added: "And I need to know by Monday".

A client making an outline business case, or seeking funding may well have a detailed schedule of accommodation and a view about specification but no design. Such requests have been known to be accompanied by the dreaded rider: "If we get the funding we will go out to architectural competition for the design."

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A client, particularly regular clients with a programme of work, may have an outline design, drawings or building information model, and some level of specification. The initial estimate will be a benchmark one, what NRM1 calls an order of cost estimate, in the sense that it is based on the costs of previous buildings with the same function rather than a specific solution for this project. This sort of estimate is the basis of the government's current cost led procurement strategy of using benchmark costs from previous projects to set the cost limits for future projects.

NRM1 describes an order of cost estimate as the "application of unit rates, i.e. cost/m₂ of gross internal floor area (GIFA), functional unit rates or element unit rates, to measured quantities to generate the base cost of the building works." In some circumstances, where no design exists, the quantities may not be measured but derived by the QS from the employer's requirement.

The first estimate may be based only on the GIFA of functional units (pupils in a school, spaces in a car park) and can be presented as a total building cost. However, it is always better to present it in elemental form, either by allocating the costs to elements by percentages from previous analyses or by deriving elemental quantities from the GIFA, assumed number stories, storey height and so on.

The advantage of presenting the costs elementally is that you can also attach notes on typical specification to better describe the benchmark data. This will give a base for understanding changes as the design evolves. The BCIS provides average costs for:

- buildings ?/m₂ GIFA
- buildings ?/functional unit
- group element prices ?/m₂ GIFA
- element prices ?/m₂ GIFA
- element prices ?/element unit quantity, e.g. external walls expressed as ?/m₂ of the area of external wall.

Alternatively, projects can be selected from the analyses section of BCIS, and downloaded to a spreadsheet for further analysis or they can be summarised within the service to provide a statistical analysis of average ?/m₂.

To use the costs to prepare an order of cost estimate, ideally there is some information you will need to know. If assumptions need to be made, these should always be clearly stated. The following checklist is based on the NRM1 guidance, and on BCIS studies of the factors that affect pricing levels:

- location
- use and accommodation requirements
- size ? both floor area and functional units
- availability of site
- status of any planning application
- any known planning constraints
- occupation target date
- level of specification
- client's initial project design brief, or where not available, their views on design or your assumptions (the name of existing buildings that are broadly similar to the client's concept is often a help here)
- number of storeys
- any special storey height requirements
- any specialist engineering or service requirements
- size of site
- access to site
- details of site conditions, ground conditions, access, etc.

- what is on the site at the moment, and details of any demolition or enabling works required
- any problems with public utilities, either connection or existing services
- procurement route
- the scope of the costs to be included beyond the construction costs, e.g. fees.

It is important that the assumptions made on these factors and any others are stated in the report to the client, even if they are only interested in the bottom line. All these factors need to be considered in 2 ways:

- as they affect the total cost
- as they affect the price level.

For example, the size of the scheme will affect both the total cost, i.e. you pay more for more building, and the pricing level, i.e. the price per unit is likely to fall as size increases. However, the scheme location will only affect the pricing level.

The BCIS Tender Price Studies offer guidance on the impact on pricing of:

- location
- building function
- selection of contractor (selected competition, negotiated, etc.)
- building height (number of storeys)
- site working space
- site access
- type of work (newbuild, refurbishment)
- contract sum.

The BCIS average prices are based on accepted tenders and include contractor's overhead and profit and preliminaries.

There are 3 approaches when producing an elemental order of cost estimate from this data:

- use the average $\text{£}/\text{m}_2$ data, for the building and allocate the total to the elements using the percentage breakdowns, shown on cost analyses
- use the average elemental cost per m_2
- if sufficient information exists about the shape of the building, generate element unit quantities and use the average element unit rate study.

Any assumptions about specification or design should be stated. The BCIS figures include contractor's overheads and profit, and one must also consider whether an adjustment needs to be made to the average figures. A risk allowance should be spelt out to cover design development, construction, employer's change and any other risk. It is also as well to highlight what is not included such as VAT and clients' own costs.

Life cycle costs

At the same time as you offer advice on the construction costs you can also offer advice on the running costs (costs in use) of the building, using data from the BCIS [Building Running Costs Online](#) service to provide a life cycle cost (LCC) plan. For this, further information will be required or will need to be assumed, namely:

- the economic life of the building
- what is to be included, normally maintenance and operation costs
- the discount rate (expressed simply, the difference between the interest and

- inflation rate, used to convert future payments to present values)
- any tax implications.

The format for an LCC plan is set out in the Standardised Method of Life Cycle Costing Procurement, which classifies the costs as follows:

- maintenance costs
- renewal costs: replacements, redecorations, etc.
- cleaning costs
- utilities costs: fuel, water, waste disposal etc.
- administrative costs: Property management, insurance, rates, etc.

Detailed advice on the maintenance and renewal estimate is given in New Rules of Measurement ? Order of cost estimating and cost planning for building maintenance works ([NRM3](#)) .

	Annual average cost per 100m ₂
Decorations	200
Fabric	1,100
Services	1,650
Total maintenance	2,950
Cleaning	1,450
Utilities	2,400
Administrative costs	3,200
Total	10,000

Figure 1: Cost-in-use, offices: not air-conditioned

The BCIS running cost data is again a benchmark estimate based on average costs from a range of similar buildings (see Figure 1).

Developing the cost plan

Starting with an elemental order of cost estimate, a cost plan can be developed as the design develops. The benchmark costs can be replaced by costs for specific element designs and components. These costs can come from subcontractors or estimating price books and databases. NRM1 provides the structure for developing an elemental cost plan as well as the rules for measuring the designed elements.

Similarly, the costs-in use part of the life cycle cost plan can be developed at the elemental level as the design identifies the components to be maintained, cleaned and replaced.

Being able to produce a robust estimate at the earliest stages of a contract is one of the core skills of experienced quantity surveyors, and one of the keys to a successful project.

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Further information

Related competencies include: [Commercial management of construction](#)

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