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A model for the delivery of large scale employment intensive works using a programme management approach

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Introduction

Many government departments and local authorities struggle to spend their allotted capital budgets. This may be attributed to a number of public sector capability and capacity constraints, including *inter alia*, inappropriate delivery models and a shortage of skilled programme and project managers. Where such skills exist, they are invariably overstretched due to outdated delivery models which frequently burden scarce skilled project management and administrative capacity.

These capacity problems may be attributed in part to the predominance of small contracts which results from:

- 1) the **project approach** whereby, for each and every project, consultants are appointed, briefed, directed and overseen by a gradually disappearing cadre of skilled staff;
- 2) **unbundling strategies** aimed at reducing the size of contract in order to target small or local enterprises.

While these approaches have opened up opportunity for small enterprises that are employment intensive by nature, they deliver limited quantities of infrastructure per contract, resulting in severe work overload for officials. They also often lead to poor quality end products, rework and delays that add to the burden.

The challenge is to develop and implement a delivery model that enables allocated budgets to be spent in a manner that results in construction works of an acceptable quality in response to prioritised needs whilst contributing to the regional social and economic agenda including employment and skills development.

This paper outlines a delivery model which was developed by the Expanded Public Works Support Programme (a Business Trust Project) and which is currently being piloted by the eThekweni Water and Sanitation Unit.

Considerations

The spending of capital budgets, where capacity and capability constraints exist, can best be achieved where:

- 1) projects of a similar nature are grouped together within a geographic region into a single programme;
- 2) key contracts associated with a programme are placed with a limited number of service providers and / or contractors for a period of not less than 3 years;
- 3) single point accountability is assigned to those who are contracted for developing and overseeing the implementation of the programme; and
- 4) efficient and integrated risk management and project management practices are pursued.

Typically at the commencement of any programme (series of projects), the only “knowns” are the allocated medium term budget, a list of short term priorities and possibly an indicative broad brush breakdown of the budget into prioritised projects for the first year of the programme. Individual projects within a programme need to be scoped, designed and documented so that construction may take place. This cycle needs to be repeated so that as projects are identified, they can be scoped, designed and documented so that construction occurs on a continuous basis over the period of the programme (see Figure 1). Accordingly, the delivery model which is selected needs to be capable of procuring services in the absence of a well defined scope of work.

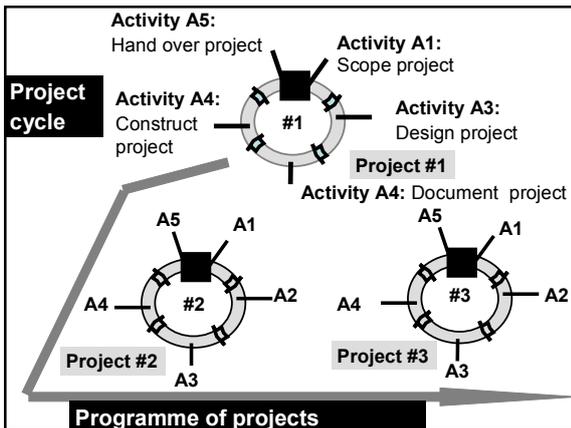


Figure 1: The project cycle within a programme of projects

The model

A client identifies a programme comprising a number of project and obtains the necessary funding for it. The client thereafter procures the services of a Programme Manager and one or more Design Consultants and Contractors in terms of a competitive procurement process in the absence of any detailed scope of work using the NEC3 family of standard contracts published by the Institution of Civil Engineers, London (see Figure 2) and the CIDB Standard for Uniformity in Construction Procurement. (see www.cidb.org.za)

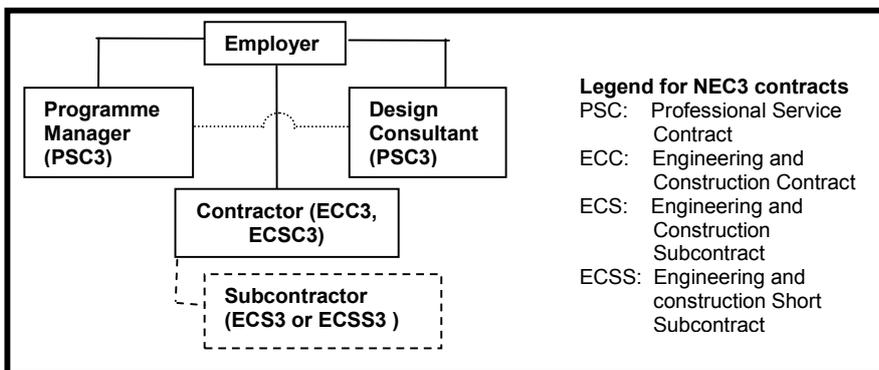


Figure 2: Contractual relationships in the model

Tenderers compete on the basis of price and quality for the programme management, design consultancy and construction services. Typically, the professional service providers tender staff rates and certain cost parameters relating to expenses while contractors tender a range of parameters associated with a schedule of cost components i.e.

- a direct fee percentage
- a subcontracted fee percentage
- time related charges for equipment
- a percentage for working areas overheads
- percentage for manufacture and fabrication overheads
- percentage for design overheads; and

- hourly rates for specified personnel.

Tender assessment schedules are used to develop a comparative price for evaluation purposes, based on assumed quantities and the tendered cost parameters (see Figure 3).

Summary schedule of cost components			
#	Component	Basis of assumed cost	Assumed cost , US\$
1	People	Employer estimated amount	
2	Equipment	Employer estimated amount plus tendered amounts for identified items or percentage of specified hire lists	
3	Plant and Materials	Employer estimated amount	
4	Charges	Employer estimated amount plus tendered percentage on people for overhead costs in the working areas	
5	Manufacture and fabrication	Tendered hourly rates and overhead percentage for employer estimated hours	
6	Design		
7	Subcontracted work	Employer estimated amount and other tendered parameters	
Subtotal			
Compensation events		Employer estimated	
Defined Cost			

Defined cost x tendered direct fee percentage/100 = US\$.....	Fee 1
Subcontracted work x tendered subcontracted fee percentage100. = US\$.....	Fee 2
Total Comparative figure = Defined cost plus Fee 1 plus Fee 2	

Figure 3: Comparative schedule for tender evaluation

The Programme Manager converts the budget into a series of works packages, manages the delivery of the works, acts as the Employer's Agent in terms of the Design Consultant's contracts, acts as the Project Manager in terms of the Contractor's contract and provides cost consultancy services. The Design Consultant provides design services in relation to the identified work packages and monitors the quality of the constructed works. The Contractor constructs the works associated with an identified works package.

The Contractor, prior to commencing the work, agrees a target cost with the Project Manager based on an activity schedule developed from the specifications and drawings provided by the Design Consultant for the identified package of work. During the course of the contract, the Contractor is paid his costs as defined in Option C of the NEC3 Engineering and Construction Contract, based on his tendered cost parameters and at the end of the contract, the Contractor is paid his share of the difference between the target cost and his cost according to an agreed formula. If the final cost is greater than the target cost, the Contractor pays his share of the difference. This motivates the Contractor to control costs. (See Figure 4).

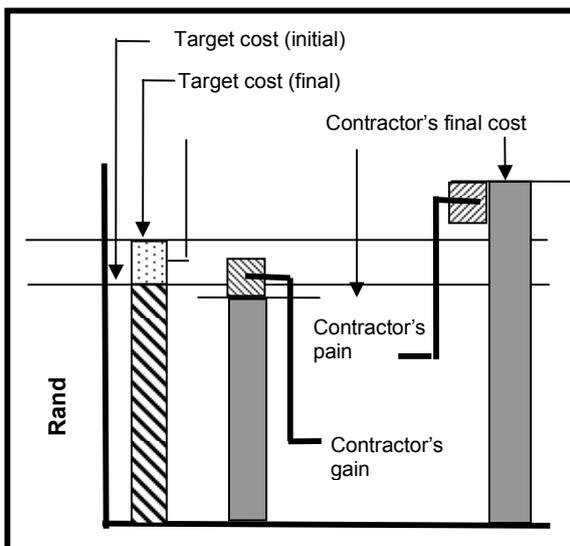


Figure 4: The target cost concept

The Design Consultant is typically paid on a time and cost basis (Option E of the NEC3 Professional Service Contract) until such time as the precise scope of work is known and a target cost can be agreed with the Design Consultant (Option C).

Accommodating the social and economic agenda

There are a number of techniques and mechanisms associated with targeted procurement procedures, all of which are designed to promote or attain the participation of targeted enterprises and targeted labour in contracts. These procedures (see SANS 10396, *Implementing preferential construction procurement policies using targeted procurement procedures*) relate to the:

- measurement and quantification of the participation of target groups
- definition and identification of target groups
- unbundling of contracts;
- granting of preferences;
- provision of incentives for the attainment of key performance indicators in the performance of contract;
- creation of contractual obligations to engage target groups in the performance of the contract;
- provision of third party management support;
- requirements for minimum prescribed levels of equity in the tendering entity
- acceleration of targeted enterprises in rotating electronic data bases; and
- evaluation of procurement outcomes.

The most convenient way of measuring and quantifying the participation of targeted groups is by means of a contract participation goal i.e. an amount equal to the sum of the wages and allowances for which the contractor contracts to engage targeted labour or the value of supplies, services and works for which the contractor contracts targeted enterprises in the performance of the contract (or both), expressed as a percentage of the contract amount.

Contract participation goals measure the participation of targeted enterprises and targeted labour i.e. the flows of money from the contract to the target group. They provide a measurable key performance indicator. Procedures as to how such goals can be quantified and verified in the performance of the contract need to be included in the contract.

SANS 1914, Targeted Construction Procurement, provides a series of performance based specifications to facilitate the establishment of a contract participation goal for a particular contract in respect of the participation of targeted enterprises, targeted partners in joint ventures, local resources and targeted labour, as relevant. (See Figure 5). These specifications, upon award of the contract, form the basis for monitoring and verifying that the contractor achieves the contract participation goal in the performance of the contract.

Contract participation goals (CPG) may be used, in addition to measuring and reporting on a key performance indicator which reflects the quantum of business or employment generated in respect of targeted enterprises or targeted labour through the performance of the contract, to:

- reserve a portion of the contract work for specified target groups through the setting of minimum contract participation goals;
- establish the basis for the awarding of preferences in proportion to the quantum of the CPG that is tendered; or
- establish performance targets for the payment of financial incentives relating to the attainment of key performance indicators.

The Construction Industry Development Board's (CIDB) generic *Specification for Social and Economic Deliverables in Construction Works Contracts* (see www.cidb.org.za) should be used in conjunction with this model. This specification provides for the delivery of a wide range of social and economic deliverables through the performance of a construction contract, including the:

- provision of employment opportunities to targeted labour;
- utilisation of local resources;
- provision of employment and skills development opportunities to targeted labour;
- provision of business opportunities for targeted enterprises;
- procuring of subcontractors for defined portions of the contract in terms of specified procedures;
- provision of third party management support services to targeted contractors;
- procuring or management (or both) of mentoring services for targeted contractors;
- execution of the contract in joint venture with a targeted partner;
- provision of experiential work opportunities towards a specified professional registration for designated persons;
- provision of work learning opportunities towards a specified degree, diploma or certificate for designated persons;
- provision of experiential work opportunities towards a SAQA registered qualification or certificate for designated persons;
- procuring and management of a training provider to provide specific training for designated persons; and
- promotion of HIV/AIDS awareness.

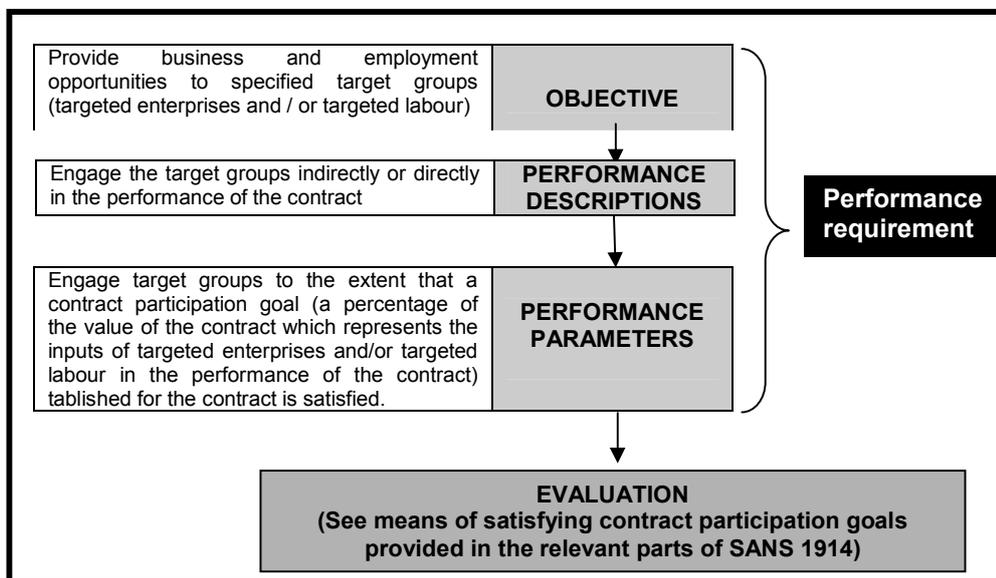


Figure 5: Structure of SANS 1914 performance based resource standards

These deliverables are based on a number of South African Standards and may be readily incorporated into a scope of work associated with a particular work package by reference to this specification and the completion of project specific variables (specification data). Contractors may be required to achieve a particular deliverable and be penalised financially should they fail to do so or to be offered a financial incentive should they equal or exceed a key performance indicator associated with a deliverable. The target cost that is developed for each work package takes into account these requirements.

This approach addressing the social and economic agenda is very flexible and, unlike most other delivery models, allows the client to change the deliverables over time in response to emerging needs and changing circumstances. This is of particular value where the contracts extend over a few years.

Pilot project

eThekwini Water and Sanitation are currently piloting this delivery model on a three year US\$ 75 million project involving the replacement of the city's old asbestos cement secondary water mains. eThekwini Water and Sanitation operates some 13 000km of water mains of which some 2 500km are aging asbestos cement pipes. These old asbestos cement pipes are at the end of their useful life, burst frequently and need to be replaced.

The concept of the model using the Option C (Target Cost) NEC3 Engineering and Construction Contract was introduced to the Design Branch of eThekweni Water and Sanitation in February 2007. (The Branch had not previously used the NEC3 Form of Contract). The decision to proceed with the model was made mid February after a briefing meeting which was attended by select officials, contractors and consultants. Expressions of Interest were prepared in accordance with the CIDB's Standard for Uniformity in Construction Procurement (see www.cidb.org.za), advertised on 9 March and closed on 23 March. Submissions were evaluated and the successful respondents were invited to proceed with the preparation of a tender in accordance with the CIDB's Standard Conditions of Tender on 7 May. Tenders for the Programme Manager and Design Consultants closed on 18 May and for the Contractors on 25 May. From these tenders one Programme Manager, four Design Consultants and four Contractors were selected. These selections were ratified by the Bid Evaluation and Adjudication Committees and awards were made in the last week of June 2007. Work commenced on 1 July 2007 i.e. the start of the new financial year.

Socio-economic deliverables for the project will include:

- 1) Employment opportunities offered to targeted labour. The nature of the work in this project is labour intensive as many mains will be laid in the original water mains trench. Most of these trenches are shallow and the modified polyvinyl chloride (mPVC) pipes are light and easily handled by labour. It is envisioned that at the peak of this operation some 2000 labourers will be employed at one time.
- 2) Procurement of subcontractors for defined portions of the contract in terms of specified procedures. The selection of some twelve subcontractors will be made using the selection method specified. These subcontractors will be developed through this project to raise their CIDB contractor grading designation. The process will include, inter alia, a system of starting the project with the main contractor's key teams, i.e. teams that have the full experience and work culture of the main contractor. These teams will then dilute to form the core leadership of subsequent teams sourced from the main contractor and the selected subcontractors. In this manner, the experience and work culture of the main contractor will be spread through the local labour and subcontractors.
- 3) Provision of workplace learning opportunities towards a specified professional registration for designated persons. Persons designated by eThekweni Water and Sanitation will receive specified training by either the main contractor, design consultant or programme manager to assist that person in achieving their professional registration.
- 4) Provision of workplace learning opportunities towards a specified degree, diploma, or certificate for designated persons. Persons designated by eThekweni Water and Sanitation will receive specified training by either the main contractor, design consultant or programme manager to assist that person in achieving a specified qualification.

Conclusions

The strength of this model lies in:

- 1) the procuring of a programme of works over a period of time rather than a large number of short duration replanned projects;
- 2) well developed and documented processes, procedures and methods;
- 3) work commences within relatively short time frames when compared to other delivery models; and
- 4) flexibility in scope of work and social and economic deliverables.

The weakness of the model is that it requires skilled management in its implementation and strict adherence to the provisions of the contract and the contracting system embodied therein.

The model, which is generic in nature, is based on an international standard form of contract and standard CIDB procurement processes, procedures and methods and is supported by a generic CIDB specification for attaining social and economic deliverables, will undoubtedly have applications in South Africa and in other countries.