Procurement strategies for infrastructure projects

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Further reading – see

Infrastructure:
• Immoveable assets which are acquired, constructed or which result from construction operations; or
• Moveable assets which cannot function independently from purpose built- immoveable assets
Value for money may be regarded as the optimal use of resources to achieve the intended outcomes. Underlying value for money is an explicit commitment to ensure that the best results possible are obtained from the money spent or maximum benefit is derived from the resources available. It is a means for developing a better understanding (and better articulation) of costs and results so that more informed, evidence-based choices can be made.

Value for money is about striking the balance between three “E’s” economy, efficiency and effectiveness” whilst being mindful of a fourth “E” – equity i.e. what can be leveraged through the project.

The critical starting point in delivering value for money through projects is to clearly define objectives and expected outcomes as well as parameters such as the time lines, cost and levels of uncertainty. This frames the value for money proposition that needs to be implemented at the point in time that a decision is taken to proceed with a project i.e. it establishes “economy” and identifies “equity”. The end point is to compare the projected outcomes against the actual outcomes i.e. to confirm the “effectiveness” of the project in delivering value for money.
**Value for money concept**

**Economy** (cost of resources) acquiring inputs of the right quality at the right price

**Efficiency** (productivity) how well inputs are converted to outputs.

**Effectiveness** (achieving of outcomes) how well outputs achieve desired outcomes

**Equity considerations**
What equity (promotion of secondary objectives) can be leveraged through a project

**Root causes for lack of success?**
- Optimism bias (the human mind's cognitive bias in presenting the future in a positive light)
- Strategic misrepresentation (behaviour that deliberately underestimates costs and overestimates benefits for strategic advantage)

- Poor / lack of procurement strategies
- Poor procurement practices in selecting contractors and consultants

Gap puts value for money for a project at risk

**Planning**

**Implementation**

**Close out**
Guideline fees published by SACAP and ECSA suggest that project definition is somewhere between 20 to 40% at the end of contract planning processes. US Department of Energy - class 3 estimate is made towards the end of contract planning processes with a -20 to + 30% accuracy where the degree of project definition is between 10 and 40%.

Key question – how does one keep project within budget during implementation?
MEGA Project Failures

“mega project” - extremely large scale project ~ 1 billion US$ or more, time to complete of 5 years or more and generates high public attention

Criteria for failure (Merlow 2011) - one or more of the following:
- Costs grew (real) 25%+
- Schedule Slipped 25%+
- Overspent (Absolute Measure) 25%+
- Execution time (Absolute Measure) 50%+
- Severe and Continuing Operational Problems into Year 2 after start-up

Yes

66% fail

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NERSA

Inability to spend budgets

The inability of many South African municipalities and provincial governments to spend all of their capital budgets each year has for several years been a sore point with National Treasury (Wall et al, 2012)

World Bank - countries typically only manage to spend about two thirds of the budget allocated to investment in infrastructure (Foster 2008)
Approach to contracts

Traditional approach inherited from the UK

After the Romans left Britain there was virtually no civil engineering work until the construction of the Clyde Canal

John Smeaton in 1768 during the construction of the Clyde Canal (Scotland) established his management scheme for the construction phase with detailed tables of responsibility for:

• the engineer in chief,
• the resident engineer and
• the ‘surveyors’ for the various geographical sections working under him.

He established the master / servant relationship between designers and contractors

Sir Joseph Bazalgette’s standard form of contract for London’s major sewer projects and the embankments on the Thames 1860s was adopted by the Metropolitan Board of Works based on the mater / servant relationship

Institution of Civil Engineers’ standard form of contract published in 1945 was based on the 1860 standard form contract

South African current traditional forms of contract based on these historic forms of contract

Office of Government Commerce (UK)

Common Minimum Standards for Procurement of Built Environments in the Public Sector (2006)

Procurement strategies and contract types must support the development of collaborative relationships between the government client and its suppliers and shall facilitate the early appointment of integrated supply teams (each part of which should incorporate an integrated supply chain)

Guidance states:
Traditional, nonintegrated procurement approaches should not be used unless it can be clearly shown that they offer best value for money - this means, in practice they will seldom be used
Procurement strategy is all about the choices made in determining how best to achieve objectives.

- Organization of work packages into contracts
- How to secure financial offers and to remunerate contractors
- How to solicit tender offers
- Procurement strategy is the packaging, contracting, pricing, and targeting strategy and selection procedure for a particular procurement
- Nature of the relationship between the parties
- Procedures for promoting secondary procurement objectives

There are a number of different approaches to procurement each of which can result in different outcomes. Procurement strategy is all about the choices made in determining what is to be delivered through a particular contract, the procurement and contracting arrangements and how secondary procurement objectives are to be promoted.

A construction procurement strategy can be developed for a single project, a programme of projects or a portfolio of projects to identify the best way of achieving objectives and value for money, while taking into account risks and constraints.

**portfolio**: a collection of projects or programmes and other work that are grouped together to facilitate effective management of that work to meet strategic objectives

**programme**: a group of related projects managed in a coordinated way to obtain benefits and control not available from managing them individually

- Maintenance project
- Construction project

**portfolio of projects**

Over next few years

- Package 1
- Package 2
- Package 3

**Packaging concept**

**packages (single or multiple projects)**

**programme**

Package = works which have been grouped together for delivery under a single contract or a package order issued in terms of a framework agreement
Framework for developing strategy

Gather and analyse information
(Conduct spend, organisational and market analyses)

Decide on delivery management strategy

Primary objectives
- tangible (budget, schedule, quality and performance)
- environmental and health and safety
- intangible (buildability, relationships, client involvement, end user satisfaction, maintenance and operation responsibilities etc.)

Formulate primary and secondary procurement objectives

Package works into contracts or orders linked to a framework agreement

Allocate risks for packages
- Contracting strategy
- Pricing strategy

Contracting strategy
- Design by employer
- Develop and construct
- Design and construct
- Construction management
- Management contractor

Pricing strategy:
- Lump sum
- Price list
- Activity schedules
- Bill of quantities
- Cost reimbursable
- Target cost
- Cost plus

Secondary (developmental) objectives (what is to be promoted):
- B-BBEE
- alleviation and reduction of poverty,
- local economic development,
- the transfer or development of skills
- contractor / supplier development
- etc

Decide on selection procedure

Decide on targeted procurement strategy

Identify a suitable form of contract

Allocate risks for professional service contracts

Identify a suitable form of contract

Package professional service contracts

Document procurement strategy
Role players

Client team

Client
As sponsor initiates, commissions and pays for the project, owns the business case and leads the project

As implementer
- oversees
  - management of demand;
  - programmes to realise specific benefits;
  - projects which progress implementation;
  - budgets and cash flows;
  - procurement of implementation resources;
  - the payment of contracted persons and the accounting for expenditure;
  - compliance with legislation;
  - etc.
- provides client direction to and accepts the outputs of the delivery team
- leads engagements with stakeholders and utilities
- etc

Delivery team

Project manager – delivers the development and implementation of the project

Design team – integrates client’s requirements into workable solutions

Supply team (manufacturer and constructor) – manufacture or provide new infrastructure or rehabilitate, refurbish or alter existing infrastructure

Stakeholders

Treasury – budgets for and controls financial expenditure

Custodian - the caretaker of infrastructure throughout its lifecycle

End user – the beneficiary of the business case

Affected communities – the communities that are impacted upon by the projects

Procurement strategy

Delivery management strategy

Delivery management is the organisation, administration, and supervision of processes which when combined into a comprehensive plan, provides the business and technical functions needed to successfully achieve the outcome of the project

Implementation responsibilities are usually assigned to a delivery manager. A delivery manager sets the team up for successful delivery and removes obstacles, or blockers to progress.
Delivery team

**Delivery team**

- **Project manager**
  - delivers the development and implementation of the project
  - administers professional service contracts on behalf of the client

**Design team**

- **Procurement leader**
  - oversees the development of the procurement documents and manages the procurement process

**Supply team** (manufacturer and constructor)

- **Manufacturer / Constructor**
  - manufactures or provides new infrastructure or rehabilitates, refurbishes or alters existing infrastructure

**Procurement leader**

- **Lead designer**
  - establishes and refines the design approach or solution so that it achieves the required standards and is coordinated within the project team

**Project manager**

- **Project leader**
  - leads and directs the design team in a non-technical role including the monitoring and integration of the activities, development and maintenance of a schedule, monitoring of progress and facilitation of the client acceptance of an end of stage deliverable

**Health and safety agent**

- assumes statutory responsibilities imposed by the Construction Regulations and leads health and safety risk management compliance processes

**Cost controller**

- provides independent and impartial estimation and control of the cost of constructing, rehabilitating and refurbishing infrastructure

**Contract manager**

- administers a contract or an order on behalf of the employer

- **Designer**
  - provides design or conditional assessment services

**Supervising agent**

- confirms that the works are proceeding in accordance with the provisions of the contract
Project, programme and portfolio management

Do the right things

In the right way

Do them well

Portfolio management
Management of initiatives and changes that collectively will deliver strategic objectives

Programme management
Management across a group of projects to realise the anticipated benefits

Project management
Management of time, cost and quality to deliver the required capabilities

Service delivery

Stakeholder value

Quality deliverables

Results

Benefits

Capability

Project management is the application of knowledge, skills, tools and techniques to project activities to meet project requirements.

Programme management is the process of managing multiple ongoing projects.
Procurement routes for infrastructure

Need identified for infrastructure

Funding?
- Client cannot fund outright purchase
  - Delivery management?
    - required
      - Coordination?
        - Client transfers some responsibilities
          - Develop procurement strategy
            - Develop procurement documents
              - Apply selection procedures and tender processes
                - Award professional service, service, supply and engineering and construction works contracts as required
            - Identify pricing strategy and suitable contract and develop procurement document
              - Apply selection procedure and tender process
                - Enter into a lease
                - Enter into a PPP
                - Award contract to a principal agent
        - not required
          - Client appoints another public sector entity to function as the implementer on an agency basis
          - Identify pricing strategy and suitable contract and develop procurement document
            - Apply selection procedure and tender process
              - Award contract

- Client can fund outright purchase
  - Identify pricing strategy and suitable contract and develop procurement document
    - Apply selection procedure and tender process
      - Enter into a lease
      - Enter into a PPP
      - Award contract
The concept of primary and secondary objectives

Objectives inform decisions that are made regarding investments in infrastructure. Procurement objectives accordingly relate to the delivery of the product (primary objectives), and what can be promoted through the delivery of the product (secondary objectives).

**Primary objectives** relating to the delivery and maintenance of infrastructure accordingly include:
- tangible objectives including budget (cost of the works); schedule (time for completion); quality and performance characteristics required from the completed works; rate of delivery (how quickly portions of the works or a series of projects can be delivered or funds can be expended)
- environmental objectives
- health and safety objectives
- intangible objectives including those relating to buildability, i.e. the ease with which the designed building or infrastructure is constructed relationships (e.g. long term relationship to be developed over repeat projects, early contractor involvement, integration of design and construction etc); client involvement in the project; end user satisfaction; maintenance and operational responsibilities.

**Secondary objectives** typically include those relating to broad Based Black Economic Empowerment, gender or racial equality, work opportunities for SMMEs alleviation of poverty, local economic development, development of CIDB registered contractors, transfer / development of skills, reduction of environmental impacts and improvement in health and safety performance.

Secondary procurement objectives are additional to those associated with the immediate objective of the procurement itself. Secondary procurement policy objectives influence procurement strategies both directly and indirectly.

Procurement objectives
Framework agreement concept

National Treasury Standard for Infrastructure Procurement and Delivery Management

Definitions

Framework agreement: an agreement between an organ of state and one or more contractors, the purpose of which is to establish the terms governing orders to be awarded during a given period, in particular with regard to price and, where appropriate, the quantity envisaged.

Order: an instruction to provide goods, services or any combination thereof under a framework agreement.

Allows the employer to procure on an as-instructed basis (call offs) over a set term without necessarily committing to any quantum of work.

Supply contracts - batch order

Services contracts - task order

Works contracts - package order

Dictionary definition

- Sum of money for which something is purchased
- The actual cost of acquiring something calculated according to some specific measure or an estimate of what the transaction is worth

Packaging strategy
Procure works or construction service?

- New undergraduate science centre
- East Campus Generator set
- South Block for Sunnyside residence
- Chamber of Mines / 4th quadrant and refurbishment
- Wits Art Museum
- West Campus Generator set

Short-term “hit-and-run” relationships focused on one-sided gain

Culture change

Long-term relationships focused on maximising efficiency and shared value

Start January 2009
Chamber of Mines – fourth quadrant (R70 m)

Start November 2009
Undergraduate Science Centre – phase 1 (R178 m)

April 2010
Wits Art Museum (R68 m)

Start October 2010
Refurbishment of Chamber of Mines – (R45 m)

Same contractor but different professional teams

Procure a construction service
Principles for framework contractors

Framework agreements may be entered into with contractors by:
- inviting tender offers to enter into a suitable contract for the required work, using stringent eligibility and evaluation criteria to ensure that contracts are entered into with only those contractors who have the capability and capacity to provide the required goods, services or works; and
- entering into a limited number of contracts based on the projected demand and geographic location for such goods, services or works.

The term of a framework agreement shall not exceed:
- three years in the case of all organs of state other than a major public entity, a national government business enterprise or a provincial government business enterprise; or
- four years in the case of a major public entity, a national government business enterprise or provincial government business enterprise.

Framework agreements that are entered into shall not commit an organ of state to any quantum of work beyond the first order, or bind the employer to make use of such agreements to meet its needs. The employer may approach the market for goods or services or any combination thereof, whenever it considers that better value in terms of time, cost and quality may be obtained.

Framework agreements that are entered into shall set out:
- the terms which are applicable for the term of the contract;
- the manner in which orders are instructed;
- the scope of work covered by the agreement; and
- the basis by which contractors will be remunerated for work performed in terms of an order, if and when such an order is issued.

Key question – how do you “determine the basis for remunerating contractors for work” which is not defined?
A framework agreement that is entered into may not be amended.

Orders:

- shall cover only goods or services or any combination thereof, falling within the scope of work associated with the agreement;
- may not be issued after the expiry of the term of the framework agreement; and
- may be completed even if the completion of the order is after the expiry of the term.
Shift in thinking

Current paradigm

Client appoints a professional team to design the works

Open tenders are called once the production information has been finalised by the professional team (production information = final detailing, performance definition, specification, sizing and positioning of all systems and components enabling either construction (where the contractor is able to build directly from the information prepared) or the production of manufacturing and installation information for construction)

Contractor prices the production information

Contractors are contracted on a bills of quantity basis for a single project (which may or may not include budgetary items to cover aspects of the works which have not been finalised)

Procuring a particular works

Procuring a construction service over a period of time

How contractors remunerated for broadly defined work which is usually not sufficiently scoped to enable it to be priced at the time when the framework agreement is entered into

Need to relook at what pricing method are available
Challenges with framework agreements

Goods
How do you add similar items that are not priced?
How do you deal with the size of orders?
How do you reduce risk pricing and compensate contractor for events for which they are not at risk?

Services
How do you add similar items that are not priced?
How do you reduce risk pricing and compensate contractor for events for which they are not at risk?

Professional services
How do you remunerate consultants before the extent of the works which are to be delivered is known?

Engineering and construction works (development of a product (works) on a site)
How do you remunerate contractors for broadly defined work which is usually not sufficiently scoped to enable it to be priced at the time when the framework agreement is entered into
How does one deal with preliminary and general items e.g. site establishment, management of the works, equipment requirements etc which vary significantly from site to site

Require a flexible contract which:

• provides cost based contracting options which enable costs to be controlled
• provides a means in priced based contracts to arrive at prices for items not priced at the start of the contract in a transparent manner
• compensates contractors for events which occur

NEC3 family of contracts are suitable for framework contracts as they make provision for cost based pricing strategies and assess compensation events on the basis of cost as defined in the contract plus a fee agreed at the time of contract formation which covers profit, overheads etc.
**Bases for changes to the prices for compensation events in NEC3 contracts**

**Compensation events** are events which, if they occur, and do not arise from the Contractor’s fault, entitle the Contractor to be compensated for any effect the event has on the **Prices** and the **Completion Date** or a **Key Date** (if applicable)

A change in Works Information, Services formation, Goods Information or Scope is a compensation event – any change to such information after the conclusion of the contract is a compensation event

The changes to the Prices are assessed as the effect of the compensation event upon

- the actual Defined Cost / Time Charge for the work already done and
- the forecast Defined Cost / Time Charge for the work not yet done.

A fee for overheads and profit is added to Defined Cost

**EXAMPLE**
Change in Prices = subcontracted fee percentage x Defined Cost of subcontracted work / 100 + direct fee percentage Defined Cost of other work / 100 + Defined Cost

**Fee percentages that tendered are included in the Contract Data**

Defined Cost calculated at open market or competitively tendered prices

*Items not priced in Price List. Price Shcedule or Task Schedule are dealt with in the same way as compensation events*
Options for pricing - price based

Contractor’s price build up:
- General items
- Construction (work) content
- Overheads
- Risk allowance
- Profit

Lump sum

**Activity schedule** - programme linked to lump sums for activities

Bill of quantities - based on a standard system of measurement
- Employer at risk for items not measured or in accordance with system of measurement and changes in quantities

Price list - Lump sum with Employer at risk for changes in quantities

Pricing strategy
Options for pricing - cost based

Contractor’s prices build up:
- General items
- Construction (work) content
- Overheads
- Risk allowance
- Profit

Cost reimbursable contract

Target contract with activity schedule or Target contract with bill of quantities

Wages and salaries + Site overheads

Materials & plant at open market rates

Equipment at agreed rates, market related rates or ± percentage of a hire list

Subcontract costs

Scenario 1: Contractor gain
Scenario 2: Contractor pain

Management contract (cost plus)

Sharing of cost savings / overruns

Target Price (initial)
Target Price (final) adjusted for compensation events

- Final “cost”
- Gain: payment to contractor (cost + fee)
- Pain

Prices for work done by the contractor himself

+ Subcontracted fee percentage

+ Fee percentage

+ Subcontracted fee percentage
Pricing framework agreements

The challenge is to decide on how contractors are to be remunerated for broadly defined work which is usually not sufficiently scoped to enable it to be priced at the time when the framework agreement is entered into.

Prices based on time charges or the percentage of construction costs can be used as a basis to arrive at price in Professional Service Contracts.

Engineering and construction works involves the development of a product (works) on a site.

Key questions – how does one deal with preliminary and general items e.g. site establishment, management of the works, equipment requirements etc which vary from site to site.

Answer require a flexible contract which:

- provides cost based contracting options which enable costs / productivity to be controlled
- provides a means in priced based contracts to arrive at prices for items not priced at the start of the contract in a transparent manner

Can tender a target price for the first package order and negotiate the target prices for subsequent tenders. Alternatively can invite tenders purely on the basis of margins and negotiate a target price when the scope is capable of being priced.

**NEC3 ECC**
- Option C (Target contract with activity schedule)
- Option D (Target contract with bill of quantities)
- Option F (Management contract)

**NEC3 ECSC**
- build up price from a tendered Price List and transparent cost plus procedure to deal with items not priced

**Caution – NEC3 Option D (Target contract with bill of quantities) needs to be used with caution as the quantum of the target is known after Completion when the works is remeasured. Also assessment of compensation events is fairer and easier with activity schedule. Work load on Project Manager and their delegates significantly less with an activity schedule.**

NB standard system of measurement assumes that the work is fully designed.
Contracting strategy options

**Design and construct**
Contractor designs a project based on a brief provided by the client and constructs it.

**Example:** Design and construct a synthetic turf hockey pitch (national level, wet unfilled pitch), laid on top of a shock-pad and an engineered base / subbase, including run-off areas, technical areas, drainage and water systems in accordance with the International Hockey Federation requirements.

**Develop and construct**
Contract based on a scheme design prepared by the client under which a contractor produces drawings and constructs it.

**Example:** Complete design for residences such that each unit has:
- a central light complete with switch;
- at least two double plug points in each room;

Design and construction integrated
Employer not liable for delays and slippages in design.

**Management contractor**
Contractor is responsible for planning and managing all post-contract activities and for the performance of the whole of the contract.

Management contractor is provided with a brief to manage the design (if required) and construction of the works by subcontracting it to others.

**Contracting strategy**

- **Employer**
  - Architect
  - Electrical engineer
  - Quantity surveyor
  - Civil engineer
  - Mechanical engineer
  - Professional service providers

- **Contractor**
  - Electrical engineer
  - Civil engineer
  - Architect
  - Quantity surveyor
  - Mechanical engineer
  - Professional service providers
Under an EPC contract, the contractor will design, procure materials and construct through own labour or by subcontracting part of the work.

Management contract with design and construct responsibilities?

Design-build is a method to deliver a project in which the design and construction services are contracted by a single entity known as the design-builder or design-build contractor.

Design-build is a method to deliver a project in which the design and construction services are contracted by a single entity known as the design-builder or design-build contractor.

The project owner selects a principal professional service provider who manages the whole project on behalf of the owner. This EPCM professional service provider coordinates and manages all the design, procurement and construction work.
Early contractor involvement

- **Development of concept for works**
- **Scope works**
- **Document works**
- **Design works**
- **Construct works**
- **Hand over works**

Packages delivered over a term by a single contractor

**Target cost contract**

- **Target Price (initial)**
- Target Price (final) adjusted for compensation events

Sharing of cost savings / overruns

- **Scenario 1:** Contractor gain
- **Scenario 2:** Contractor pain

Framework agreements

- Stage 3: Strategic brief
- Stage 4: Concept report
- Stage 5: Design development report
- Stage 6: Production information

Early contractor involvement

Contractor appointed in traditional contracts
Allocation of responsibilities (risks) between Employer and Contractor

Risk is to expose (someone or something valued) to danger, harm, or loss

Early contractor involvement deals with fragmentation of design and construction – allows integration
Lean construction concept
To provide higher value and less waste the fragmentation in design needs to be addressed, preferably before 25% of the design is complete.

Target cost contracts can enable this to happen even where a design by employer approach is adopted as it allows a specialist in construction to be appointed at the same time as the design team. Alternative is design and construct or develop and construct.

Critical questions
- who is responsible for the design?
- when is a contractor appointed?
- how do you remunerate contractors?
Fast track construction - options

Production information (information enabling either construction or the production of manufacturing and installation information for construction) needs to be complete in order to price a contract. This is not always possible. As a result, certain pricing assumptions may need to be made regarding allowances for items or budgetary items.

**Option 1: Provisional bills of quantities**
“Pay as you go” system with no contractor insights and no incentive to keep costs within estimates.

**Option 2: Target contract**
Allows continuous budget control with early contractor involvement as all participants are focussed on finalising the work to go within the target price at the start.

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**Difference = risk associated with delivery model / poor estimates**

- **Contract value at award**
  - Price adjustment for inflation (projected component)
  - Estimated value of subcontracts including markups (highly variable component)
  - Contract value of main contract excluding subcontracts and related markups (fixed component)

- **Final contract value**
  - Final price adjustment for inflation
  - Actual value of subcontracts including markups
  - Cost of changes to scope of work after contract concluded

- **Target at completion** (total of the Prices) adjusted for compensation events
  - Price for compensation events other than changes in production information
  - Price based on final (100% complete) production information

- **Target at start (total of the Prices)**
  - Assumed Price of outstanding production information based on elemental cost estimate
  - Price based on percentage of production information

- **Rand**
Objectives / philosophy embedded in standard forms of contracts

Contracts are drafted around significantly different objectives and philosophies e.g.

- *master - servant relationship* or *collaboration between two experts*,
- risk sharing or risk transfer,
- independent or integrated design
- short term relationship based on one sided gain or long-term relationships focused on maximising efficiency and shared value,
- etc

There are accordingly a wide range of different contracting approaches and price and cost based pricing strategies with distinctly different risk allocations.

**J BCC Principal Building Agreement (July 2007)** Clause 15.5 : The **contractor** shall provide everything necessary for the proper execution of the **works** and shall carry out and complete the **works** in compliance with the **contract documents**, using materials and workmanship of the quality and standards specified therein, provided that such quality and standards shall be to the reasonable satisfaction of the **principal agent**.

**GCC 2010** Clause 10.2.1 In respect of any matter arising out of or in connection with the **Contract**, which is not required to be dealt with in terms of Clause 10.1 (Contractor’s claims), the **Contractor** or the **Employer** shall have the right to deliver a written dissatisfaction claim to the **Engineer**.

**FIDIC Silver book** - ...much of the market requires a form of contract where certainty of final price, and often of completion date, are of extreme importance. Employers on such turnkey projects are willing to pay more – sometimes considerably more – for their projects if they can be more certain that the agreed final price will not be exceeded.

**Martin Barnes 1999** - The basic interaction between Engineer and Contractor, for example, has mutated over the last hundred and fifty years from ‘master and servant’ to a simple collaboration between two specialist contributors. The boundaries of the traditional interactions have also moved in response to the same pressures to improve. In earlier times, for example, contractors made none of the decisions about what was to be built and all the decisions about how it was to be built. Now we have developed operational and commercial relationships which will enable the boundary between design and construction to be placed anywhere that preferences might dictate on a particular project and even varied between different parts of the same project.

**Identify suitable form of contract**
## Coverage of contracts for construction works

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<td>Design and build</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td>Yellow &amp; Silver</td>
</tr>
<tr>
<td><strong>Pricing strategy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activity schedule</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Lump sum</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td>Yellow &amp; Silver</td>
</tr>
<tr>
<td>Bill of quantities</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td>Red</td>
</tr>
<tr>
<td>Cost reimbursable</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Target cost</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

NEC3 contracts are suitable for framework contracts as they make provision for cost based pricing strategies.

NEC3 Contract covers all types of contracts (engineering and construction, term service, professional service and supply) using the same principles and philosophy.

NEC3 Engineering and Construction Contracts cover the full range of contracting and pricing options that are available.
Management of cost and time overruns

Society of Construction and Law’s Delay and Disruption Protocol (2002) contains 21 core principles to:

- provide useful guidance on some of the issues that arise on construction contracts where one party wishes to recover from the other an extension of time and / or compensation for the additional time spent and the resources used to complete the project
- provide a means by which the parties can resolve these matters and avoid unnecessary disputes

<table>
<thead>
<tr>
<th></th>
<th>Programme and records</th>
<th>12</th>
<th>After the event delay analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Purpose of extension of time</td>
<td>13</td>
<td>Mitigation of delay and mitigation of loss</td>
</tr>
<tr>
<td>3</td>
<td>Entitlement to extension of time</td>
<td>14</td>
<td>Link between extension of time and compensation</td>
</tr>
<tr>
<td>4</td>
<td>Procedure for granting extension of time</td>
<td>15</td>
<td>Valuation of variations</td>
</tr>
<tr>
<td>5</td>
<td>Effect of delay</td>
<td>16</td>
<td>Basis of calculation of compensation for prolongation</td>
</tr>
<tr>
<td>6</td>
<td>Incremental review of extension of time</td>
<td>17</td>
<td>Relevance of tender allowances.</td>
</tr>
<tr>
<td>7</td>
<td>Float as it relates to time</td>
<td>18</td>
<td>Period for evaluation of compensation</td>
</tr>
<tr>
<td>8</td>
<td>Float as it relates to compensation</td>
<td>19</td>
<td>Global claims</td>
</tr>
<tr>
<td>9</td>
<td>Concurrent delay - its effect on entitlement for extension of time</td>
<td>20</td>
<td>Acceleration</td>
</tr>
<tr>
<td>10</td>
<td>Concurrent delay - its effect on entitlement to compensation for prolongation</td>
<td>21</td>
<td>Disruption</td>
</tr>
<tr>
<td>11</td>
<td>Identification of float and concurrency</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following points can be assigned to each of the 21 core principles in respect for each of the forms of contract as follows:

- 1 = non-compliance
- 0 = some compliance
- 1 = partially compliant
- 2 = fully compliant

JBCC 2000 PBA (2007) and GCC 2010 - poor correlation (≤ 0,5)
FIDIC Red Book - a moderate correlation (> 0,5 but ≤ 1,5)
NEC3 ECC - an excellent fit (>1,5)
## Comparison of features of different forms of contract commonly used in South Africa

<table>
<thead>
<tr>
<th>Criteria</th>
<th>FIDIC</th>
<th>GCC 2010</th>
<th>JBCC 2000</th>
<th>NEC3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Correlation / fit with respect to Society of Construction and Law’s Delay and Disruption Protocol (2002)</td>
<td>Moderate</td>
<td>Poor</td>
<td>Poor</td>
<td>Excellent</td>
</tr>
<tr>
<td>2  Potential for collaborative working</td>
<td>Moderate</td>
<td>Poor</td>
<td>Poor</td>
<td>Excellent</td>
</tr>
<tr>
<td>3  Target contract option for application in framework contracts, collaborative working and early contractor involvement</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>4  May be used for both engineering infrastructure and building projects</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>5  The main contractor may be required to assume responsibility for the design or the works or the finalisation of the design</td>
<td>Yes (yellow and silver)</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>6  The main contractor may be required to operate as a management contractor</td>
<td>Yes (silver)</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>7  Cost based pricing strategies, including target cost contracts</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>8  Back to back subcontracts</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>9  Short forms of contract suitable for use where risks are low and there is no requirement for sophisticated management techniques</td>
<td>Yes</td>
<td>None</td>
<td>Same management requirements as for principal contract but no subcontracts</td>
<td>Yes</td>
</tr>
<tr>
<td>10 An open book approach to the cost of change</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>11 Pricing structures that align payments to results and reflect a more balanced sharing of performance risk</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
**Procurement as an instrument policy**

### Type of obligations placed on contractors

<table>
<thead>
<tr>
<th>Number</th>
<th>Descriptor</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Structure of the contracting entity</td>
</tr>
<tr>
<td>II</td>
<td>Internal workings of the contracting entity</td>
</tr>
<tr>
<td>III</td>
<td>Outsourcing</td>
</tr>
<tr>
<td>IV</td>
<td>Nominated deliverables</td>
</tr>
</tbody>
</table>

- e.g. B-BBEE score card
- e.g. subcontract to SSMEs
- e.g. provide work for unemployed persons

### Methods used to implement policies

<table>
<thead>
<tr>
<th>Scheme type</th>
<th>Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Reservation</strong></td>
</tr>
<tr>
<td></td>
<td>1 Set asides</td>
</tr>
<tr>
<td></td>
<td>2 Qualification criteria</td>
</tr>
<tr>
<td></td>
<td>3 Contractual conditions</td>
</tr>
<tr>
<td></td>
<td>4 Offering back</td>
</tr>
<tr>
<td></td>
<td><strong>Award criteria</strong></td>
</tr>
<tr>
<td></td>
<td>5 Weighting of objectives at the shortlisting stage</td>
</tr>
<tr>
<td></td>
<td>6 Award criteria (tender evaluation criteria)</td>
</tr>
<tr>
<td></td>
<td><strong>Incentives</strong></td>
</tr>
<tr>
<td></td>
<td>7 Incentive payments</td>
</tr>
<tr>
<td></td>
<td><strong>Indirect</strong></td>
</tr>
<tr>
<td></td>
<td>8 Product/service specifications</td>
</tr>
<tr>
<td></td>
<td>9 Design of specifications, contract conditions and procurement processes to benefit particular contractors</td>
</tr>
<tr>
<td></td>
<td><strong>Supply side</strong></td>
</tr>
<tr>
<td></td>
<td>10 General assistance</td>
</tr>
</tbody>
</table>

**Targeted procurement strategy**

- Not permitted in all procurement regimes
- May compromise equal treatment of contractors or may not be cost effective
Targeted procurement procedures

**SANS ISO 10845-1** defines a targeted procurement procedure as the process used to create a demand for the services or goods (or both) of, or to secure the participation of, targeted enterprises and targeted labour in contracts in response to the objectives of a secondary procurement policy.

Targeted procurement procedures include:
- Specifications for deliverables e.g. B-BBEE code of good practice, SATS 1286 (local content), parts of SANS ISO 10845 (targeted enterprises and labour) etc.
- Some specifications enable contractual obligations to be established e.g. a minimum quantum of expenditure on target groups in the performance of the contract
- Unbundling of contracts
- Granting of evaluation points (price – preference)
- Provision of financial incentives for the attainment of key performance indicators in the performance of the contract

A Key Performance Indicator (KPI) is a quantifiable performance measurement of an individual, group or organisation against strategic or operational objectives.

KPIs in procurement relates to targets

NEC3 Engineering and Construction Contract defines a KPI as “an aspect of performance for which a target is set.”

A KPI allows financial incentives to be paid, enable preferences to be applied in the evaluation of tenders or financial incentives to be paid, allows minimum requirements to be set, enables sanctions including penalties (low performance damages) to be applied.

KPIs need to be formulated so that they are contractually enforceable.

Procurement outcomes (deliverables) need to be quantified, measured and evaluated.

Aim for minimum cost neutral targets.

Incentivise / encourage beyond minimum performance - stretch targets.
Framework for procurement

SANS 10845 and National Treasury Standard provides the universe of options

Expression of interest

Approach to procurement

Financial offer
Financial offer and preferences
Financial offer and quality
Financial offer, quality and preferences

Prequalification methods

Negotiation procedure
Competitive selection procedure

A Nominated procedure
B Open procedure
C Qualified procedure
D Quotation procedure
E Proposal procedure using the two-envelope system
F Proposal procedure using the two-stage system
G Confined procedure
H Design competition
I Shopping procedure

Competitive negotiation procedure

A Restricted competitive negotiations
B Open competitive negotiations

Eligibility criteria (if any) – criteria which need to be satisfied in order to have a submission evaluated

Opportunities to engage with tenderers during the tender process

Selection procedure
Framework for developing strategy

Primary objectives
- tangible (budget, schedule, quality and performance)
- environmental and health and safety
- intangible (buildability, relationships, client involvement, end user satisfaction, maintenance and operation responsibilities etc.)

Secondary (developmental) objectives (what is to be promoted):
- B-BBEE
- alleviation and reduction of poverty,
- local economic development,
- the transfer or development of skills
- contractor / supplier development
- etc

Contracting strategy
- Design by employer
- Develop and construct
- Design and construct
- Construction management
- Management contractor

Pricing strategy:
- Lump sum
- Price list
- Activity schedules
- Bill of quantities
- Cost reimbursable
- Target cost
- Cost plus

Allocate risks for packages
- Contracting strategy
- Pricing strategy

Identify a suitable form of contract

Package professional service contracts

Document procurement strategy

Decide on delivery management strategy

Gather and analyse information
(Conduct spend, organisational and market analyses)

Formulate primary and secondary procurement objectives

Package works into contracts or orders linked to a framework agreement

Allocate risks for packages

 Decide on selection procedure

Decide on targeted procurement strategy

Identify a suitable form of contract

Allocate risks for professional service contracts

Package works into contracts or orders linked to a framework agreement
**Procurement documents**

<table>
<thead>
<tr>
<th>Component</th>
<th>Broad outline of contents (ISO 10845-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heading</td>
<td></td>
</tr>
</tbody>
</table>

C1: Agreements and contract data

| Form of offer and acceptance | Formalizes the legal process of offer and acceptance |
| Contract data                | Identifies the applicable conditions of contract and associated contract-specific data that collectively describe the risks, liabilities and obligations of the contracting parties and the procedures for the administration of the contract. |

C2: Pricing data

| Pricing assumptions | Provides the criteria and assumptions which it is assumed (in the contract) that the tenderer has taken into account when developing his prices, or target in the case of target and cost reimbursable contracts. |
| Pricing schedules / Activity schedule / Bill of quantities | Records the contractor's prices for providing goods, services or engineering and construction works which are described in the scope of work section of the contract. |

C3: Scope of Work

| Scope of work | Specifies and describes the goods, services, or engineering and construction works which shall be provided and any other requirements and constraints relating to the manner in which the contract work shall be performed |

C4: Site information (engineering and construction works contracts only)

| Site information | Describes the site as at the time of tender to enable the tenderer to price his tender and to decide upon his method of working and programming and risks. |

The implementation of a procurement strategy takes place through procurement documents. Procurement documents which present requirements in a clear, unambiguous, comprehensive and understandable manner support successful implementation.

A standard form of contract is a contract between two parties that is published by an authoritative industry body with fixed terms and conditions which are deemed to be agreed and are not subject to further negotiation or amendment.

**CIDB Standard for Uniformity in Construction Procurement**

4.4.4.2 The standard industry forms of contract listed in 4.4.4.1 shall be used with minimal project specific variations and additions which do not change their intended usage.

Cabinet Office (UK) Government Construction Strategy (2011)

Efficiency and elimination of waste

2.28 . . . . . The Government will now move towards using only standard forms of contract with minimal amendment for all new central government procurement activity

Refrain from drafting specific clauses / modifications to cover perceived issues – will probably lead to risk pricing, ambiguities, confusion and disputes and can lead to a contractor going insolvent.
Questions