



Civilution

February 2016

Focus on: National Treasury Standard for Infrastructure Procurement and Delivery Management



national treasury

Department:
National Treasury
REPUBLIC OF SOUTH AFRICA



A thriving economy, which manifests as a happy civil society, is underpinned by sound infrastructure.



**Accelerating infrastructure delivery.
Improving the quality of life.**

National Treasury's *Standard for Infrastructure Procurement and Delivery Management*, which was published in November 2015, heralds the dawn of an encouragingly fresh approach to the planning, design, procurement and execution of infrastructure projects.



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Block 19, Thornhill Office Park,
Bekker Street, Vorna Valley, Midrand
Private Bag X200, Halfway House, 1685
Tel 011 805 5947/8, Fax 011 805 5971
<http://www.saice.org.za> | civilinfo@saice.org.za

CIVILITION FORUM (CURRENT COMPOSITION)

Consulting Engineers South Africa (CESA)
Concrete Society of Southern Africa (CSSA)
Institute of Municipal Engineering of Southern Africa (IMESA)
Southern African Asset Management Association (SAAMA)
South African Council for the Project and Construction Management Professions (SACPCMP)
South African Forum of Civil Engineering Contractors (SAFCEC)
South African Institution of Civil Engineering (SAICE)
South African Institute of Electrical Engineers (SAIEE)
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In collaboration with National Treasury and the School of Construction Economics and Management, University of the Witwatersrand

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CIVILITION CONTACT

Steven Kaplan
steven@saice.org.za
Tel 011 805 5947/8

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NATIONAL TREASURY STANDARD FOR INFRASTRUCTURE PROCUREMENT AND DELIVERY MANAGEMENT

Foreword

DURING NOVEMBER 2015, in support of the separation of the supply chain for infrastructure procurement and delivery management from that for general goods and services, National Treasury issued the following two documents:

- An instruction in terms of Section 76(4)(c) of the Public Finance Management Act of 1999 (Act 1 of 1999) (PFMA), which requires the implementation of the *Standard for Infrastructure Procurement and Delivery Management* (SIPDM) by all organs of state subject to the PFMA, with effect from 1 July 2016.
- A Model Supply Chain Management (SCM) Policy for Infrastructure Procurement and Delivery Management in terms of Section 168 of the Municipal Finance Management Act of 2003 (Act 56 of 2003) (MFMA) in support of the MFMA SCM Regulation 3(2) as a National Treasury guideline determining standards for municipal SCM policies.

The implementation of the *National Treasury Standard for Infrastructure Procurement and Delivery Management* forms an integral part of the Model SCM Policy issued in terms of the MFMA. The issuing of the Model SCM Policy accordingly enables implementation of the SIPDM through the MFMA.

The SIPDM establishes control frameworks for the planning, design and execution of infrastructure projects and infrastructure procurement; requirements for a number of matters as applied to the supply chain management system for infrastructure procurement and delivery management; and minimum requirements for infrastructure procurement. This standard enables the separation of the supply chain management requirements for general goods and services from those for infrastructure. Underlying the separation of the supply chains is the notion that the effective and efficient functioning of the supply chain management system for infrastructure procurement and delivery management will realise value for money and good-quality service delivery. 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.

The issuing of the Treasury Instruction in terms of the PFMA and the issuing of the circular for the Model SCM Policy for Infrastructure Procurement and Delivery Management establish a common approach to infrastructure delivery across all organs of state in all spheres.

There is a relationship between socio-economic growth, development and infrastructure delivery. The delivery of basic public services depends as much on the people and the institutions delivering the services as on the physical works they use. It is not enough just to have money. It is one thing to build a clinic, but quite another to build the right clinic within budget, on time and to the required quality, and be able to maintain it.

A study by government was undertaken during 2002 to determine the issues and gaps in the delivery of infrastructure. This study reported that there was a shortfall in effective and systematic delivery systems, as well as a shortage of skills. In 2004 the Infrastructure Delivery Improvement Programme (IDIP) was established as a partnership between National Treasury, the Construction Industry Development Board (CIDB), the Department of Public Works (DPW) and the Development Bank of Southern Africa (DBSA) to establish a capacity building programme dealing with failures across provincial departments. It was within this programme that the concept of the Infrastructure Delivery Management System (IDMS) was birthed and informed by the answers to questions posed to projects, namely – is it suitable, is it feasible, is it credible and does it deliver value for money? In 2006 the IDMS was implemented in the Education Sector and the following year it was piloted in the Health Sector.

In 2011 the National Planning Commission published a detailed diagnostic report that set out the key challenges that confront South Africans in fighting poverty and inequality and in achieving the Constitutional objectives. The implicit conclusion of this report was that a business-as-usual approach will result in South Africa failing to meet a great many of its objectives. With the publication of the *National Development Plan 2030: Our future – make it work* in 2012 it became clear that an infrastructure delivery system was needed which focused on *prioritising, planning, allocating* and *measuring*. Given this thought process, National Treasury developed

the Infrastructure Delivery Management System (IDMS) as a model for best practice delivery of infrastructure management within the public sector.

Government's Infrastructure Delivery Management System comprises three core systems, namely a planning and budgeting system, a supply chain management system and an asset management system, all of which have forward and backward linkages. These core systems are located within portfolio, programme and project management, and operation and maintenance processes. Collectively these processes and systems, together with a performance management system, establish the institutional system for infrastructure delivery, as indicated in Figure 1.

It must be stressed that the SIPDM does not establish planning and budgeting or asset management requirements. It merely establishes the forward and backward linkages with such systems. It is but a component of government's IDMS.

The SIPDM is required to be implemented by organs of state which are subject to the PFMA on 1 July 2016. Regulation 3(1) of the Supply Chain Management Policy issued in terms of the MFMA requires the accounting officer of a municipality or municipal entity to at least annually review the implementation of the SCM Policy and, if necessary, submit proposals for the amendment of the policy to the council or the board of directors. The issuing of the Model SCM Policy will trigger a review of the current policies and require that an appropriate SCM Policy be put in place for infrastructure. There is no date set for implementation. Nevertheless, the revised policy should be in place for implementation by 1 July 2017 at the very latest.

This special publication, which is aimed at built environment

professionals who may participate in infrastructure procurement and delivery management as regulators, clients, consultants and contractors, is expected to facilitate the effective implementation of the SIPDM as it:

- contextualises and communicates the philosophy behind the SIPDM;
- explains the impact of the separation of the supply chain for infrastructure procurement and delivery from that for general goods and services;
- discusses the role of the client, including the assigning and delegation of responsibilities;
- offers guidance on how to apply the control frameworks;
- indicates the range of procurement options and approaches that are available;
- provides high-level guidance on satisfying most aspects of the SIPDM;
- deals with selected aspects of infrastructure delivery which should be dealt with in order to improve project outcomes; and
- presents short views on the SIPDM from a number of key industry stakeholders.

The Office of the Chief Procurement Officer would like to thank the South African Institution of Civil Engineering (SAICE) for making its editorial staff available to edit articles provided by National Treasury, develop the layout and publish this special magazine.

Kenneth Brown
Chief Procurement Officer
National Treasury



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Department:
National Treasury
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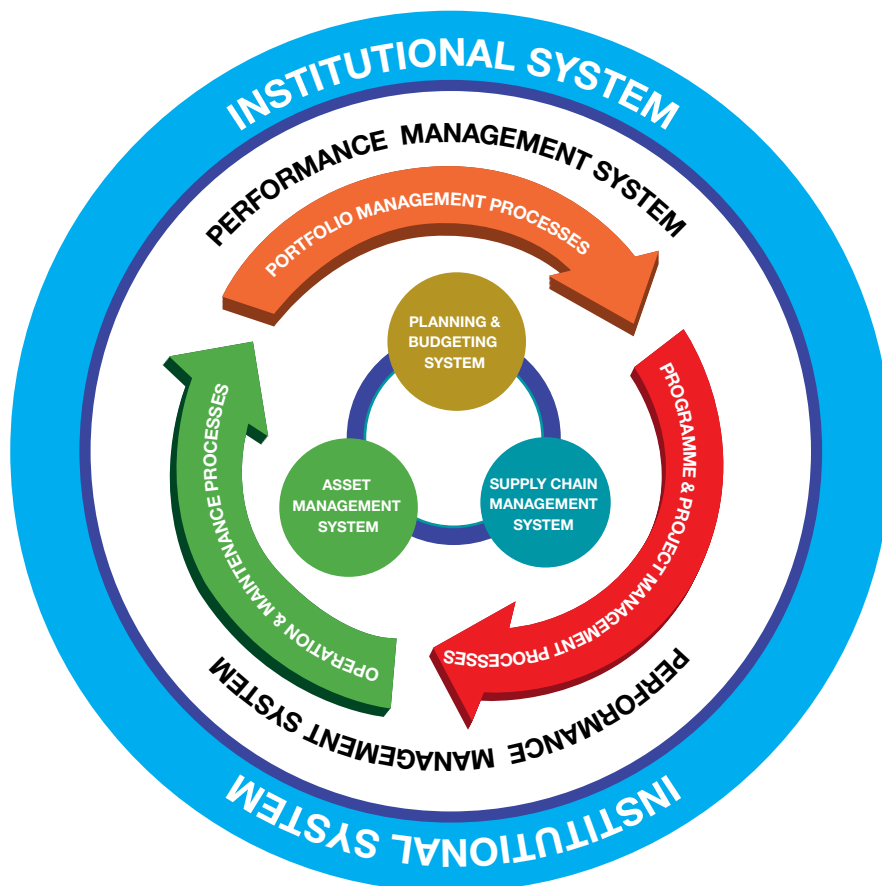


Figure 1: The Infrastructure Delivery Management System (IDMS)

Comments from the CBE and CIDB on the SIPDM



CBE

(Council for the Built Environment)

The CBE coordinates the six Built Environment Professional Councils (BEPCs) – Architecture, Engineering, Landscape Architects, Project and Construction Management, Property Valuation and Quantity Surveying. It is an entity of the Department of Public Works (DPW), and is mandated to ensure the sustainability of the built environment professions which serve the public and national interest. The *Standard for Infrastructure Procurement and Delivery Management* (SIPDM) deals with issues which impact upon the core business of most of these professions – the planning, procurement, design, execution and maintenance of infrastructure projects.

Slow infrastructure spending has resulted in challenges regarding the delivery of new infrastructure and the maintenance of existing assets, and government is struggling to attract and retain crucial skills in the built environment. This affects the quality of planning and the project management of construction works.

One of government's key strategies to address the problem has been the development of the Infrastructure Delivery Management System (IDMS). The issuing of the SIPDM in support of the IDMS provides an excellent framework within which construction projects can be procured, delivered and maintained.

Infrastructure spend of R900 billion has been earmarked to deliver and maintain infrastructure, which enables continued growth of the economy and creates employment. Such investment holds the potential to provide a better life for all. Key success factors for this include proper planning and dedicated, rigorous management of the full infrastructure delivery life cycle. The CBE against this background has initiated a number of skills development programmes, and continu-

ally undertakes research on these issues. CBE as an entity of the DPW ensures that the government is capacitated with the requisite skills for effective infrastructure delivery. The CBE is working hand in hand with organs of state entrusted with the delivery and maintenance of state assets through candidacy, internship and continuing professional development programmes. The CBE also has partnerships with the private sector who provide mentorship and workplaces for interns.

CBE stakeholders will benefit from the clear processes, procedures and frameworks for the effective delivery of infrastructure projects embedded in the SIPDM. Mentors working with the CBE will be better positioned to engage within this space, and in turn start influencing candidates and interns in their programmes, thus changing the way that business is done in the public sector.

CIDB

(Construction Industry Development Board)

The construction industry is responsible for assisting government in delivering key social and economic infrastructure. However, government is not getting full value from public sector construction. Inconsistent procurement practices by under-performing public sector departments have highlighted the need to develop and promote further efficiencies and increase the level of standardisation of practices and procedures.

Underspending of capital expenditure is a chronic problem, particularly at local government level. At the same time, key state-owned enterprises have also regularly missed projected expenditure targets. The opportunity to create around 8 000 full-time jobs per annum is lost for every R1 billion that remains unspent. The delivery and maintenance of infrastructure is prone to waste and corruption. As a result, the pace of de-

livery is slow, and citizens and taxpayers do not get value for money. Few projects are delivered on time and within budget, and this problem is exacerbated by poor procurement practices and poor controls in the delivery process.

The CIDB therefore welcomes the *Standard for Infrastructure Procurement and Delivery Management* (SIPDM) issued by National Treasury. The SIPDM complements several other government initiatives to strengthen supply chain management (SCM) of government infrastructure. Key amongst these is government's Infrastructure Delivery Management System (IDMS), which addresses portfolio, programme and project management, and operation and maintenance processes, and which is being rolled out across government.

The CIDB has worked closely with National Treasury and other stakeholders in the development of the IDMS, the SIPDM, the National Infrastructure Asset Maintenance Management (NIAMM) Framework and others.

The CIDB continues to focus and strengthen its mandate to promote the standardisation of the procurement process with regard to the construction industry within the framework of the procurement policy of government, and to promote uniform and ethical standards within the construction industry, including a Code of Conduct for all parties engaged in construction procurement.

Key to the CIDB's focus is its Construction Registers Service, which serves as critical components in the construction procurement and delivery environment.

Together with National Treasury and other stakeholders, the CIDB continues to enhance infrastructure delivery in South Africa that underpins the socio-economic growth of South Africa and the transformation of the construction industry. ●



The Civilition Forum welcomes the publication of the SIPDM

Civilition is a voluntary movement which seeks to encourage engineering practitioners and others to act and think differently, with the sole aims of improving current conditions and addressing flawed ways in which matters within the realms of participants in the movement are handled. The Civilition Forum is the body established to lead, drive and monitor the movement, as well as to seek collaboration between stakeholders on matters of mutual interest and concern.

The Civilition Forum welcomes National Treasury's release of the *Standard for Infrastructure Procurement and Delivery Management* (SIPDM) and recognises its potential to improve current service delivery outcomes which are linked to the provision, operation and maintenance of infrastructure through doing things better and differently.

SAICE'S VIEW ON THE SIPDM

(South African Institution of Civil Engineering)

Effective and efficient infrastructure procurement that achieves value for money is one of the cornerstones of economic development. The tightening up of supply chain management (SCM) processes over

recent years, whilst a very necessary action, has highlighted the weaknesses of attempting to manage infrastructure procurement using approaches that are better geared to the acquisition of relatively standard goods and services and purchase orders generated from a financial system. The development of an SCM system that is specifically designed to accommodate and manage the complexities and uncertainties that arise throughout the entire infrastructure procurement process is a significant step towards improving the pace and quality of infrastructure delivery. There has long been the need to recognise that the infrastructure procurement process begins the moment a need has been identified, and that, as the advertising of a tender through to the award of a contract is just one very small part of the entire procurement chain, the current SCM model is not appropriate.

The introduction of the SIPDM establishes a professional approach to the entire service delivery continuum, and ensures that the process is properly managed and controlled. The application of this standard will ensure that projects do not get initiated before the planning processes have been thoroughly carried

out and signed off by the relevant officials. Whilst the transition to this approach may prove challenging for the less well-resourced organs of state, it is an essential step in ensuring that limited resources are used to maximum advantage, and in line with strategic goals.

The SIPDM is essentially a well-structured professional project management approach to infrastructure procurement. It is important that the role of registered built environment professionals is not overlooked, and their expertise passed over. In addition to professionalising the approach to service delivery, the review process embedded in the standard ensures that built environment professionals are strategically positioned so that decision-making is undertaken by those with the appropriate skills and contextual knowledge. Clear responsibilities for decision-making enhance accountability, which in turn, together with the specified controls, reduce the likelihood of corruption.

The development of a public sector procurement system that recognises the challenges which are specific to infrastructure procurement goes a long way to providing practitioners with clear

direction about the “how”. The difficulties of aligning infrastructure procurement to current SCM guidelines have led to multiple interpretations of key legislation, which at times has resulted in conflicting guidelines and incorrect audit interpretations. These in turn have resulted in legal challenges and negative audit reports that have delayed key infrastructure delivery by months and even years, leading to unnecessary and wasted costs. The SIPDM clarifies many of these contentious aspects and provides a fresh basis to improve the service delivery regimen and reduce the likelihood of litigation.

The SIPDM also opens the door to a more appropriate approach to value for money. The current SCM approach has been limited to setting minimum quality thresholds, and thereafter accepting the lowest prices, whereas the reintroduction of quality as part of the final score ensures that the optimum value for money balance between cost and quality can be achieved, as the lowest cost is not always synonymous with best value for money. This is particularly relevant when procuring professionals, where the planning or design fee represents a minuscule fraction of the asset’s construction and life cycle operating cost.

The requirement to plan for a portfolio of projects or packages covering a period of not less than five years begins to establish a “pipeline” of projects, ensuring that the planning is properly and fully carried out. This approach creates the space (and time) to thoroughly review options when the cost of making changes can be minimised, rather than attempting to manage changes to a poorly planned project during the implementation phase, where costs will be far higher.

Current public sector resources are very limited, particularly when seen in relation to the extent of the infrastructure demands, and the clear guidelines on the use of other contracting options (such as target price contracts and framework contracts) open opportunities for innovative procurement strategies that will improve efficiency and effectiveness. One cannot carry on business as usual and expect to achieve different results. The concept of “approaching procurement above the project level” is fundamental to maximising efficiencies with limited resources. Service delivery via a multitude of ad hoc individual projects must give way to programmes and portfolios of projects, struc-

tured to maximise both service delivery and opportunities for empowerment.

Excellence engenders excellence. The SIPDM certainly lays out a path towards excellence in infrastructure procurement. It provides a very significant opportunity for built environment professionals to strategically influence infrastructure procurement and thus ramp up their contribution to service delivery in a most effective way.

CESA’S VIEW ON THE SIPDM (Consulting Engineers South Africa)

As the voice of consulting engineering CESA welcomes the recent amendments adopted by National Treasury to improve the public sector procurement process within the construction industry through the introduction of the SIPDM. In particular the notion that the effective and efficient functioning of the supply chain management (SCM) system for infrastructure delivery will realise value for money and good-quality service delivery, is applauded. It is extremely gratifying that the long-held views and concerns of CESA and its members regarding the current flawed public procurement process are being addressed in the following areas:

- **Separation of infrastructure procurement from that of ordinary goods and services**

CESA has complained for a number of years that professional services are treated as off-the-shelf commodities, procured at lowest cost, whereas the scope and extent of the required services are generally unique for each project and require careful individual planning and design development to achieve an optimal result. This results in professionals seeking ways to reduce their prices in order to be successful rather than focusing on the project requirements. Supply chain managers in the public sector focus on the rules developed for commodities, and the proper specification of professional services are routinely neglected or omitted. CESA and its membership are extremely gratified that the SIPDM recognises this challenge and has provided for the separation of the relative SCM functions.

- **Emphasis on good-quality service delivery**

In the existing public sector procurement process emphasis is placed on price, whilst quality/functionality is treated as a hurdle/threshold. This is

inappropriate for the infrastructure sector as it reduces quality/functionality (which is difficult to define in quantitative terms when dealing with professional services) to minimum levels. The inclusion of quality in the SIPDM as an objective criterion in the evaluation of tenders, alongside price and preference, is welcomed.

- **Project planning and preliminary documentation**

A major problem currently encountered by consulting engineering firms is that of inadequately drafted tender documentation, largely as a result of lack of capacity and capability in government. This under-scoped or poorly-specified work results in variation orders to carry out the true scope of work that unfolds as the work progresses, which, besides involving the state entity in unforeseen expenditure, prevents the tenderers from gauging a fair and competitive price for the project, ultimately to the detriment of all parties concerned. The careful and well-ordered steps with respect to planning and documentation contained in the SIPDM will go a long way in addressing this problem, and are welcomed.

- **Framework contracts**

When open tendering is used for work of limited scope and cost, the total cost of bidding by all the numerous bidders can often exceed the value of the work being let, and is simply wasteful of the country’s resources. In other instances many state entities are faced with implementing numerous infrastructure projects of similar nature and scope where the entity has insufficient resources to award and manage separate contracts for the planning, design, construction and monitoring of each project. It is considered that the provision of the SIPDM for the awarding of framework contracts in such cases will address these problems in minimising the wastage of limited resources, by reducing the number of separate infrastructure tenders and contracts.

- **Blocked infrastructure project pipeline**

The delayed infrastructure investment by government, also known as the “blocked infrastructure project pipeline”, often through inadequate planning and allocation of resources, as well as excessive bureaucracy, is damaging our country. Besides discouraging

foreign investment in infrastructure, and resulting in regular and destructive service delivery protests, the lack of sorely needed infrastructure projects is resulting in an exodus of consulting engineering skills through lost work opportunities. It is considered that the implementation of the SIPDM with its rigorous planning and control frameworks will do much to eliminate these impediments to infrastructure provision and service delivery.

It is pleasing to note that the SIPDM addresses several other public procurement problems faced by the consulting engineering industry, including:

- the provision of targeted procurement procedures to assist with the attainment of transformation goals relating to emerging and small firms;
- requirements for built environment professionals to prepare the evaluation of tenders, which will be of great assistance to clients in ensuring value for money and eliminating corruption;
- performance metrics relating to late payment; and
- the discouraging of the use of performance bonds in professional service contracts, a practice which favours large foreign firms in Engineering, Procurement and Construction Management (EPCM) projects.

SAFCEC'S VIEW ON THE SIPDM

(South African Forum of Civil Engineering Contractors)

In his 2014/2015 Annual Report, SAFCEC's President, Thembinkosi Nzimande, made reference to the compelling effect of infrastructure development on the economy as one of the most strategic necessities for South Africa. As representatives of the civil engineering industry as a whole, SAFCEC members are ready with capacity and willingness to deliver on infrastructure projects in the pursuit of a successful and prosperous South Africa for all its citizens. There are, however, several barriers preventing progress in the delivery of critical infrastructure such as roads, water systems, schools and education facilities. These challenges can be overcome by unblocking the pipeline to allow the free flow of infrastructure projects. Undoubtedly, many stakeholders can present many solutions, and SAFCEC is no different in proposing solutions that include the early involvement of contractors to ensure that our immense expertise is utilised.

The particulars and elements of the SIPDM are nothing new for civil engineering contractors. What will be seen as new and highly innovative, is the manner in which the SIPDM is packaged, and the functioning of it, against the backdrop of a South African context. A critical aspect of the SIPDM for civil engineering contractors is the provision of a separate industry-based procurement process for obtaining contracting services. Making a distinction between the procurement of general goods and services, and construction activities, the SIPDM will be better placed to accommodate the requirements of the construction industry.

Government entities, as well as local authorities, will find the SIPDM most beneficial, as it allows for the proactive management of risks, a transparent and auditable process, and a structure that will promote and deliver the acquisition of built environment assets on the basis of value for money. The development of an asset in the built environment, whether new or an improvement, is a complex process with many interfaces involving extensive planning and managerial functions. It requires tailor-made procurement processes for its successful implementation.

The requirement that only registered professionals in the built environment be allowed to administer construction contracts has many advantages for public sector owners and clients. Additionally, the contractor will also find this condition beneficial, as these professional administrators understand the nature and peculiarities of construction activities better than the typical generalist supply chain manager. No longer will construction's language be 'lost in translation', as issues related to payment certificates, variations and claims will be dealt with properly.

Contractors will be encouraged by the SIPDM's clear and consistent procurement processes, which take into account the peculiarities of the construction industry. The appropriate risk apportionment and allocation of responsibilities will further stimulate the confidence of contractors, as they will be assured of fair and equal treatment. Under such circumstances, contractors will be able to control costs, manage time schedules and strive for profitability, whilst delivering quality projects on time and within budget, thereby passing the test on which the SIPDM is based – value for money.

The implementation of the SIPDM will provide opportunities for both established and emerging contractors. The advantage for the development of black contractors will be found in the common-sense approach that the SIPDM prescribes. As an example, procurement documents will be compiled in accordance with relevant national standards and standard forms of contract, and deviations from these standards are required to be clearly indicated. Furthermore, the unilateral and biased amendments by officials to the agreed provisions and standard conditions of contract will no longer be tolerated.

Overall, the SIPDM will encourage the cooperation of all participants in the development of infrastructure projects, being the key ingredient for success. Ultimately, the hope is that the SIPDM will provide an environment whereby the confrontational nature of the construction business will be minimised. Under such circumstances the civil engineering industry will become truly inclusive, thereby providing opportunities for all contractors – large or small, established or emerging – and thereby eradicating the exclusivities of the past.

IMESA'S VIEW ON THE SIPDM

(Institute of Municipal Engineering of Southern Africa)

It is a well-documented and accepted fact that local government is the coalface of service delivery in a country. Globally large cities are recognised as key drivers of national economic growth and platforms for social service delivery. Rapid rates of urbanisation give further credence to this reality. So it is not surprising that effective and efficient service delivery, as well as key economic growth enablement, fall to local government to champion.

With regard to service delivery at local government level, it is estimated that more than 90% of these services require infrastructure to give effect to them, and hence the planning, implementation, management and operation of infrastructure over the life cycle of such infrastructure are critically important. Reports from the Office of the Auditor General tend to indicate that these important challenges are not being adequately dealt with throughout the country. In many local authorities there is a dearth of the requisite technical skills, inadequate delivery systems and poorly functioning institutional structures. The supply chain management process initiated through the promulgation of the Municipal Finance Management Act (MFMA) and

Supply Chain Management Regulations has not succeeded in reducing corruption and improving value for money, and this in the face of growing basic service backlogs.

In this regard, the prescription of the SIPDM through the MFMA Circular No 77 will go a long way to ensure that the procurement process relating to infrastructure delivery management is more efficient and effective by firstly distinguishing this process from the procurement of general goods and services, and by providing for a prescribed process with regular gates and milestones, suitably resourced oversight structures, proper planning in advance of procurement, a suite of procurement options to obtain best value, and improved transparency and oversight.

SAIEE'S VIEW ON THE SIPDM

(South African Institute of Electrical Engineers)

Electrical products and services have

long suffered inferior outcomes due to standardised procurement practices, particularly in the local government arena. The technical nature and terms surrounding electrical equipment are not adequately understood by procurement officials, thus allowing unscrupulous suppliers being successful in providing inferior products. Life cycle costing and the importance thereof in using electrical energy over the lifetime of a product is another aspect of procurement that deserves much more emphasis in the specification and application as it pertains to the procurement of electrical equipment. Inexperienced buyers of large entities are sometimes oblivious of the technical aspects of products that could have a huge impact on operational expenditure.

Given the wide variation of sizes, skills, resources and engineering/technical competency within local gov-

ernment, it is to be expected that not all government entities can operate at the required level to address and satisfy the challenges of the whole spectrum of service delivery demanded by communities. This situation is exacerbated when technical and engineering services are the major part of such service delivery and the procurement of such services is dealt with in the same way as the general/usual/non-technical requirements.

The SIPDM will certainly assist electrical engineering and its contribution to service delivery. It is our belief that, if applied by decision-makers across the board, the application of the SIPDM could be the panacea for electrical engineers. Procurement along the lines of the SIPDM will render a much more focused and specific process that will benefit not only electrical engineering, but the country as a whole. ●



CIVILUTION CONGRESS ENGINEERING REVOLUTION

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An overview of the Standard for Infrastructure Procurement and Delivery Management

National Treasury Instruction No 4 of 2015/2016, issued in terms of the Public Finance Management Act of 1999 (PFMA), requires accounting officers and accounting authorities to implement the National Treasury Standard in the planning, design, procurement or execution of infrastructure projects, and to develop a suitable supply chain management policy for infrastructure procurement and delivery management.

National Treasury Circular No 77, issued in terms of the Local Government: Municipal Finance Management Act of 2003 (MFMA), provides guidance to municipalities and municipal entities to establish a suitable supply chain management system for infrastructure delivery which is better able to deliver value for money, while minimising the scope for corruption. Attached to this circular is a *Model Supply Chain Management Policy for Infrastructure Procurement and Delivery Management*, which is issued in terms of the MFMA in support of the Supply Chain Management Regulations as a Treasury guideline, determining a standard for municipal supply chain management policies. This policy is linked to the *National Treasury Standard for Infrastructure Procurement and Delivery Management*.

INTRODUCTION

The National Treasury *Standard for Infrastructure Procurement and Delivery Management* (SIPDM) establishes:

- a control framework for the planning, design and execution of infrastructure projects and infrastructure procurement;
- requirements for the following matters as applied to the supply chain management (SCM) system for infrastructure procurement and delivery management:
 - institutional arrangements
 - demand management
 - acquisition management
 - contract management
 - logistics management

- disposal management
- reporting of SCM information
- regular assessment of SCM performance
- risk management and internal control; and
- minimum requirements for infrastructure procurement.

The SIPDM applies to the procurement of all infrastructure-related goods, services and works, including professional services. It does not apply to:

- the storage of goods and equipment, following their delivery to an organ of state, which are stored and issued to contractors or to employees of that organ of state;

- the disposal or letting of land;
- the conclusion of any form of land availability agreement;
- the leasing or rental of moveable assets;
- public-private partnerships; and
- the provision of municipal services by means of external mechanisms referred to in Chapter 8 of the Municipal Systems Act.

The SIPDM includes the procurement of goods and services necessary for a new facility, as delivered, to be occupied and used as a functional entity.

The SIPDM does not establish planning and budgeting or asset management requirements. It merely establishes the forward and backward linkages between

such systems. The output of the budgeting and planning system is an input into the infrastructure procurement and delivery management system, while the output of this system is an input into the asset management system. There are also feedback loops within the infrastructure procurement and delivery management system to the budgeting and planning system, and asset management system.

The SIPDM requires that organs of state differentiate between the supply chains for infrastructure from those for general goods and services. Underlying the separation of the supply chains is the notion that the effective and efficient functioning of the SCM system for infrastructure delivery will realise value for money and good-quality service delivery.

CONTROL FRAMEWORKS

A control is a restraint or check point within a process where:

- decisions are taken before authorising the proceeding with an activity within a process, or commencing with the next process;
- confirmation of conformity with requirements is required before completing a task or activity; or
- information is provided which creates an opportunity for corrective action to be taken.

A control which authorises the proceeding with an activity within a process, or commencing with the next process, is referred to as a gate. Gates provide a means for directing an organ of state towards what is aimed or sought, and confirm conformity with requirements.

The SIPDM maps out the work flow for infrastructure procurement and delivery management processes, and establishes a number of gates linked to documented deliverables where decisions are required to progress to the next ac-

tivity or process (see Figure 1). These gates not only enable risks to be proactively managed, but also facilitate auditing.

The SIPDM requires that all major capital projects having an estimated capital expenditure greater than or equal to the prescribed value be subjected to a gateway review of the Stage 4 deliverable (concept report or feasibility report) prior to acceptance of this deliverable. Such a review in the first instance focuses on the quality of the documentation, and thereafter on deliverability, affordability and value for money.

SCM MATTERS DEALT WITH IN THE STANDARD

General

The current SCM regulations issued in terms of the PFMA and MFMA establish requirements for a number of matters. Most of these requirements

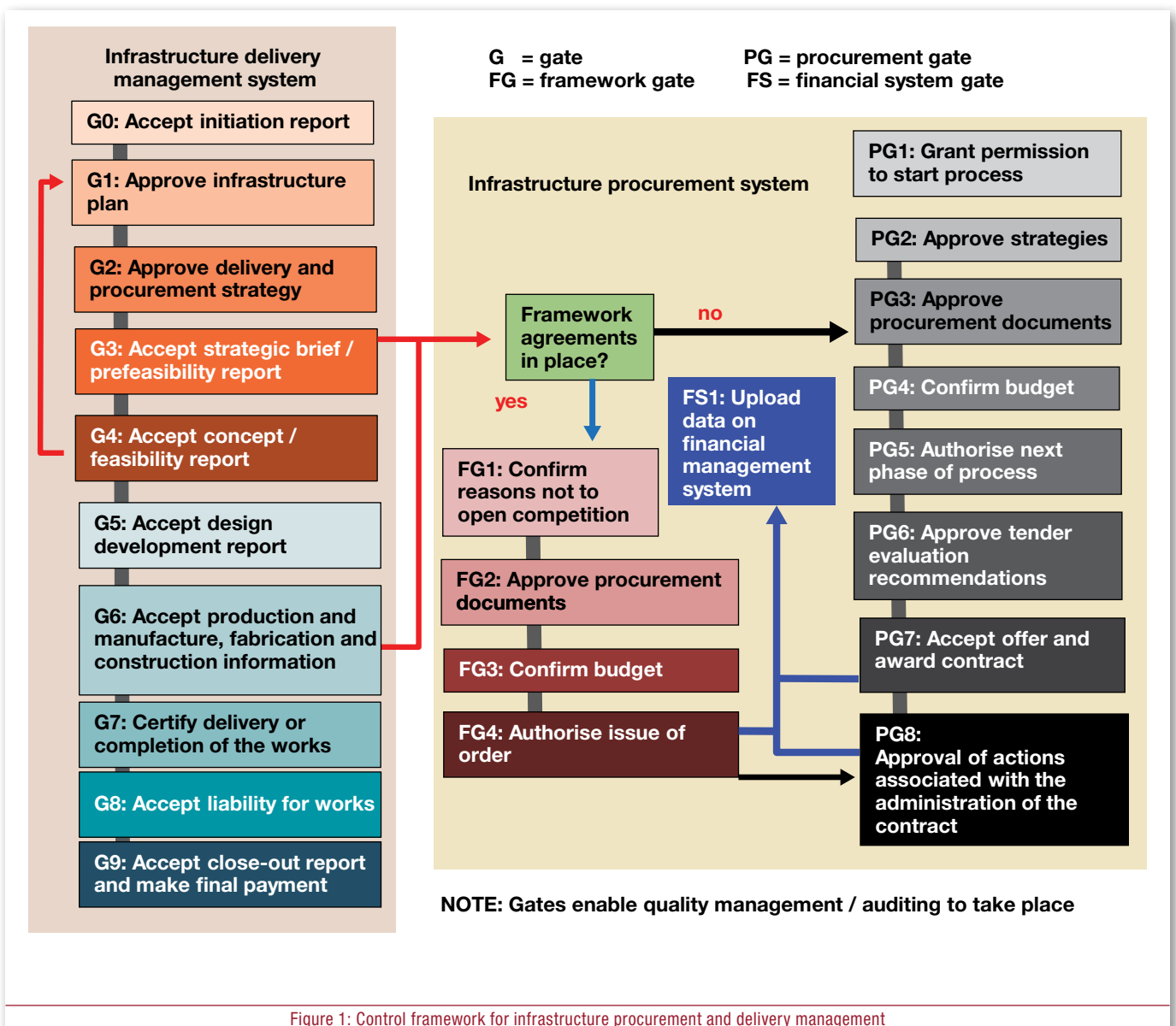


Figure 1: Control framework for infrastructure procurement and delivery management

have been formulated around a supply chain for general goods and services. As a result, these requirements do not address many of the issues which are pertinent to infrastructure and delivery management. The SIPDM establishes specific requirements for infrastructure procurement and delivery management for SCM matters which are unique to infrastructure projects.

Institutional arrangements

Organs of state who are responsible for infrastructure projects need to establish a suitable infrastructure procurement and delivery management SCM policy to implement the SIPDM. Such a policy as a minimum needs to assign responsibilities for approving or accepting deliverables associated with a gate in

the control framework or authorising a procurement process or procedure, to establish delegations for the awarding of a contract or the issuing of an order, and to provide ethical standards for those involved in the procurement and delivery of infrastructure. Organs of state who delegate or assign responsibilities to another organ of state need to enter into an agency agreement which sets out the terms, conditions, roles and responsibilities regarding infrastructure projects.

Demand management

The demand management system needs to be aimed at ensuring that goods and services, and any combination thereof, are delivered at the right price, time and place, and that the quality and quantity of such goods or services satisfy needs.

The demand for infrastructure delivery needs to be managed through service life plans and infrastructure plans. Identified projects need to be prioritised and budgeted for in the infrastructure plan, and, wherever possible, be delivered in accordance with established norms and standards which are designed to yield value for money. Costs need to be proactively managed through the setting and proactive monitoring of control budgets for projects through the project planning, detailed design and site processes.

Acquisition management

Budget submission for budget approval to advance a project or package relating to the delivery or planned maintenance of infrastructure in a financial year need to be broken down into the stages

Table 1: Stages and end-of-stage deliverables

Table 1: Stages and end-of-stage deliverables			
Stage		End-of-stage deliverable	
No	Name		
0	Project initiation	An initiation report which outlines the high-level business case together with the estimated project cost and proposed schedule for a single project or a group of projects having a similar high-level scope.	
1	Infrastructure planning	An infrastructure plan which identifies and prioritises projects and packages against a forecasted budget over a period of at least five years.	
2	Strategic resourcing	A delivery and/or procurement strategy which, for a portfolio of projects, identifies the delivery strategy in respect of each project or package and, where needs are met through own procurement system, a procurement strategy.	
3	Prefeasibility	A prefeasibility report which determines whether or not it is worthwhile to proceed to the feasibility stage.	
	Preparation and briefing	A strategic brief which defines project objectives, needs, acceptance criteria and client priorities and aspirations, and which sets out the basis for the development of the concept report for one or more packages.	
4	Feasibility	A feasibility report which presents sufficient information to determine whether or not the project should be implemented.	
	Concept and viability	A concept report which establishes the detailed brief, scope, scale, form and control budget, and sets out the integrated concept for one or more packages.	
5	Design development	A design development report which develops in detail the approved concept to finalise the design and definition criteria, sets out the integrated developed design, and contains the cost plan and schedule for one or more packages.	
6	Design documentation	6A Production information	Production information which provides the detailing, performance definition, specification, sizing and positioning of all systems and components enabling either construction (where the constructor is able to build directly from the information prepared) or the production of manufacturing and installation information for construction.
		6B Manufacture, fabrication and construction information	Manufacture, fabrication and construction information produced by or on behalf of the constructor, based on the production information provided for a package which enables manufacture, fabrication or construction to take place.
7	Works	Completed works which are capable of being occupied or used.	
8	Handover	Works which have been taken over by the user or owner complete with record information.	
9	Package completion	Works with notified defects corrected, final account settled and the close-out report issued.	

contained in the control framework for infrastructure delivery management, as indicated in Table 1. Implementation plans relating to new infrastructure, or the rehabilitation, refurbishment or alteration of existing infrastructure, need to be developed for each project or package (work which is grouped together for delivery under a single contract or an order) which is to be delivered in a financial year. Financial data needs to be gathered to enable a financial report to be generated at regular intervals.

Contract management

The person responsible for the administration of the contract or an order on behalf of the employer needs to act as stated in the contract that is entered into, subject to any constraints that may be imposed by the employer or the employer's SCM policy for infrastructure procurement and delivery management. Such a person is also responsible for providing data for capturing on the contract management system, for providing regular reports on events which impact on time and cost, and for making inputs into the close-out report.

The persons responsible for the administration of a contract or order relating to the provision of new infrastructure, or the rehabilitation, refurbishment or alteration of existing infrastructure, needs to be professionally registered with a built environment council falling under the umbrella of the Council for the Built Environment.

Logistics management

Suitable arrangements or measures need to be put in place where materials, equipment or plant are issued free of charge to contractors, to minimise:

- loss or damage to such items until the contractor has received and accepted them; and
- delays in supply which could result in increases in the contractor's fees for providing the works.

Procurement processes associated with long lead items of plant, equipment and materials may be initiated before the conclusion of Stage 4 (concept and viability or feasibility), provided that no contract is entered into until Stage 4 has been concluded and the budgets are in place to proceed.

Disposal management

A disposal committee needs to decide on how best to undertake disposals relating

to the demolition or dismantling of infrastructure or parts thereof, and the disposal of unwanted, redundant or surplus materials, plant and equipment.

Reporting of SCM information

An implementer needs to report to the relevant treasury within one month of the award of a contract or the issuing of an order, all engineering and construction, supply, service and professional service contracts that are awarded, or orders that are issued, above a prescribed threshold. An implementer also needs to prepare an annual report and submit such report to the relevant treasury within two months after the financial year end. Such a report is required to include:

- a performance report covering specified indicators;
- a progress report focusing on time and cost of all contracts above a prescribed threshold;
- information on unsolicited proposals; and
- particulars relating to the cancellation or termination of a contract, the use of the negotiated procedure or confined procedure above a threshold, the evoking of the emergency procedures above a threshold, disputes which are referred to arbitration or a court of law for settlement, and contracts where the total of prices or the time for completion at the time that the contract was concluded or the order issued is exceeded by a prescribed percentage.

Assessment of SCM performance

An annual performance report needs to be prepared for each portfolio of projects involving infrastructure delivery, which reflects performance over a financial year in relation to expenditure, the efficacy of the tender system, variances between planned and achieved completion of stages, managing price increases and time overruns during the works stage, the time taken to handover a package following completion, the effectiveness of the control of costs during the execution of a works contract, and late payment.

Risk management and internal control

Risk registers need to be established and maintained to enable risk mitigation to be proactively managed at a portfolio, programme, project and contract level.

The gates in the control frameworks need, as appropriate, to be applied in

making decisions to proceed, using suitable templates which record the approval or acceptance of documents.

INFRASTRUCTURE PROCUREMENT

The SIPDM establishes requirements which cover a number of aspects for infrastructure procurement, including thresholds for the use of certain procurement procedures and the use of quality as a criterion in the evaluation of tender offers. Requirements relating to the preparation of procurement documents, and the solicitation and evaluation of expressions of interest and tenders are linked to the recently published South African National Standard, SANS 10845 *Construction Procurement*. Organs of state are required to select a standard form of contract from a prescribed list, and administer such contracts strictly in accordance with the administrative procedures contained in the selected form of contract. Requirements relating to the application of the Construction Industry Development Board (CIDB) register of contractors and register of projects are linked to the CIDB *Standard for Uniformity in Construction Procurement*.

The SIPDM makes provision for the putting in place of framework agreements which enable orders to be issued over a term without any commitment to a quantum of work. Rules are also established for the use of one organ of state's framework contracts by another.

There are also requirements for persons who are professionally registered in certain categories of registration with built environment councils to prepare procurement documentation review and evaluation reports, and to evaluate quality as other objective criteria in tender submissions.

NOTE

Further insights and information can be obtained from:

Watermeyer, R B, Nevin, G & Langenhoven, K 2012. The supply chain management system for the delivery and maintenance of infrastructure by organs of state. *Civil Engineering*, 20(6): 51–58.

Watermeyer, R B, Wall, K & Pirie, G 2013. How infrastructure delivery can find its way again. *IMIESA*, 38(3): 17–29.

Watermeyer, R B 2015. Design and adoption of innovative procurement systems in infrastructure delivery. West Africa Built Environment Research Conference, Accra, Ghana, August. ●

The separation of the supply chains for general goods and services from those for infrastructure

The intent of National Treasury Instruction No 4 of 2015/2016 and Municipal Circular 77 is to separate the supply chains for infrastructure procurement and delivery management from those for general goods and services. There is a need to understand the differences between procurement and supply chain management, the different types of procurement, and the major differences between these two different types of supply chains in order to understand the thinking behind this separation.

LEGISLATIVE REQUIREMENTS FOR SUPPLY CHAIN MANAGEMENT

The Public Finance Management Act (PFMA) of 1999 requires accounting officers and accounting authorities to establish and maintain an appropriate procurement and provisioning system which is fair, equitable, transparent, competitive and cost-effective. The Supply Chain Management Regulations (March 2005) issued in terms of the PFMA of 1999 establishes, amongst other things, requirements for a supply chain management (SCM) system, the establishment of SCM units, training of SCM officials, procurement of goods and services, disposal and letting of state assets, compliance with ethical standards, avoiding abuse of an SCM system, and reporting of SCM information. These Regulations, which establish high-level requirements, require that the SCM system provides for at least demand management, acquisition management, logistics management, disposal management, risk management and the regular assessment of supply chain

performance. They also require that a committee system comprising bid specification, bid evaluation and bid adjudication be established to deal with procurement through a bidding process. National Treasury instructions and practice notes have been issued over the years to deal with or inform specific issues, mostly those relating to activities associated with tender procedures and requirements from the time that a decision is taken to procure goods or services or any combination thereof up until such time that a contract is awarded.

The Local Government: Municipal Finance Management Act (MFMA) of 2003, on the other hand, requires that each municipality and each municipal entity have and implement an SCM policy which gives effect to the provisions of a prescribed framework, the principles of which are established in the Act and the details of which are contained in the Regulations. The main focus of this framework is on competitive bidding processes. The Act also establishes re-

quirements for contracts and contract management. Regulations are required to prescribe the details to give effect to the framework.

The Supply Chain Management Regulations (2005), issued in terms of the MFMA, regulate a number of aspects of an SCM system, including the framework for SCM policies, demand management, acquisition management (system of acquisition management, range of procurement processes, procedures for procuring goods or services, process for competitive bidding, bid documentation, committee system for competitive bids, appointment of consultants, deviation from and ratification of minor breaches, procurement processes, unsolicited bids, combating of abuse of supply chain management system, etc), logistics, disposal, risk and performance management, and a number of matters such as those relating to tax matters, awards to persons in the service of the state or close family members, ethical standards, etc.

The focus of the SCM regulations issued in terms of the MFMA is on

tendering procedures and requirements leading up to the award of a contract. Approximately 70% of the text of these regulations relates to acquisition management and bidding-related matters. Very high-level requirements are established for demand management, logistics, disposal, risk and performance management. These requirements merely identify the purpose of these systems.

The SCM Regulations issued in terms of both these Acts did, however, establish a requirement for bid documents to comply with the requirements set by the Construction Industry Development Board. This is the only differentiator between requirements for general goods and services, and those for infrastructure.

PROCUREMENT VERSUS SUPPLY CHAIN MANAGEMENT

Procurement is the process which creates, manages and fulfils contracts. Procurement deals with activities surrounding contracts. Such processes focus on establishing what is to be procured, developing a procurement strategy, identifying procurement tactics, producing procurement documentation, soliciting and evaluating tender offers, the awarding of contracts, and administering contracts. Procurement focuses on activities at the project level.

Supply chain management (SCM), on the other hand, is the design, planning, execution, control and monitoring of supply chain activities in the delivery of goods, services or any combination thereof. Supply chains comprise all those public and private entities that are involved in delivering the inputs, outputs and outcomes of projects. Accordingly, SCM is concerned with the oversight, coordination and monitoring of inputs, outputs and outcomes of projects from the various entities within a supply chain, whereas procurement relates to the contracts which are entered into to deliver projects. SCM infrastructure projects focus on portfolio and programme management activities relating to the management of the solutions to the business case and the specific benefits of interrelated projects in terms of cost, schedule and performance objectives.

Section 217 of the Constitution of the Republic of South Africa, 1996, establishes the overarching requirements for the procurement system. Regulations

issued in terms of the Public Finance Management Act of 1999 and the Local Government Finance Management Act of 2003 establish requirements for an SCM system, and further requirements for the procurement system.

Typical responsibilities of an organ of state's SCM unit should include:

- implementation of functions allocated to the unit in terms of SCM policies;
- maintenance of the SCM to ensure its effectiveness and efficiency;
- regular reporting to the accounting officer or accounting authority on the performance of the SCM;
- ensuring compliance with the financial management regulatory framework;
- rendering assistance and administrative support to the line function managers and other employees in the performance of their SCM responsibilities; and
- coordination and management of institutional interfaces and the relevant treasury in implementing the SCM system.

The focus of an SCM unit should be on managing and coordinating the flow of information, and not performing activities associated with the SCM system.

DIFFERENT TYPES OF PROCUREMENT

Public procurement that is unrelated to infrastructure delivery typically concerns goods and services which relate to consumption and operational needs that are standard, well defined and readily scoped and specified. Once purchased, goods invariably need to be taken into storage prior to being issued to employees. Services most often involve routine, repetitive services with well understood interim and final deliverables which do not require strategic inputs or require decisions to be made regarding the fitness for purpose of the service outputs (see Figure 1).

In contrast, procurement relating to the provision of new infrastructure or the rehabilitation, refurbishment or alteration of existing infrastructure covers a wide and diverse range of goods and services, which are required to deliver a product or alter the condition of immovable assets on a site. Accordingly, the procurement process for the delivery of infrastructure involves the initial and subsequent recurring updating of planning processes at a portfolio level,

flowing out of an assessment of public sector service delivery requirements or business needs. Thereafter it involves planning at a project level, and the procurement and management of a network of suppliers, including subcontractors, to produce a product on a site (see Figure 2). There is no need to store and issue materials or equipment unless these are issued to employees responsible for the maintenance or operation of infrastructure, or are issued free of charge to contractors for incorporation into the works.

DIFFERENCES IN APPROACH TO PROCUREMENT DOCUMENTATION

There are also major differences in the approach to procurement documentation. General goods and services typically deal with the direct acquisitions for well-defined standard services, off-the-shelf items and readily available commodities. The business need is commonly achieved through the production of a specification, which then forms a requisition for the procurement of goods or services, hence the "bid specification committee". An immediate choice can generally be made in terms of the cost of goods or services satisfying specified requirements. Limited management inputs are required in administering the contracts.

Procurement documents that are developed for general goods and services are based on the National Treasury General Conditions of Contract (GCC) which may not be amended. Special Conditions of Contract (SCC) relevant to a specific bid, are compiled separately for every bid (if applicable) and supplement the General Conditions of Contract. Whenever there is a conflict, the provisions in the SCC prevail. The GCC applies to all bids, contracts and orders, including bids for functional and professional services, sales, hiring, letting and the granting or acquiring of rights, but excluding immovable property, unless otherwise indicated in the bidding documents. This GCC:

- deals with aspects of the bidding process, e.g. costs incurred in the preparation of bids, pre-bid testing;
- requires that goods conform to the standards mentioned in the bidding documents and specifications;
- relies on the SCC to provide the method and conditions of payment which are applicable; and
- is used with standard bidding documents which include an invitation to

bid, price schedules, local content, certificate of bid independence, declaration of bidders' past SCM practices, etc. Typically a contract or a service level agreement is entered into after the award of the bid. Frequently the terms of this contract or service level agreement are negotiated between the parties.

The typical general goods and services procurement documents are character-

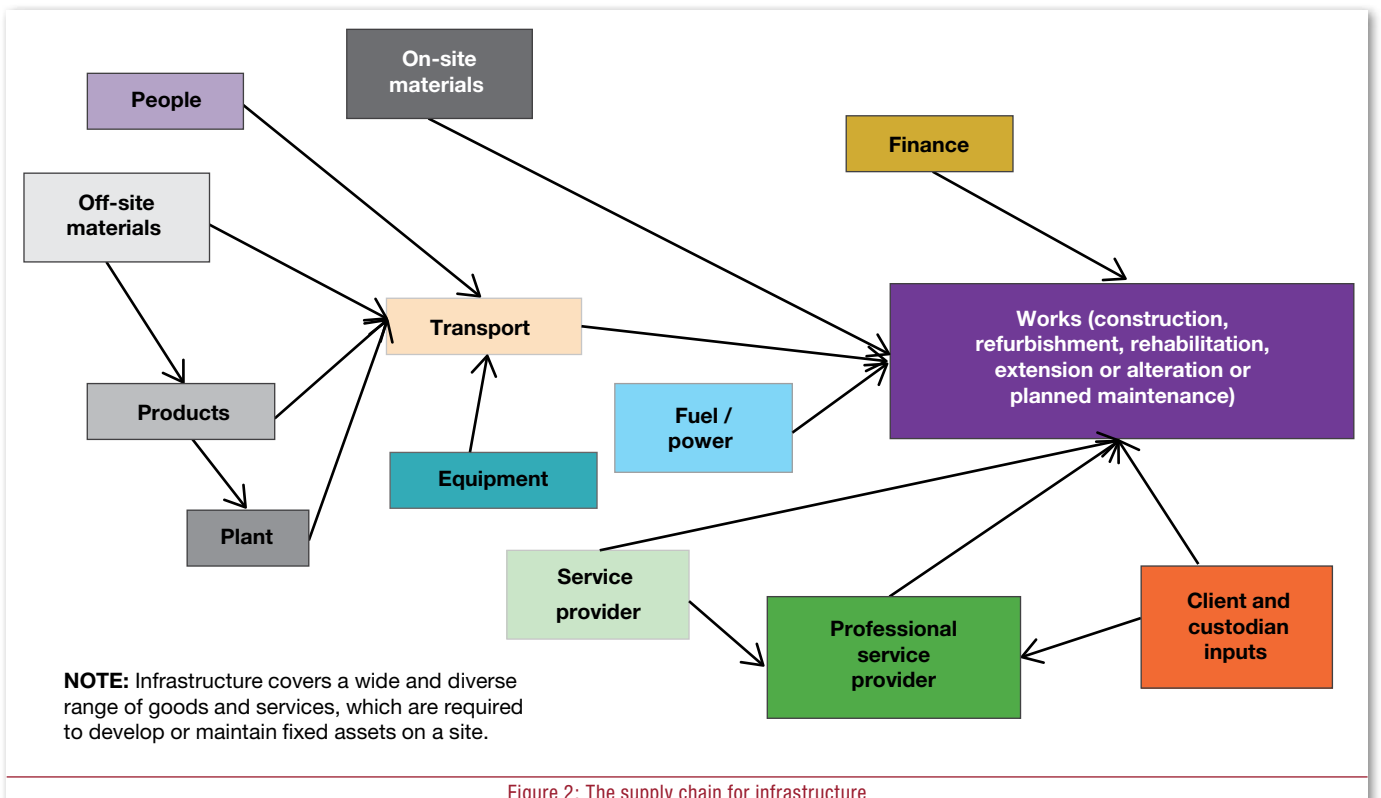
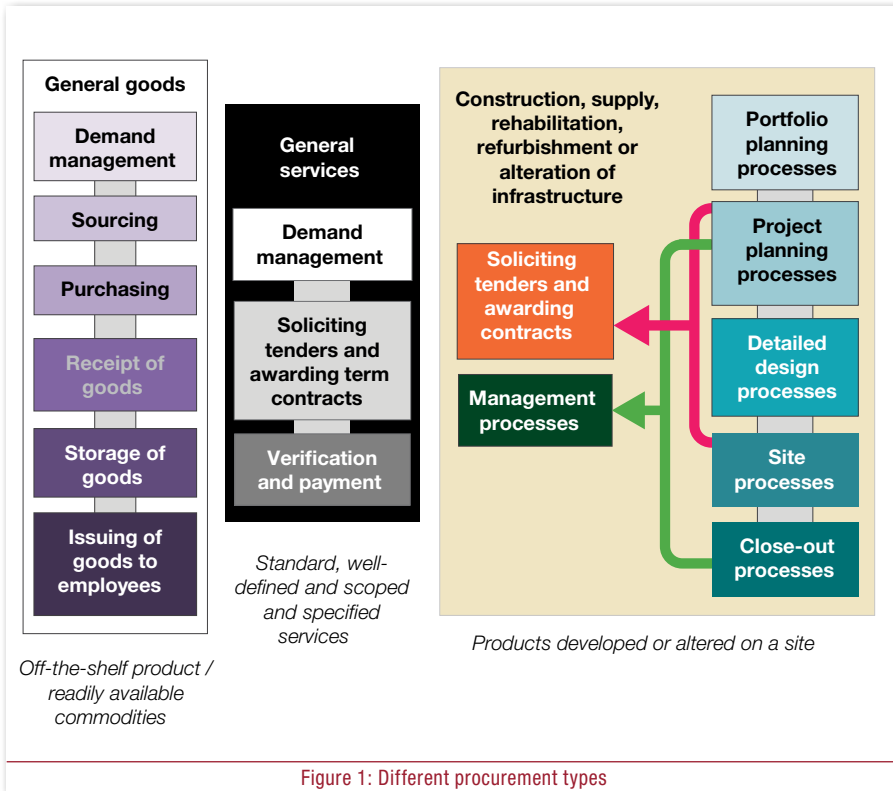
ised by the following:

- tenders are awarded to tenderers on the basis of the lowest price for meeting a minimum standard;
- generic conditions of contracts are applied which only describe the rights and obligations of the parties and lack agreed procedures for the administration or management of the contract;
- no standardised structuring of compo-

nent procurement documents;

- reliance in the evaluation of tenders of a tenderer is placed on completing standard schedules which are applied indiscriminately to procurement transactions; and
- standard, inflexible allocation of risks are made in contracts which require the drafting of extensive special conditions of contract to amend.

The delivery and maintenance of infrastructure differ considerably from those for general goods and services required for consumption or operational needs, in that there cannot be the direct acquisition of infrastructure. Each contract has a supply chain which needs to be managed and programmed to ensure that the project is completed within budget, to the required quality, and in the time available (see Figure 2). Many risks relate to the 'unforeseen' which may occur during the performance of the contract. This could, for example, include unusual weather conditions, changes in owner or end user requirements, ground conditions being different to what were expected, market failure to provide materials, or accidental damage to existing infrastructure. Unlike general goods and services, there can be significant changes in the contract price from the time that a contract is awarded to the time that a contract is completed. Key persons responsible for managing a contract, particularly in complex services



or works, have a major impact on the outcome of these changes. The procurement of supplies and equipment within infrastructure projects is also different, as requirements are frequently established in terms of desired performance. As a result, a range of goods and services (or combinations thereof), with different characteristics, reliability, availability of spares, costs, time for delivery, etc, may satisfy such requirements.

The core business of built environment professionals, who may be employed by either the public or private sector, is to plan, design, manage the execution and control costs of infrastructure projects after a client has decided to implement a project, and to manage the delivery of projects. These professionals, during the planning and design phases of a project, develop production information (information enabling either construction where the constructor is able to build directly from the information prepared or the production of manufacturing and installation information for construction). This information is required by contractors in order for them to price the works.

Infrastructure procurement involves the development or maintenance of a product on a site. A central issue that needs to be dealt with in infrastructure projects is the financial liability related to the uncertainty of future events, who takes the risk for the difference between the actual prices paid in terms of the contract and those estimated at the time of tender, and how are changes to the information used to produce the works assessed and paid for. Failure to do so will result in risk pricing which increases project costs or risk exposure. The selection of a suitable contractor and his team is also a critical factor in the mitigation of risk.

There are a number of procurement strategies (selected packaging, contracting, pricing and targeting strategy and procurement procedure for a particular procurement) and tactics (setting up of the procurement documents to solicit tender offers and to enter into contracts) which impact on procurement outcomes and are likely to yield different outcomes. Standard forms of contract (fixed terms and conditions which are deemed to be agreed and are not subject to further negotiation or amendment when applied to a particular tender), standard conditions for the calling for

expressions of interest, and standard conditions of tender enable a wide range of options to be implemented. The setting up of these documents requires professional judgement if value for money is to be delivered on.

Procurement and contract management form part of the scope of work of built environment professionals. As a result, such professionals have a critical role to play in not only the drafting of the production information, but also the setting up of procurement documents (documentation used to initiate or conclude a contract or the issuing of an order). They also play an important role in the evaluation of tenders, particularly where quality forms part of the tender evaluation criteria.

THE NATIONAL PLANNING COMMISSION'S FINDINGS AND THINKING

South Africa's *National Planning Commission's (NPC) National Development Plan 2030: Our future – make it work* identified a number of shortcomings in the SCM system. The NPC found that the “emphasis on compliance by box-ticking makes the system costly, burdensome, ineffective and prone to fraud” and “procurement systems tend to focus on procedural compliance rather than value for money, and place an excessive burden on weak support functions.” The NPC accordingly proposed that the following five areas be focused on in designing a procurement system that is better able to deliver value for money, while minimising the scope for corruption:

- Differentiate between the different types of procurement which pose different challenges and require different skills sets.
- Adopt a strategic approach to procurement above the project level to balance competing objectives and priorities, rather than viewing each project in isolation.
- Build relationships of trust and understanding with the private sector.
- Develop professional supply chain management capacity through training and accreditation.
- Incorporate oversight functions to assess value for money.

THE DESIGN OF THE SIPDM

The Standard for Infrastructure Procurement and Delivery Management

(SIPDM) either embraces the National Planning Commission's principles or facilitates their implementation. It is also informed by National Treasury's 2015 Public Sector Supply Chain Management Review. It has been designed to be better able to deliver value for money, while minimising the scope for corruption.

One of the unintended consequences of the emphasis on tendering processes in the SCM regulations, instructions and practice notes issued prior to the publication of the SIPDM is that most organs of state have adopted a one-size-fits-all approach to SCM, and established committees with one common policy, and a committee system with standing bid specification and bid evaluation committees which deal with all types of procurement. Many aspects of procurement which were in the past performed by built environment professionals were taken over by 'supply chain management' officials, as the SCM Regulations required that a separate SCM unit be established with the office of the Chief Financial Officer (PFMA) or, where possible, operate under the direct supervision of the Chief Financial Officer (MFMA). This evolved over time as the emphasis in these units shifted from managing SCM systems to performing procurement functions.

The separation of the supply chains for general goods and services from that for infrastructure reverses this trend in order to deliver better value for money. The control frameworks contained in the SIPDM, which cover not only procurement activities, but also those relating to the planning, designing and execution of infrastructure projects, integrate the SCM system for infrastructure. The infrastructure-specific requirements of the SIPDM for procurement documentation, evaluation committees and contract management, linked to professional registration (infrastructure supply chain management practitioners), provide a starting point for delivering value for money.

NOTE

Further insights and information can be obtained from:

Watermeyer, R B, Wall, K & Pirie, G 2013. The case for a separate supply chain for the delivery and maintenance of infrastructure. Available at: www.infrastructurene.ws/wp-content/uploads/2013/02/Technical-Paper-FULL.pdf. ●

Value for money in infrastructure delivery

The *Standard for Infrastructure Procurement and Delivery Management* defines value for money as “the optimal use of resources to achieve intended outcomes”. The control framework for the planning, design and execution of infrastructure projects, the tracking of projects, and the monitoring of performance provided in this standard is, amongst other things, designed to ensure that any infrastructure acquired or to be acquired offers value for money. A focus of the gateway reviews for major capital projects is on value for money. The concept of and issues surrounding value for money need to be understood, as well as the threats and opportunities associated therewith.

THE CONCEPT OF VALUE FOR MONEY

Public infrastructure that is acquired needs to be financially, economically and technically viable, and should offer value for money over its life cycle. A key question that is most often asked whenever new public infrastructure is contemplated or delivered, is “Does the investment provide value for money?”

Value for money may be regarded as the optimal use of resources to achieve intended outcomes. Underlying value for money is an explicit commitment to ensure that the best results possible are obtained from the money spent, or the 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 needs to be assessed during the delivery cycle using the so-called three “E’s” – *economy*, *efficiency* and *effectiveness* at the end of the planning, implementation and close-out phases of a project, respectively (see Figure 1). An overarching fourth ‘E’ also needs to be

considered when delivering infrastructure, namely *equity*.

The critical starting point in delivering value for money through infrastructure projects is, in the first instance, to align such projects with strategic objectives, priorities, budgets and plans, and thereafter, during the planning phase, 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.

Implementation sits between *economy* and *effectiveness* in the results chain framework. It needs to be executed *efficiently* in order to minimise time delays, scope creep and unproductive costs, and to mitigate the effects of uncertainty on objectives so as to maintain the value-for-money proposition formulated at the

outset of the project. This necessitates that the implementer of an infrastructure project exercises due care and reasonableness during implementation. Failure to do so may result in substandard or unacceptable performance, which results in a gap between intended and achieved outcomes. This gap puts value for money for a project at risk and may result in unintended consequences, such as community instability and unrest.

DELIVERING VALUE FOR MONEY IN INFRASTRUCTURE PROJECTS

The delivery of infrastructure needs to be managed and controlled in a logical, methodical and auditable manner. The starting point in the development of any delivery management system is to identify the information which needs to be developed and accepted by the client or implementer at a particular point in the delivery process to enable a project to be advanced, i.e. at a control point (or gate). The stages in the delivery of construction works can then be defined as the activities that need to take place between such points. These stages enable the workflow

(sequence of connected activities) towards the attainment of an end-of-stage deliverable to be developed, and culminate in gates (control points) which can be used to provide assurance that the proposed works remain within agreed mandates, align with the conceived purpose, and can progress successfully from one stage to the next. The results-chain framework illustrated in Figure 1 needs to be linked to the stages of infrastructure delivery. Figure 2 links the three basic “E’s” associated with value for money to the stages of the life cycle for the delivery of infrastructure embedded in the *Standard for Infrastructure Procurement and Delivery Management*.

The critical starting point in delivering value for money through projects is to screen and select projects during the project initiation stage which are aligned with strategic needs or business opportunities (see Stage 0 in Figure 2). Objectives and expected outcomes for given inputs, as well as parameters such as the time lines, cost and levels of uncertainty need to be formulated and documented at the

end of the planning phase (Stage 4). 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 the implementation of a project. It establishes *economy* and identifies opportunities for *equity* when design concepts or solutions have been sufficiently developed to establish the feasibility of the works, or to select a particular conceptual approach to pursue. It is also the point where the scope of a project is frozen. Should the works not prove to be viable as conceptualised (e.g. insufficient budget, unacceptable risk profile, geotechnical / environmental / community constraints, poor return on investment, etc), the project is either consciously modified in order to satisfy *economy* considerations before proceeding with implementation or is terminated as indicated in Figure 2.

During the close-out of a project (Stage 9) the projected outcomes are compared against the actual outcomes. This confirms the *effectiveness* of the project in delivering value for money. This

typically involves the comparing of the scope, schedule and cost plan, and, where relevant, the performance as documented at the start and the end of the implementation phases respectively. Value for money will occur when what is achieved equals or exceeds what was expected. Any deficit between what was planned and what was achieved puts value for money for a project at risk. An assumption can, however, be made that if the implementer exercises due care and reasonableness during implementation, value for money will be achieved. Put differently, if due care and reasonableness are exercised during implementation, and what is achieved is nevertheless less than what was expected, the difference lies not in the efficiency of implementation, but in the inherent project risks materialising, or shortcomings in framing the value-for-money proposition at the start of the project. It is a well-researched fact that risk is inherent in all projects, and not all risks can be accurately forecasted or controlled during project planning and implementation.

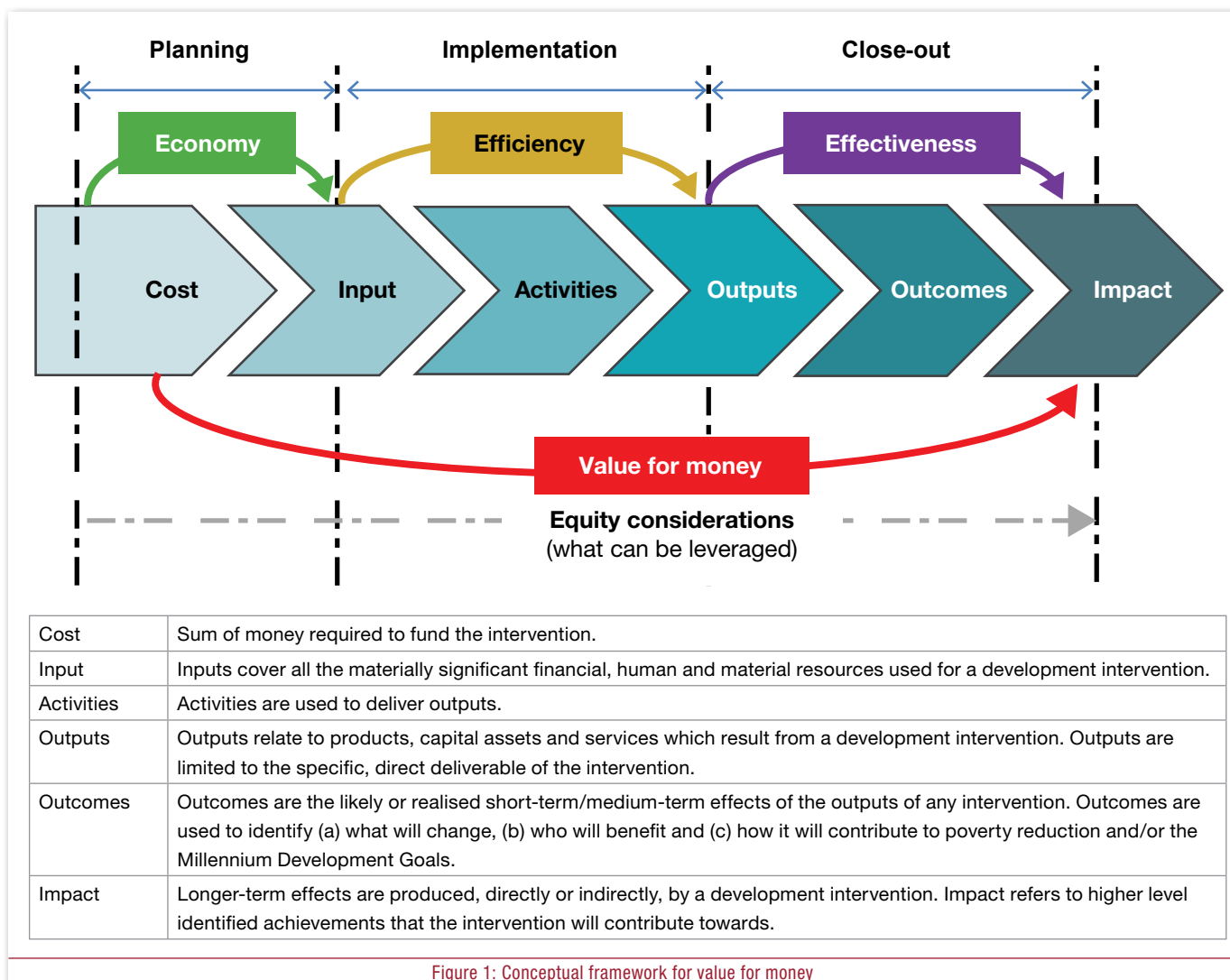


Figure 1: Conceptual framework for value for money

REASONS FOR INFRASTRUCTURE PROJECTS FAILING TO DELIVER VALUE FOR MONEY

Planning phase

The value-for-money proposition at the time that a decision is taken to proceed with the implementation of an infrastructure project is based on sets of assumptions and the available data. It is

therefore important to understand the context within which the value-for-money proposition is established, particularly that relating to cost.

The degree of project definition, as measured by the percentage of design completed at the end of Stage 4, can be estimated from the fee apportionments for stages contained in the guideline fees, such as those published by the

South African councils for the architectural and engineering professions and the Royal Architectural Institute of Canada. It is somewhere between 12% and 40%, depending upon the nature of the works that are being designed and the level of effort and detail put into the end of Stage 4 deliverables, as some of the work which is normally included in the Stage 5 deliverables may

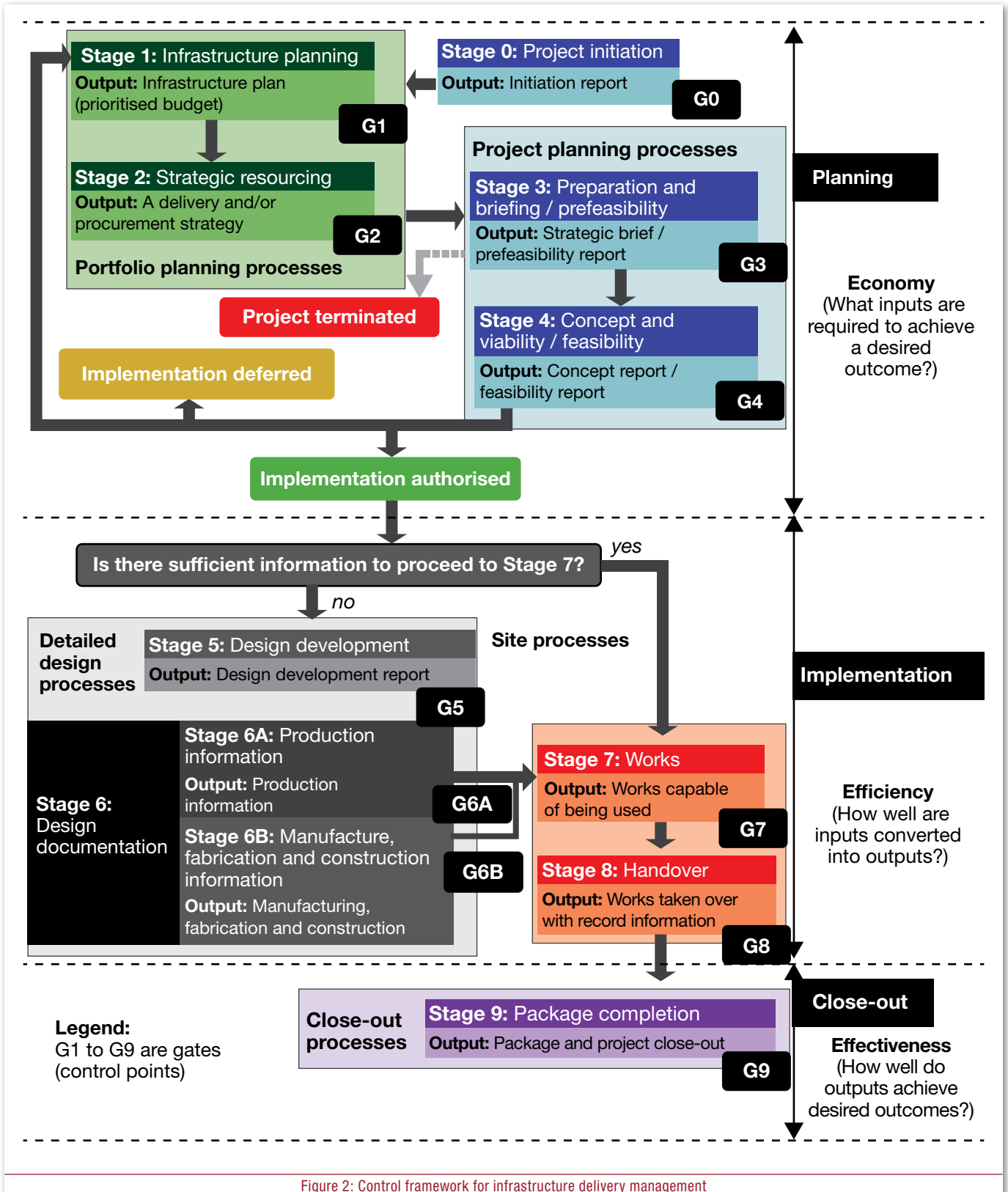


Figure 2: Control framework for infrastructure delivery management

be included in the Stage 4 deliverables. As an illustrative example, the United States Department of Energy uses the classification of estimates indicated in Table 1 to enable the quality of the cost estimate to be appropriately considered through the evolution of a project. Classes 3, 2 and 1 estimates typically occur towards the end of Stages 4, 5 and 6 respectively. As a result, the decision to proceed with a project may be based on a Class 3 estimate with a -20% to +30% accuracy where the degree of project definition is between 10% and 40%.

The value-for-money proposition upon which the *economy* of a project is made at the end of Stage 4 should be viewed with some caution, as it may be tainted by:

- optimism bias – the human mind’s cognitive bias in presenting the future in a positive light; and
- strategic misrepresentation – behaviour that deliberately underestimates costs and overestimates benefits for strategic advantage, usually in response to incentives during the budget process.

The HM Treasury’s *The Green Book: Appraisal and Evaluation in Central Government* (2003) defines optimism bias as “the demonstrated systematic tendency for appraisers to be over-optimistic about key project parameters, including capital costs, operating costs, works duration and benefits delivery”. This United Kingdom publication introduces an explicit adjustment procedure to redress the systematic optimism (“optimism bias”) that histori-

cally has afflicted the appraisal process of projects. Optimism bias can arise in relation to capital costs, works duration, operating costs and under-delivery of benefits. According to *The Green Book*, the two main causes of optimism bias in estimates of capital costs are:

- poor definition of the scope and objectives of projects in the business case, due to poor identification of stakeholder requirements, resulting in the omission of costs during project costing; and
- poor management of projects during implementation, so that schedules are not adhered to and risks are not mitigated.

Explicit adjustments for bias need to be made in the form of increasing estimates of the costs, and decreasing (and delaying the receipt of) estimated benefits. Sensitivity analysis needs to be used to test assumptions about operating costs and expected benefits. Adjustments should be empirically based (e.g. using data from past projects or similar projects elsewhere), and adjusted for the unique characteristics of the project in hand. Table 2 provides adjustment percentages recommended in a supplementary *Green Book* guidance (2011) for generic project categories that should be used in the absence of more robust evidence.

Implementation phase

Implementation sits between the bookends of *economy* and *effectiveness*

in the results chain framework shown in Figure 1, i.e. between Stages 4 and 9 (Figure 2). It needs to be executed *efficiently* so as to maintain the value-for-money proposition formulated at the outset of the project.

Optimism bias and strategic misrepresentation are in the main confined to the planning (*economy*) stages of a project, which end with a decision being made to proceed with a project, and relate to the quality of the information upon which a decision is made. The key question that begs asking is what proactive action can be taken during implementation (*efficiency*) to minimise any gaps between achieved and projected outcomes, irrespective of whether or not optimism bias and strategic misrepresentation are present at the time that a decision is taken to implement a project.

Strategy in infrastructure delivery may be considered as the skilful planning and management of the delivery process. It involves a carefully devised plan of action which needs to be implemented. It is all about taking appropriate decisions in relation to available options and prevailing circumstances in order to achieve optimal outcomes. Portfolio, programme and project management arrangements for the delivery of projects can be effectively used to manage risk (foreseen and unforeseen), stakeholder interference and scope creep, all of which, if unchecked, inevitably lead to what was not planned

Table 1: Generic cost estimate classifications and primary characteristics

Primary characteristic		Secondary characteristic		
Estimate class	Degree of project definition (expressed as % of complete definition)	Typical purpose of estimate	Methodology	Expected accuracy range (typical variation in low and high ranges)*
Class 5	0% to 2%	Concept screening	Capacity-factored parametric models judgement or analogy	-20% to -50% +30% to +100%
Class 4	1% to 15%	Study or feasibility	Equipment-factored or parametric models	-15% to -30% +20% to +50%
Class 3	10% to 40%	Budget, authorisation or control	Semi-detailed unit costs with assembly-level line items	-10% to -20% +10% to +30%
Class 2	30% to 70%	Control or bid/tender	Detailed unit costs with forced detailed take-off	-5% to -15% +5% to +20%
Class 1	70% to 100%	Check estimate or bid/tender	Detailed unit cost with detailed take-off	-3% to -10% +3% to +15%

* The state of process technology and the availability of applicable reference cost data affect the range markedly. The + or - values represent the typical percentage variation of actual costs from the cost estimate after application of contingency (typically at a 50% level of confidence) for a given scope.

Table 2: HM Treasury recommended adjustment ranges for optimism bias

Project type	Optimism bias (%)			
	Works duration		Capital expenditure	
	Upper	Lower	Upper	Lower
Standard building projects are those which involve the construction of buildings not requiring special design considerations.	4	1	24	2
Non-standard building projects are those which involve the construction of buildings requiring special design considerations due to space constraints, complicated site characteristics, specialist innovative buildings or unusual output specifications.	39	2	51	4
Standard civil engineering projects are those that involve the construction of facilities, in addition to buildings, not requiring special design considerations.	20	1	44	3
Non-standard civil engineering projects are those that involve the construction of facilities, in addition to buildings, requiring special design considerations due to space constraints or unusual output specifications.	25	3	66	6

Table 3: Culture changes which are conducive to improving project outcomes

From	To
Master-servant relationship of adversity (them and us).	Collaboration towards shared goals (integrated project team approach).
Fragmentation of design and construct.	Integration of design and construct through early contractor involvement.
Constructability and cost model determined by the design team and quantity surveyor / cost consultant only.	Constructability and cost model developed with contractor's insights.
Short-term hit-and-run relationships focused on one-sided gain.	Long-term relationships focused on maximising efficiency and shared value.
Risks are allowed to take their course.	Active risk management and mitigation.
Develop the project in response to a stakeholder wish list.	Deliver the optimal project within the budget available.
Pay-as-you-go delivery culture.	Discipline of continuous budget control.
Pay for what is designed.	Deliver infrastructure within an agreed budget.
Rigid, bespoke, ill-defined and disjointed procurement system.	Flexible, predictable, integrated, documented and auditable procurement system.
Poorly structured procurement documents based on bespoke or local standards and forms of contract with reliance placed on local knowledge.	Structured procurement documents based on international/national standards and forms of contract with minimal customisation/amendments, and clear and unambiguous requirements.
Meetings focused on the past – what has been done, who is responsible, claims, etc.	Meetings focused on how the project can be finished within the time and budget available.
Project management focused on contract procedures and paper trails.	Decisions converge on the achievement of the client's objectives.
Standard delivery stages prescribe the contracting arrangements and are unrelated to a portfolio of projects.	Delivery is managed and controlled through stages which permit the full range of contracting arrangements and commence at a portfolio level.
Ill-defined end-of-stage deliverables and acceptance procedures.	Well-defined end-of-stage deliverables and acceptance procedures which enable informed decisions to be made.
Design and construction developed in isolation from operation and asset management considerations.	Design and construction aligned with operation and asset management requirements.
Procurement strategy focused on selection of form of contract, as all other choices are predetermined.	Selected packaging, contracting, pricing and targeting strategy and procurement procedure aligned with project objectives.
One project one contract.	Works packaged appropriately to achieve objectives and efficiencies.
Project delivery takes place within predetermined parameters without any conscious thought to objectives.	Project delivery on documented primary and secondary (developmental) objectives takes place in a measureable and quantifiable manner.

to happen. Governance linked to suitable control frameworks for infrastructure procurement and delivery management can make a significant contribution to the effectiveness of project implementation.

Delivery strategies including the use of another organ of state to implement a project can, depending on how it is structured, impact negatively or positively on a project.

The leadership qualities, experience, technical understanding and commercial competence of those responsible for directing the implementation of projects and programmes on behalf of a client can have a significant impact on project outcomes. This is particularly true as the project scale and complexity increase.

Procurement strategy reflects the choices made in determining what is to be delivered through a particular contract, the procurement and contracting arrangements, and how secondary (or developmental) procurement objectives are to be promoted during the implementation phase of an infrastructure project. Such strategy enables risks to be allocated to the party that is best able to manage it, provides performance incentives, enables fragmentation in design to be addressed (thereby providing higher value and less waste), and can reduce the number of relationships which have to be managed, which in turn can overcome capacity constraints.

Procurement tactics are required to implement procurement strategies. Such tactics relate to the setting up of the procurement documents to solicit tender offers and to enter into contracts, i.e. the formulation of submission data, tender data, contract data, and the pricing and scope of work associated with a contract or order issued in terms of a framework contract. Choices are informed by a number of considerations, such as the selection of a contractor who is most likely to deliver best value through the performance of the contract, life cycle costs, the availability of spares, operation and maintenance requirements, the nature of the desired relationship with the contractor, the manner in which delays and disruptions are to be managed, the allocation of specific risks to the party that is best able to bear it, risk mitigation measures, development procurement policy objectives, etc.

Procurement strategy and tactics accordingly have the potential to contribute to *efficiency* during implementation, and to reduce the gap between achieved and projected outcomes.

The selection of a form of contract can also potentially impact on project outcomes. Forms of contract which provide open-book approaches to the costing of changes, due to the occurrence of risk events, foster collaborative working relationships and are most likely to deliver value for money, based on the belief that collaboration and teamwork across the whole supply chain:

- optimise the likely project outcomes;
- provide pricing arrangements that align payments to results;
- reflect a more balanced sharing of performance risk; and
- deal with delays and disruptions efficiently and effectively.

Inefficiencies during implementation can result from:

- the application of supply chain management (SCM) thinking associated with that for general goods and services;
- poor SCM policies which do not place the decision-making in the hands of those best able to make decisions and who are motivated to do so;
- the allocation of responsibilities to perform functions to those who do not have the skills set to function effectively; and
- poor procurement skills amongst those responsible for conceptualising and executing procurement processes.

Efficiencies during implementation can be facilitated through the culture changes outlined in Table 3.

DESIGNING AN INFRASTRUCTURE PROCUREMENT AND DELIVERY MANAGEMENT SYSTEM WHICH DELIVERS VALUE FOR MONEY

A review of some of the pertinent literature suggests that project outcomes can be improved by embracing the following principles in the design of an infrastructure procurement and delivery management system:

- Adopt a strategic approach to procurement and delivery management above the project level.
- Establish trust-based engagement of stakeholders throughout the process to avoid suboptimal solutions and unnecessary delays.

- Put in place governance systems which incorporate oversight functions to assess aspects of value for money throughout the project cycle in a systematic manner.
 - Put in place rigorous project selection processes.
 - Differentiate between the different types of procurement which pose different challenges and require different skills sets.
 - Standardise delivery in a manner which enables risks to be proactively managed and responsibilities to be clearly established.
 - Build relationships of trust and understanding with the private sector.
 - Put in place reliable data-gathering systems on which to base day-to-day oversight and long-term planning.
 - Develop strong public-sector capabilities across the value chain of planning, delivery and operations.
 - Increase transparency through the disclosure of information which is subjected to internal and external scrutiny.
- The National Treasury *Standard for Infrastructure Procurement and Delivery Management* is either designed around the abovementioned principles or facilitates their implementation.

NOTE

Further insights and information can be obtained from:

- Flyvberg, B, Bruzelius, N & Rothengatter, W 2003. *Megaprojects and risk: An anatomy of ambition*. Cambridge: Cambridge University Press.
- HM Treasury 2011. *The Green Book: Appraisal and Evaluation in Central Government*. Treasury Guidance, London: TSO.
- US Department of Energy 2011. *Cost Estimating Guide*. Available at: <https://www.directives.doe.gov>.
- Watermeyer, R B 2013. Value for money in the delivery of public infrastructure. West Africa Built Environment Research Conference, Accra, Ghana, August.
- Watermeyer, R B 2014. Realising value for money through procurement strategy in the delivery of public infrastructure. 8th CIDB Post-Graduate Conference, University of the Witwatersrand, Johannesburg, February.
- Watermeyer, R B 2015. Design and adoption of innovative procurement systems in infrastructure delivery. West Africa Built Environment Research Conference, Accra, Ghana, August. ●

Control framework for the planning, design and execution of infrastructure projects

The National Treasury Standard for Infrastructure Procurement and Delivery Management (SIPDM) provides a control framework for the planning, design and execution of infrastructure projects, the tracking of such projects and the monitoring of performance which enables risks to be proactively managed. This control framework can also be audited. An organ of state's supply chain management (SCM) policy for infrastructure procurement and delivery management is, in terms of the SIPDM, required to assign responsibilities for approving or accepting deliverables associated with a gate (control point) in this control framework. There is a need to understand the thrust and intent behind this control framework and what needs to be considered when assigning responsibilities for approving or accepting deliverables at the associated gates.

INTRODUCTION

A process can be considered to be an activity or set of activities using resources which are managed to enable the transformation of inputs into outputs. An organisation wishing to plan, design and execute infrastructure projects effectively needs to determine and manage numerous interrelated and interacting processes. Accordingly, the effective delivery of infrastructure necessitates that:

- the processes be identified and appropriately defined;
- procedures to ensure the effective planning, operation and control of such processes be documented;
- responsibilities for activities be assigned;
- procedures be implemented; and
- measures be put in place to ensure effective control so that the required

results are obtained.

The starting point is to determine and document the processes associated with the planning, designing and execution of infrastructure projects, as well as their sequence and interaction. Thereafter, procedures associated with the performance of activities need to be documented and responsibilities assigned to persons with competence (demonstrated ability to apply knowledge and skills) to perform such activities. Controls also need to be put in place to ensure both the operation and control of these processes to ensure their effectiveness based on the conceptual thinking presented in Figure 1. Resources and information need to be made available to support the operation and monitoring of these processes. Finally, records which provide evidence of conformity to requirements need to be

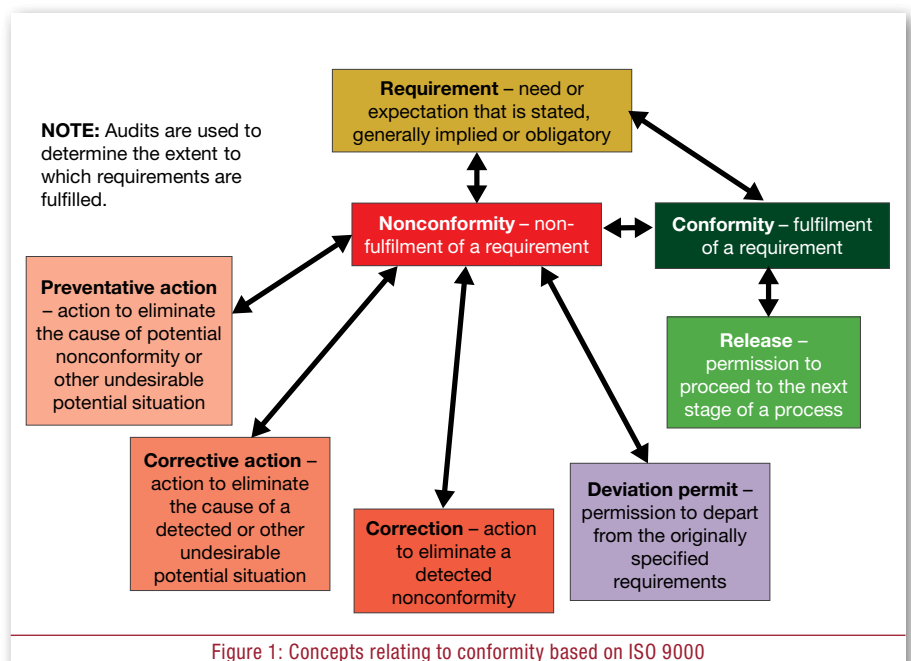


Figure 1: Concepts relating to conformity based on ISO 9000

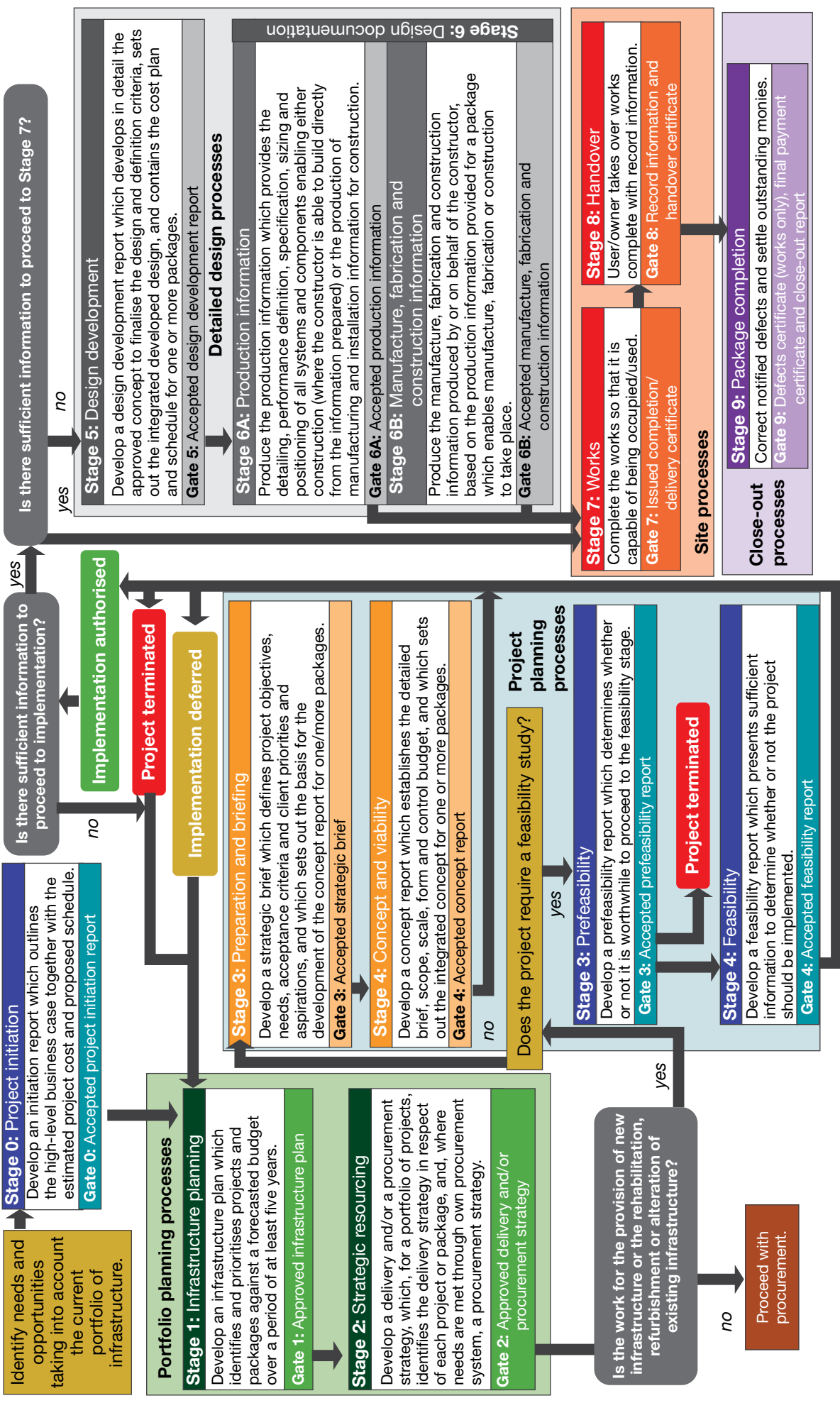


Figure 2: National Treasury's control framework for the planning, design and execution of infrastructure projects

identified, stored, protected and retained in a readily retrievable manner.

A control is a restraint or check point within a process where:

- decisions are taken before authorising the proceeding with an activity within a process or commencing with the next process;
- confirmation of conformity with requirements is required before completing a task or activity; or
- information is provided which creates

an opportunity for corrective action to be taken.

Controls provide the means for directing an organisation towards what is aimed or sought, and for confirming conformity with requirements. They provide the opportunity to take corrective action or to confirm compliance with documented requirements. A control which authorises the proceeding with an activity within a process, or commencing with the next process, is commonly referred to as a gate.

PROJECT LIFE CYCLE FOR THE DELIVERY OF INFRASTRUCTURE PROJECTS

Projects involving the construction, rehabilitation, refurbishment or alteration of infrastructure are delivered through a number of phases or work stages which may be broadly described as planning at a portfolio level, planning at a project level, detailed design, site processes and close-out. These project life cycle stages are structured in such a manner that the

Table 1: Local and international project life cycle stages

Project life cycle stage					
National Treasury (2015)	Engineering Council of South Africa (ECSA)	SA Councils for the quantity surveying profession (SACQSP), project and construction management professions (SACPCMP), landscape architectural profession (SACLAP) and architectural profession (SACAP)	Construction Industry Council (2007)	ISO 29481-1 (2010), Building Information Modelling	Royal Institute of British Architects Plan of Work (2013)
0 Project inception				0 Portfolio requirements	
1 Infrastructure planning					
2 Strategic resourcing					
3 Preparation and briefing or prefeasibility	1 Inception	1 Inception	1 Preparation	1 Concept of need	0 Strategic design
				2 Outline feasibility	1 Preparation and brief
4 Concept and viability or feasibility	2 Concept and viability (preliminary design)	2 Concept and viability	2 Concept	3 Substantive feasibility	2 Concept design
				4 Outline conceptual design	
5 Design development	3 Design development (detailed design)	3 Design development	3 Design development	5 Full conceptual design	3 Developed design
6A Production information	4 Documentation and procurement	4 Documentation and procurement	4 Production information	6 Coordinated design and procurement	4 Technical design
				7 Production information	
6B Manufacture, fabrication and construction information			5 Manufacture, fabrication and construction information	8 Construction	
7 Works	5 Contract administration and inspection	5 Construction			5 Construction
8 Handover			6 Post practical completion	6 Handover and close-out	
9 Close-out	6 Close-out	6 Close-out			7 In use

viability of a project may be tested and monitored and controlled as it progresses. They are crafted around the work breakdown structure required to plan, design and implement such projects, and as such present the workflow to deliver projects and to make decisions as to whether or not to proceed from one stage to the next.

The process of delivering infrastructure projects can be broken down into nine collections of logically related activities (stages), with end-of-stage deliverables and gates established in the control framework for the planning, design and execution of infrastructure projects contained in the National Treasury *Standard for Infrastructure Procurement and Delivery Management (SIPDM)* as shown in Figure 2. This control framework includes portfolio planning, project planning, detailed design, site and close-out processes for the delivery of infrastructure, but excludes procurement and management processes. It has forward and backward linkages with planning and budgeting and asset management systems as indicated in Figure 3.

National Treasury's control framework shown in Figure 2 deals with the generic workflow associated with the planning, design and execution of infrastructure projects, i.e. the project life cycle for the delivery of infrastructure projects. It generates information which informs decisions at particular points in the process. It is not aligned to any particular funding or procurement procedure. The framework is independent of the procurement strategy (i.e. design by employer, design and construct, or develop and construct)

that is pursued to appoint engineering and construction works contractors. It is also not dissimilar to local and modern international work stages for construction projects, as indicated in Table 1.

STAGES AND GATES

A stage in the infrastructure gateway system is only completed when the deliverable has been approved or accepted by the person or persons designated to do so. Activities associated with Stages 5 to 9 may be undertaken in parallel or series, provided that each stage is completed in sequence. Stages 3 to 9 may be omitted where the required work does not involve

the provision of new infrastructure or the rehabilitation, refurbishment and/or alteration of existing infrastructure. Stages 5 and 6 may be omitted if sufficient information to proceed to Stage 7 is contained in the Stage 4 deliverable. Additional gates may, if necessary, be added to the control framework.

The level of detail contained in a deliverable associated with the end of each stage needs to be:

- sufficient to enable informed decisions to be made to proceed to the next stage; and
- such that it can be used to form the basis of the scope of work for taking

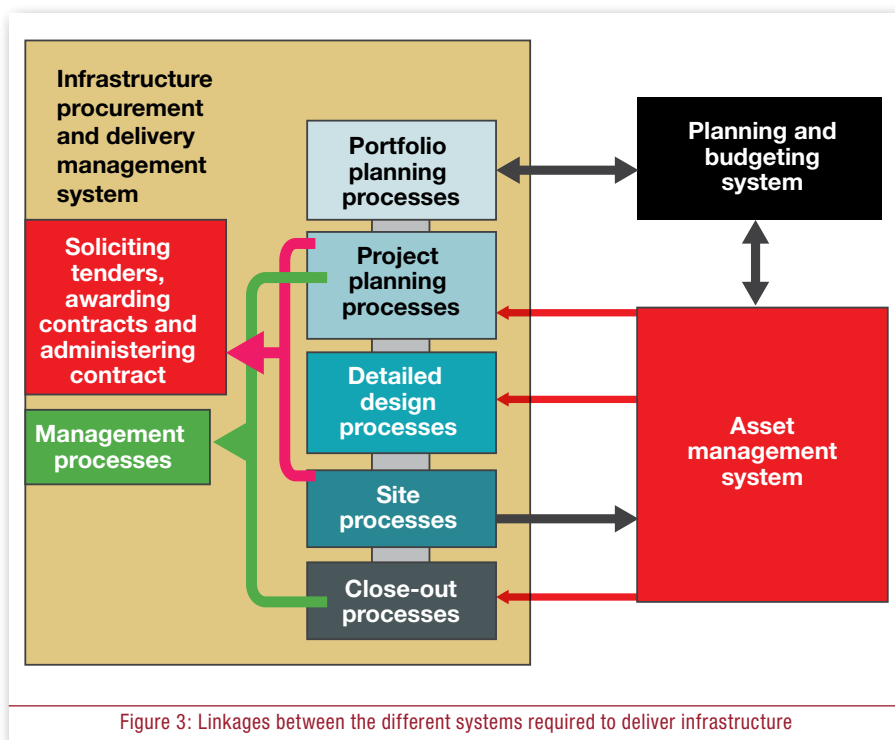


Figure 3: Linkages between the different systems required to deliver infrastructure

Table 2: Key deliverables associated with the scope of work of a contracting strategy

Contracting strategy		Key deliverable which forms the basis of the scope of work associated with a contract	
Strategy	Description	Stage associated with the deliverable	Deliverable
Management contractor*	Contract under which a contractor provides consultation during the design stage and is responsible for planning and managing all post-contract activities and for the performance of the whole of the contract	3 Preparation and briefing	Client accepted strategic brief*
Design and construct	Contract in which a contractor designs a project based on a brief provided by the client and constructs it	4 Concept and viability	Client accepted concept report
Develop and construct	Contract based on a scheme design prepared by the client under which a contractor produces drawings and constructs it	5 Design development	Client accepted design development report
Design by employer	Contract under which a contractor undertakes only construction on the basis of full designs issued by the employer	6A Design documentation (production information)	Completed and client accepted production information

* A management contractor can also be appointed after Stages 4, 5 or 6A, in which case the client-accepted concept report, design development report or production information respectively can serve as the basis of the scope of work.

the package (work which is grouped together for delivery under a single contract or an order issued in terms of a framework agreement) forward in terms of the selected contracting strategy (see Table 2).

The level of information increases with each successive stage. Different types of infrastructure and contracting strategies, as well as the scale and location of projects, present different risks. As a result, the level of detail at each stage necessary to make an informed decision at a gate is a matter of professional judgement, and varies between different types of projects and contracting strategies.

PLANNING STAGES

Infrastructure planning is a continuum and not an event which typically involves interactions between the different internal and external role-players as indicated in Figure 4. It is a highly iterative process involving the rationalisation of demand against available resources while maintaining required service levels. It is not a step-by-step process where the analyses are independent of each other and can be performed in sequence. Information needs to flow between the different analyses, and constant feedback mechanisms need to be put in place to ensure coherence. Such planning can be

supply-driven by addressing the difference or gap between a desired state and a current state, or demand-driven by adopting approaches which change the perceptions and hence requirements as to what should be supplied.

The planning processes within Stage 1 should enable the infrastructure plans which are developed to:

- be aligned and integrated with the long-term objectives and the spatial planning of the different spheres of government which impact upon the organ of state's mandate;
- contain projects which have been selected and prioritised on the basis of institutionalised prioritisation processes;
- satisfy all legislative requirements, including prescribed reporting requirements, organisational requirements and any conditions or requirements associated with grant funding;
- be linked to budgets for at least five years (i.e. three-year MTEF period and two outer years); and
- organise projects into categories such as new construction, alteration, extension, rehabilitation, refurbishment and planned maintenance.

The infrastructure plan developed in Stage 1 enables a delivery management plan and a procurement strategy to be developed during Stage 2.

Prefeasibility and feasibility reports developed during Stages 3 and 4 are required on major capital projects or projects which require significant capital investment over several years. They may also be required where projects are not of a process-based, somewhat repetitive or relatively standardised nature where the risk of failing to achieve time, cost and quality objectives is relatively high. Such reports may also be required when infrastructure has significant staffing and operation costs, the implications of which need to be understood before a decision is taken to proceed with an infrastructure project.

Stages 3 (preparation and briefing) and 4 (concept and viability) need to be repeated for each package if the acceptance at Stage 4 is for the acceptance of a project comprising a number of packages which are to be delivered over time. Stage 4 (concept and viability) results in a solution for an infrastructure project. The design or solution is 'frozen' at the end of Stage 4.

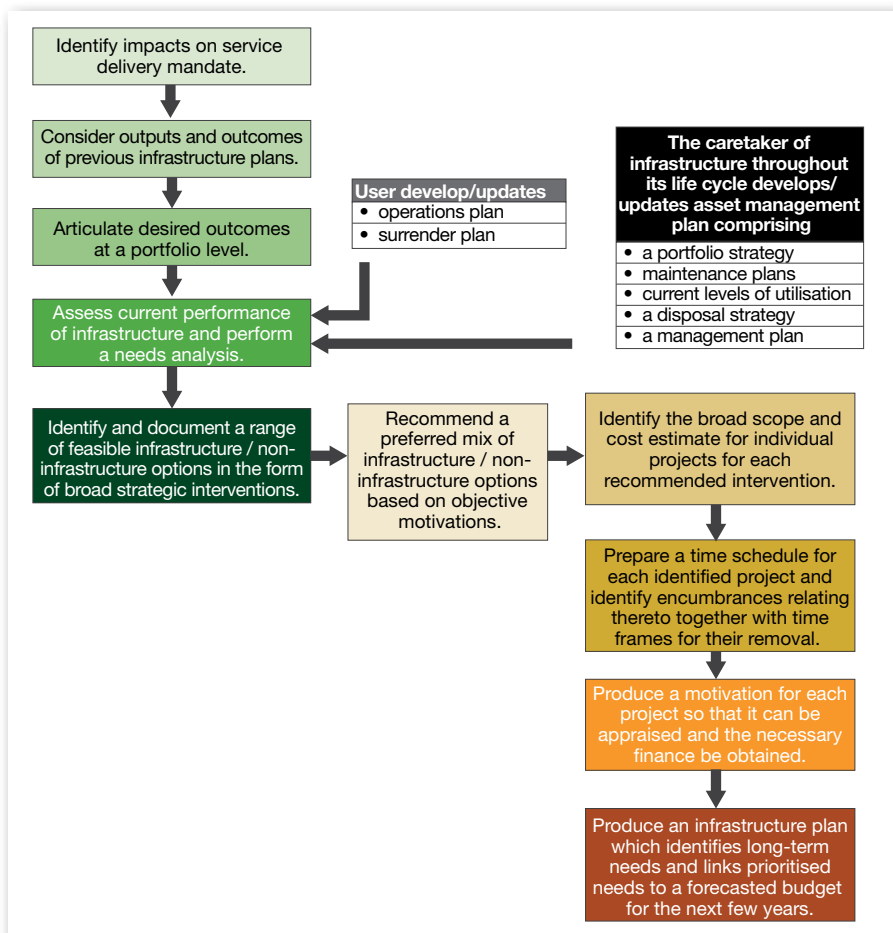


Figure 4: Activities commonly associated with the development of an infrastructure plan

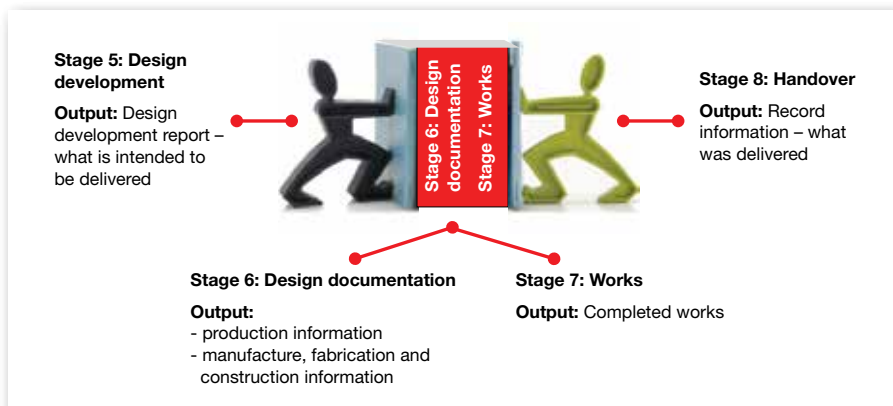


Figure 5: The bookends of implementation – design development report and record information

The portfolio and project planning activities, as indicated in Figure 2, are iterative processes with improved information with each iteration. Accordingly, portfolio and project planning (the first four stages of the control framework), being an iterative process, can involve a number of financial years, depending upon how early planning activities commence and how long it takes to bring a project to a state of readiness for implementation. The infrastructure plan (Stage 1), which is informed by demand-management requirements, initiation reports (Stage 0), decisions made during Stages 3 and 4, and work in progress in Stages 5 to 9, and the procurement strategy (Stage 2), needs to be reviewed and updated at least once a year.

Land acquisition planning should begin well in advance of implementation. It is therefore highly desirable to have planning time frames longer than the funding period under consideration, and to develop a land acquisition strategy which also considers the impact of disputes relating to land acquisition on the programme.

DESIGN STAGES

Detailed design during Stage 5 includes the selection of materials and components. At this stage there will frequently be an iterative process of proposing a component, checking its predicted performance against the brief, and amending selections if required. The design development report translates the concept report into a document which paints a picture of what is to be delivered. The report needs, as such, to describe how structures, services or buildings and related site works, systems, subsystems, assemblies and components are to function, how they are to be safely constructed, how they are to be maintained and, if relevant, how they are to be commissioned.

The design development report relates to what is to be delivered. Record information relates to what has been delivered. Accordingly, the record information is an updated version of the design development report (see Figure 5).

Outline specifications prepared during Stage 5 should be in sufficient detail to enable a view to be taken on the operation and maintenance implications of the design, and the compatibility with existing plant and equipment. The design should reflect the constraints of

the budget for the overall project. To meet the brief, adjustment of either the budget or the service life requirements may be necessary. Where a specification is adjusted to meet cost constraints, the maintenance and operation implications should also be considered.

Production information is developed during Stage 6A of the design documentation stage, i.e. the 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. This information enables manufacture, fabrication and construction information to be produced during Stage 6B by or on behalf of the contractor, based on the production that is information-provided. This information enables manufacture, fabrication or construction to take place.

Commissioning is often misinterpreted to focus solely on testing during the end of the construction phase. Commissioning is actually a collaborative process for planning, delivering and operating works that function as intended. Commissioning procedures accordingly need to be scheduled in relation to other services or construction activities. Since the commissioning process is dependent on the progress of systems, structures and building fabric, the scheduling of commissioning activities needs to be carefully planned in relation to those activities. Accordingly, the interdependency problems need to be identified and considered as early in the project as possible, as they need to be included in the designer's outputs.

IMPLEMENTATION STAGES

The following activities are typically undertaken during Stage 7 (works) in relation to the works:

- Provide temporary works.
 - Provide permanent works in accordance with the contract.
 - Manage risks associated with health, safety and the environment on the site.
 - Confirm that design intent is met.
 - Correct notified defects which prevented the client or end user from using the works and others from doing their work.
- Stage 7 can also include the design, supply and installation of plant which is incorporated into the works.

The following activities need to be undertaken during Stage 8 (handover):

- Finalise and assemble record information which accurately reflects the infrastructure that is acquired, rehabilitated, refurbished or maintained.
- Hand over the works and record information to the owner, end user or those responsible for the operation and maintenance of the works and, if necessary, train end user staff in the operation of the works.

It must be stressed that there is a difference between achieving completion of the works in accordance with the provisions of the contract and the handing over of the works to the owner, end user or those responsible for the operation and maintenance of the works. Upon completion, or soon thereafter, risks associated with loss of, or wear or damage to the works are no longer borne by the contractor. Arrangements may need to be put in place to secure and safeguard the works from the time that the contractor's liabilities cease until the time that the works are handed over.

The primary objective of the record information is to provide those tasked with the operation and maintenance of a building and associated site works with the necessary information to:

- understand how the designers intended the works, systems, subsystems, assemblies and components to function;
- effectively operate, care for and maintain the works, systems, subsystems, assemblies and components to function;
- check, test or replace systems, subsystems, assemblies or components to ensure the satisfactory performance of works, systems, subsystems, assemblies and components over time;
- develop routine and scheduled maintenance plans;
- determine stock levels for components and assemblies that need to be regularly replaced; and
- budget for the operation and maintenance of the works, systems, subsystems and components over time.

The secondary objective of the record information is to provide information pertaining to the planning and design of the works to inform refurbishments, alterations, modifications, renovations and additions that may be required from time to time.

Stage 9 (close-out) closes out not only the contract or order issued in terms of a

framework contract, but also the project. Such a report needs to outline what was achieved and make suggestions for improvements on work of a similar nature. It also needs to comment on the performance of the contractor.

GATEWAY REVIEWS

Gateway reviews deliver a team review in which independent practitioners, preferably from outside of a programme, but certainly outside of the project, examine the likelihood of the successful delivery and the soundness of a project, through a series of interviews and documentation reviews. Review teams can also provide valuable additional perspectives on issues facing the project team and are able to challenge the robustness of an end-of-stage deliverable after Stage 2. The gateway review process is designed to provide independent guidance on how best to ensure that projects are successfully delivered. They provide clients with the confidence that an appropriate level of discipline is being applied in the delivery process and the best options to meet needs are being selected. Alternatively they can be used to review the quality of the end-of-stage deliverables that were developed.

Gateway reviews are based primarily on the information contained in end-of-stage deliverables, supplementary documents, if any (provided by key staff obtained during an interview process), and interviews with key staff members and stakeholders. Aspects in the report produced by the team need to be flagged as:

- Code red: team considers the aspect to pose a significant risk to the project or package;
- Code amber: team considers the aspect to indicate a minor risk to the project or package; and
- Code green: team considers the aspect to have been given adequate consideration, to the extent that it is unlikely to jeopardise the success of progressing to the next stage, or minor adjustments may be required before proceeding.

The SIPDM requires a gateway review on all major capital projects above a threshold prior to the acceptance of a deliverable at the end of Stage 4. The focus of such a review is on:

- deliverability (the extent to which a project is deemed likely to deliver the expected benefits within the declared cost, time and performance envelope);

- affordability (the extent to which the level of expenditure and financial risk involved in a project can be taken up, given the organisation's overall financial position, both singly and in the light of its other commitments); and
- value for money.

The SIPDM requires that the relevant treasury be afforded an opportunity to participate in the gateway reviews. This standard furthermore permits the relevant treasury to initiate a gateway review of any of the end-of-stage deliverables associated with the control framework, irrespective of the estimated cost of the project.

APPROVAL OF HIGH-VALUE NATIONAL AND PROVINCIAL MAJOR CAPITAL PROJECTS

The SIPDM requires Cabinet or the Executive Council to approve the Stage 0 (initiation report) and Stage 4 (feasibility report) end-of-stage deliverables for high-value national and provincial major capital projects above a threshold, after taking into account comments and recommendations of the relevant treasury. The Stage 3 (prefeasibility) end-of-stage deliverables need to be approved by the relevant member of Cabinet or the relevant member of the Executive Council, whichever is appropriate, after taking into account the comments and recommendation of the relevant treasury.

PERFORMANCE MONITORING

A package is defined in the SIPDM as "work which is grouped together for delivery under a single contract or an order", while a control budget is defined as "the amount of money which is allocated or made available to deliver or maintain infrastructure associated with a project or package, including site costs, professional fees, all service and planning charges, applicable taxes, risk allowances and provision for price adjustment for inflation." Packages are identified typically during Stage 2 (strategic resourcing).

The SIPDM requires that:

- the initiation report developed in Stage 0 (project initiation) provides an estimated cost and proposed schedule for the project;
- the prefeasibility report developed during Stage 3 (prefeasibility) provides preliminary capital estimates and a proposed schedule;
- the strategic brief developed during

Stage 3 (preparation and briefing) includes a control budget and a schedule for the package;

- the concept report developed during Stage 4 (concept and viability) establishes the feasibility of satisfying the strategic brief for a package within the control budget established during Stage 3, and if not, motivates a revised control budget; and
- the design development report developed during Stage 5 (design development) contains a schedule for the package, and confirmation that the package can be completed within the control budget, or proposes a revision to the control budget.

The price for the work required to satisfy the developed and documented design for a package and the schedule for the delivery of the works is known at the time that Stage 7 (works) commences. Payment certificates reflect the amount of work certified in terms of the contract for payment at the completion of Stage 7. The final amount due in terms of the contract is established at the completion of Stage 9 (close-out). Accordingly, data associated with costs and schedule is known throughout the project life cycle for the delivery of infrastructure projects. It is therefore possible to track shifts in costs and schedules, as well as changes in scope and performance of the works during most of the stages of the project life cycle.

The SIPDM requires that budget submissions for budget approvals to advance a project within a financial year be broken down into the stages of the control framework. This standard also requires that an implementation plan be developed for new infrastructure or for the rehabilitation, refurbishment or alteration of existing infrastructure. Such a plan is required to include the scope, budget and schedule for each project or package, a time management plan for each project (baseline against which progress can be measured) and projected budget and cash flow which enable planned and actual expenditure to be measured. The SIPDM also requires that an annual report be prepared which reflects the performance for each portfolio of projects. Such a report is required to reflect performance against the following implementation metrics:

- expenditure incurred in infrastructure delivery for the financial year against the budget available to cover such expenditure;

- the average variance between planned and achieved completion of all stages and packages;
- the average time taken to complete Stage 8 (handover); and
- the average difference between the totals of the prices in the payment certificate issued following completion of Stage 7 (works) and that contained in the final account during Stage 9 (close-out).

The baseline data for the quantification of these metrics is contained in the infrastructure plans. The above-mentioned metrics measure the efficiency of those responsible for managing projects and programmes within a portfolio of infrastructure projects.

The SIPDM also requires that the annual report contains an overview of all packages where Stage 7 (works) was completed within a financial year, and where the total of the prices and the envisaged time for completion exceed 20%, together

with a brief explanation as to why such increases occurred.

It should be noted that copies of the annual reports need to be sent to the relevant treasuries.

ALLOCATION OF RESPONSIBILITIES FOR APPROVING AND ACCEPTING DELIVERABLES AT EACH GATE

The SIPDM requires that an organ of state's SCM policy for infrastructure procurement and delivery management assign responsibilities for approving or accepting deliverables associated with a gate in the control framework indicated in Figure 2. Decisions to proceed to the next stage need to be based on the acceptability (receive as adequate, valid or suitable, or give an affirmative answer to a proposal) or approval (officially agree to) of the end-of-stage deliverable. They may also be based on certifications made in terms of a contract or order issued in terms of a

framework agreement, as indicated in Table 3.

The implementation of infrastructure projects needs to be carefully managed. The gates shown in the control framework presented in Figure 2 provide to all those involved in all levels of management access to information to perform their work, and to those involved in the governance system to take decisions regarding their readiness to bear the risk (effect of uncertainty on objectives) after risk treatment in order to achieve objectives.

The indicative impact of a number of key factors over the life cycle of a project is illustrated in Figure 6, while the linkage between the four "E's" associated with value for money to the stages in the project life cycle for the delivery of infrastructure is indicated in Figure 7. The decisions made at an early stage in the project set the value-for-money proposition and have the greatest impact on project outcomes. Accordingly ap-

Table 3: Responsibilities for approving or accepting end-of-stage deliverables in the control framework for the planning, design and execution of infrastructure projects

Stage		Person assigned the responsibility for approving or accepting end-of-stage deliverables
No	Name	
0	Project initiation	Designated person accepts the initiation report.
1	Infrastructure planning	Designated person approves the infrastructure plan.
2	Strategic resourcing	Designated person approves the delivery and/or procurement strategy.
3	Prefeasibility	Designated person accepts the prefeasibility report.
	Preparation and briefing	Designated person accepts the strategic brief.
4	Feasibility	Designated person accepts the feasibility report.
	Concept and viability	Designated person accepts the concept report.
5	Design development	Designated person accepts the design development report.
6	Design documentation	6A Production information Designated person accepts the parts of the production information which are identified when the design development report is accepted as requiring acceptance.
		6B Manufacture, fabrication and construction information The contract manager accepts the manufacture, fabrication and construction information.
7	Works	The contract manager certifies completion of the works or the delivery of goods and associated services.
8	Handover	The owner or end user accepts liability for the works.
9	Package completion	The contract manager or supervising agent certifies the defects certificate in accordance with the provisions of the contract. The contract manager certifies final completion in accordance with the provisions of the contract. Designated person accepts the close-out report.

provals typically take place at a senior management or portfolio level, whilst acceptances can be made at a programme or project management level where the project parameters are better defined and understood. Approvals and acceptances can be granted by individuals or committees. Where an organ of state implements a project on behalf of an organ of state, acceptance or approval of end-of-stage deliverables may have to be granted in consultation with such an organisation, who remains the client. Alternatively the decision-making at a gate may be assigned

by a party to an agency agreement between a client and an implementer.

As a general rule, the person designated to approve or accept a deliverable at a gate should be the person best able to make an appropriate decision based on the information presented, and who has insights of the potential impact of the decision on the business case, programme or project objectives, as relevant.

NOTE

Further insights and information can be obtained from:

Construction Industry Development Board. IDM Toolkit. Delivery Management Guidelines: Delivery Process 1 – Portfolio Management. Available at: www.cidb.org.za/_layouts/toolkit/index.html. SANS 9000:2015 ISO 9000:2015. Quality management systems – fundamentals and vocabulary. South African Bureau of Standards. Watermeyer, R B 2015. Design and adoption of innovative procurement systems in infrastructure delivery. West Africa Built Environment Research Conference, Accra, Ghana, August. ●

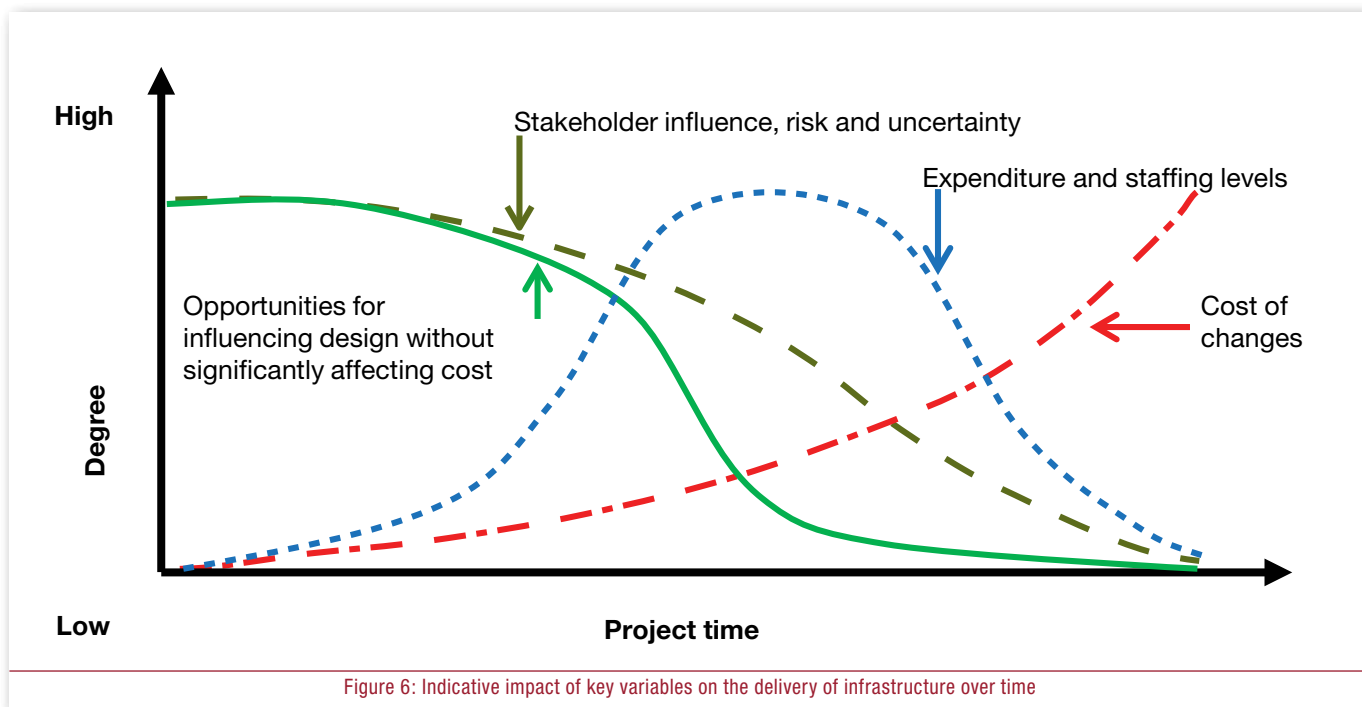


Figure 6: Indicative impact of key variables on the delivery of infrastructure over time

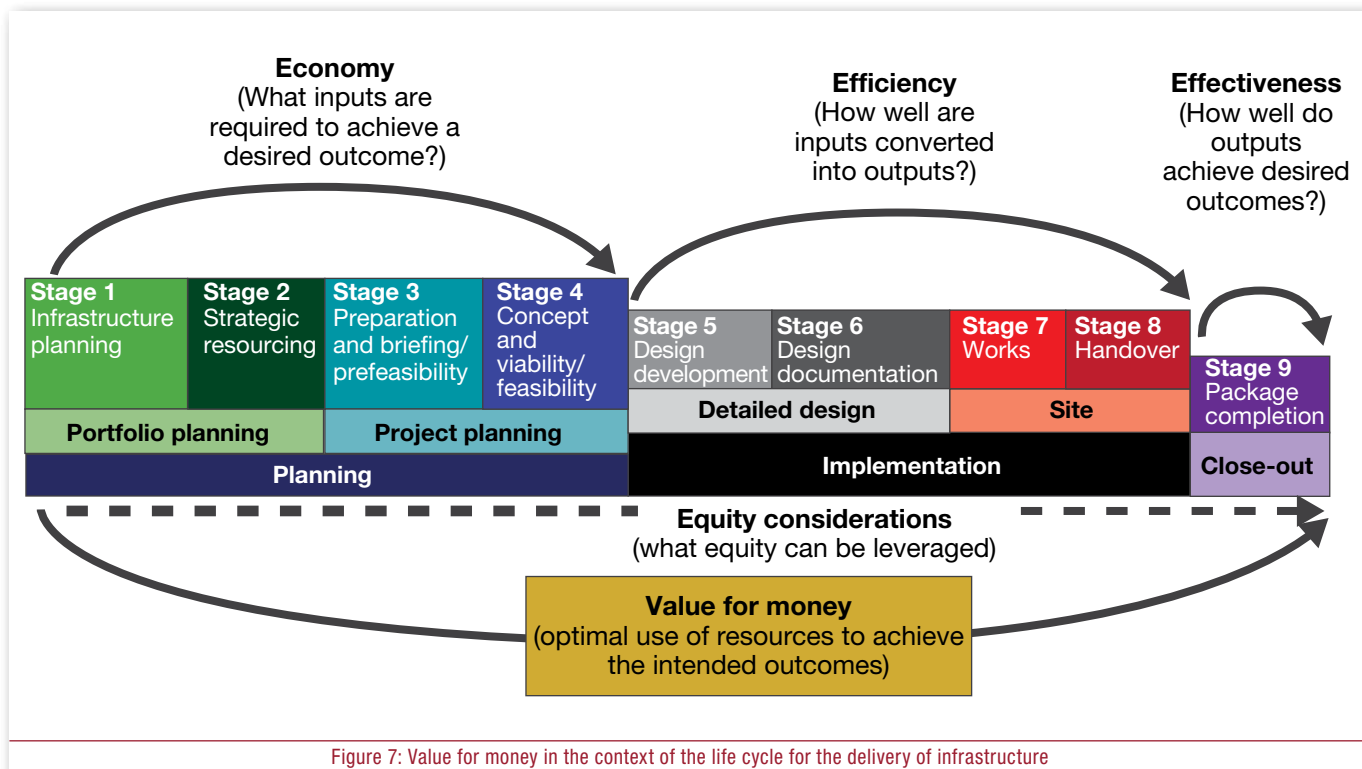


Figure 7: Value for money in the context of the life cycle for the delivery of infrastructure

Guidance for client and delivery teams

The *Standard for Infrastructure Procurement and Delivery Management (SIPDM)* establishes requirements for institutional arrangements for organs of state who are responsible for infrastructure delivery. Such requirements relate to:

- the establishment of a suitable infrastructure procurement and delivery supply chain management policy to implement the standard, which as a minimum:
 - assigns responsibilities for approving or accepting deliverables associated with a gate in the control framework, or authorising a procurement process or procedure
 - establishes committees that are required by law, or equivalent quality management and governance arrangements
 - establishes delegations for the awarding of a contract or the issuing of an order
 - establishes ethical standards for those involved in the procurement and delivery of infrastructure; and
- the entering into agency agreements between organs of state where responsibilities for implementation are delegated or assigned to other organs of state.

There is a need to understand the roles and responsibilities of the client and delivery teams in order to develop a suitable supply chain management (SCM) policy to implement the standard and to structure an agency agreement which satisfies the minimum requirements of the SIPDM.

THE ROLE OF THE CLIENT

A client initiates, commissions and pays for infrastructure projects. The role and performance of the client is perhaps the single most important factor in determining the success of an infrastructure project regardless of its size, complexity and location.

The principal role of the client is to ensure that a solution to the business case for a project is achieved. The client as such owns the business case of the project and needs to provide effective leadership of the project throughout the project life cycle, commencing at a strategic level and ending at the close-out of a project after the beneficiary of the project has accepted and operates the delivered infrastructure. Typically, a named individual is held accountable for the outcomes of the project. The

client needs to:

- establish a clear business case at the inception of a project, constantly revisit it, and verify its assumptions, objectives and ongoing validity;
- create and communicate a vision for the project which enables all participants to understand its purpose;
- create an enabling environment within which decisions and authorisations can be made to progress projects in an efficient and effective manner;
- apply effective leadership and governance in the way in which a project is authorised, conducted and overseen in order to create a business environment for success;
- provide strategic thinking, intent and approach;
- set the priorities between time, cost and quality and the attainment of developmental and other objectives to provide

crucial direction to the project team when hard choices have to be made to steer a project through the complexities of decision-making;

- carefully monitor projects and remain vigilant to changes that can impact on a project and its business case;
- gain insight into and find ways where possible to satisfy the requirements of stakeholders;
- ensure that:
 - the budget contained in the business case is realistic and provides value for money
 - the programme is not only realistic, but is also likely to be attractive to the market and attract competitive prices; and
- focus on strategy, the project environment, the business case, high-level progress, corrective action, communi-

cation, and managing internal and external stakeholders and lessons learned. A public sector client, as a custodian of public funds, needs in addition to ensure a culture of governance and accountability which:

- resonates with Section 195(1) of the Constitution of the Republic of South Africa, 1996, in particular with respect to a high standard of professional ethics and standards, and the efficient, economic and effective use of resources;
- balances the competing needs of cost-effectiveness, affordability, sustainability and South Africa as a developmental state;
- caps project scope and costs;
- avoids prohibited practices, improper conduct and maladministration, whether by act or omission;
- avoids political interference resulting in improper conduct; and
- delivers not only value for money, but also achieves results.

A client needs to be bold enough to make timely decisions such as to press the 'start' button if corrective action is necessary and to push the 'stop' button if the project becomes unviable, or if there is insufficient budget to complete the project or related projects. A client also needs to manage demand to ensure that goods, services and engineering and construction works which are required to support the business plan are delivered at the right price, time and place, and that the quality and quantity of such goods or services satisfy needs.

Clients need to either have in-house resources or procure the resources that are necessary to function as a client, to deliver projects once a decision has been made to proceed with implementation and to interface with stakeholders during the delivery process as indicated in Figure 1. The functions of the design team and the supply team (constructor and manufacturer) are most often outsourced. The functions of the project manager and the technical resources may, depending upon the capacity and capabilities of the client, be performed by employees of the client or professional service providers. It is also possible for a client to assign or delegate certain client team responsibilities to another organ of state, i.e. an implementer. Where such delegation or assignment is made, the *sponsor/owner* and the *implementer*, although being different organs of state, collectively function as the 'client team'.

Figure 2 indicates the typical roles and responsibilities of the client and delivery teams. The client cannot outsource client team responsibilities to the private sector. It can, however, adopt delivery and procurement strategies which minimise the number of contracts that it needs to put in place to deliver projects to manageable levels.

Units or divisions within an institution may perform different roles in the delivery of infrastructure. Some units may not assume responsibility for all the areas or may only provide the necessary technical advice to progress projects as indicated in Figure 2. Some of the responsibilities may

be assigned to other units or departments. Accordingly one unit may function as the *sponsor/owner* and another unit as an *implementer*. Typically, the *implementer* assumes responsibility for programme management, procurement, payment of contractors, administration of contracts, and the provision of technical advice and inputs. The *sponsor/owner* and the *implementer* collectively function as the client.

ASSIGNING AND DELEGATING CLIENT RESPONSIBILITIES

The unit or department acting as the *sponsor/owner* in such circumstances typically retains responsibility for ensuring the strategic alignment of the project or programme. As such it is the owner of the investment and enables the realisation of benefits by ensuring continuity of focus on the business case, having clear authority and actively managing risks and stakeholders. The unit or department acting as the *implementer*, on the other hand, is typically responsible for specifying requirements to external participants and managing delivery outcomes. Fundamental to this is the procurement of appropriate private sector participants and the management of those relationships to maximise value. An *implementer* as such needs to ensure that:

- specified requirements will achieve the required benefits of the business case and provide value for money;
- momentum is maintained for the investment appropriate to the needs of the stakeholders and the delivery team

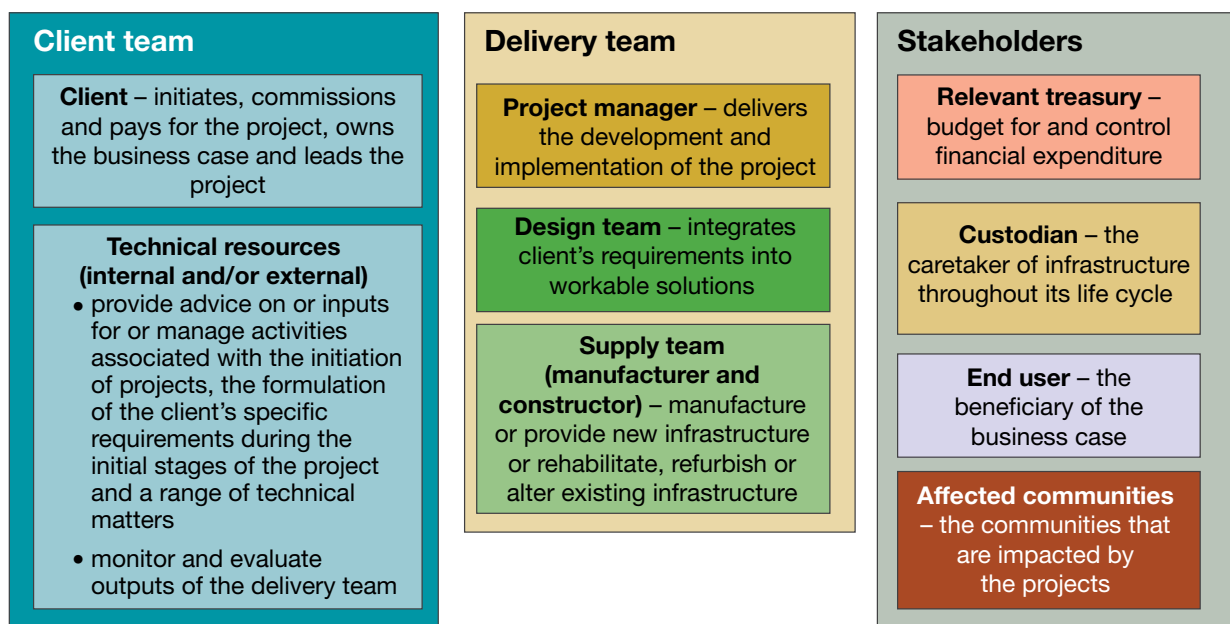


Figure 1: The principal role players in the delivery of infrastructure

Client team

Client:

- Initiates, commissions and pays for infrastructure projects.
- Ensures that a solution to the business case for infrastructure projects is achieved.
- Owns the business case of the infrastructure projects and needs to provide effective leadership of the project.

Areas of responsibilities:

- Manage demand to ensure alignment with strategic and operational commitments.
- Manage a portfolio of projects to achieve strategic business objectives.
- Manage programmes (interrelated projects) to realise specific benefits, focusing on cost, schedule and performance objectives.
- Manage projects which are necessary to progress projects and support implementation.
- Procure resources to plan and implement projects.
- Manage budgets and cash flows.
- Pay contractors and account for expenditure.
- Comply with legislation including occupational health and safety, environmental legislation, etc.
- Obtain the necessary statutory permissions.
- Communicate with stakeholders.
- Provide client direction to and accept the outputs of the project team.
- Administer the contract with project management professional service providers and specialist consultants involved in the initial stages of a project.
- Oversee the commissioning, fine-tuning and handover of completed infrastructure, including record information, to the end user / custodian.
- Post implementation review, revalidate business case and implementation of lessons learned.
- Etc.

Technical resources (internal and/or external) to:

- Provide advice on, inputs for or manage activities associated with the initiation of projects, the formulation of the client's specific requirements during the initial stages of the project, and matters relating to:
 - o financing
 - o procurement
 - o planning
 - o land assembly
 - o costs
 - o compliance with legislation
 - o the commissioning of studies
 - o acceptability of end-of-stage deliverables
 - o etc.
- Monitor and evaluate outputs of the delivery team.

Project manager:

- Manages the development and implementation of the project.
- Administers professional service contracts on behalf of the client/implementer.

Procurement leader:

- Oversees the development of the procurement documents and manages the procurement process.

Manufacturer / constructor:

- Manufactures or provides new infrastructure or rehabilitates, refurbishes or alters existing infrastructure.

Contract manager:

- Administers a contract or an order on behalf of the employer.

Supervising agent:

- Confirms that the works are proceeding in accordance with the provisions of the contract.

Lead designer:

- Establishes and refines the design approach or solution so that it achieves the required standards and is coordinated within the project team.

Designer:

- Provides design or conditional assessment services.

Cost controller:

- Provides independent and impartial estimation and control of the cost of constructing, rehabilitating and altering infrastructure.

Health and safety agent:

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

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.

Delivery team

Package

Package

Package

Delivery team for a package

Figure 2: Client and delivery teams and their typical respective responsibilities

for the efficient delivery of outcomes;

- requirements are translated into project or programme purpose, delivery principles and roles before the detail;
- value is added through the establishment of relationships and the incorporation of best practice;
- a clear governance structure, founded on the principles of honesty, accountability and integrity, is established and maintained; and
- interface management occurs which aligns all stakeholder organisations so as to maximise the potential of the project or programme to deliver on the required outcomes.

On the other hand, it may be more appropriate to assign or delegate responsibilities for implementation to another organ of state, in which case:

- the *sponsor/owner* initiates, commissions and pays for infrastructure projects; and
- the *implementer* is responsible for the implementation of infrastructure projects.

Such delegation or assignment in terms of the SIPDM needs to be performed through a written agency agreement which:

- establishes principles and requirements relating to the recovery of costs associated with the rendering of the service, claims for payments made on an agency basis including the release of retention sums, the settling of claims for payment and the documentation required to accompany such claims; and
- includes a service delivery agreement which, as relevant, sets out at least the following:
 - overall aims, objectives and priorities
 - governance structures
 - reporting requirements
 - the scope of the services to be performed by the *implementer* during each financial year
 - the projects and packages which are included in the infrastructure plan which are to be delivered, and the time frames for doing so
 - the roles and responsibilities of the parties to the agreement, including requirements for the engagement and management of stakeholders
 - delegations to the *implementer* to accept end-of-stage deliverables on an agency basis
 - contributing resources, including human resources
 - dispute resolution procedures.

Where an organ of state is delegated to function as an *implementer*, agreement needs to be reached as to what precisely is addressed by the *sponsor/owner* and what is addressed by the *implementer* so that collectively all the *client* functions are covered by the two organs of state.

The allocation of roles and responsibilities between the *sponsor/owner* and the *implementer*, and the governance arrangement need to be such that:

- the *sponsor/owner* is able to retain ownership and control over the business case and the *implementer* is able to efficiently deliver infrastructure through the delivery team; and
 - there is little or no duplication of effort.
- If, however, a management contractor is appointed to manage the delivery team on an “engineer, procure and construct basis”, the management contractor replaces the project manager and administers all contracts with professional service providers and constructors as subcontracts. The *client* is, in terms of this contracting strategy, required to only administer the contract with the management contractor. This arrangement reduces the demands on the resources of a client to the extent that it may not be necessary to assign implementing responsibilities to units or divisions.

PROJECT GOVERNANCE

Governance is the system by which the whole organisation is directed and controlled and held accountable to achieve its core purpose over the long term. Management, on the other hand, is the act of bringing people together to accomplish desired goals and objectives, using available resources in an efficient, effective and risk-aware manner. Accordingly, management is about getting the work done, whereas governance is about ensuring that the right purpose is pursued in the right way and that the organisation continuously develops overall.

An effective governance system needs to encompass the principles of accountability, direction and control as indicated in Table 1.

Project governance describes the way in which projects are authorised, conducted and overseen by the *client* and significant interested parties. It:

- comprises those areas of governance that are specifically related to project activities;

- is a mechanism for engaging the *client* institution in a project, for obtaining buy-in of key players and for driving executive decision-making;
- provides a comprehensive, consistent method of controlling the project and ensuring its success; and
- includes the establishment of appropriate and effective delegations of responsibility.

Project governance is the framework within which project decisions are made. Project governance is a critical element of any project since, while the accountabilities and responsibilities associated with an organ of state’s business as usual activities are laid down in their governance arrangements, seldom does an equivalent framework exist to govern the development of its infrastructure projects, unless there is in place a specifically developed project governance policy for project development activity. This is particularly true where responsibilities as *sponsor/owner* and *implementer* sit between two different organs of state.

The role of project governance is to provide a decision-making framework that is logical, robust and repeatable to govern an organ of state’s delivery of infrastructure projects. This provides an organ of state with a structured approach to conducting both its business-as-usual activities and its business-change, or project, activities. There is no one-size-fits-all governance structure for projects. Project governance needs to be appropriate to a particular project and organ of state. A *client board* or *project steering committee* is typically established to fulfil the governance function for projects. Alternatively, *programme boards* or *portfolio boards* may be more appropriate to provide governance for programmes and portfolios of projects, respectively.

Project governance typically involves:

- the *client*, who authorises the project, makes executive decisions and solves problems and conflicts beyond the project manager’s authority;
- the *project steering committee* or *board*, which contributes to the project by providing senior-level guidance to the project; and
- *stakeholders* such as end users and custodians, who contribute to the project by specifying project requirements and accepting the project deliverables.

Projects are usually organised into stages that are determined by

governance and control needs, and follow a logical sequence with a start and an end, divided by decision points. The stages and gates within the delivery management process shown in the SIPDM provide a suitable project life cycle for the delivery of infrastructure and the necessary controls for author-

ising the proceeding with an activity within a process or commencing with the next process.

DELIVERY TEAM SERVICES

The basic services which are provided by the delivery team are outlined in Figure 2. These services can be broken down into

four basic categories:

- project management and cost control;
- design services;
- construction and manufacturing services; and
- health and safety services.

The project management, cost control and design services fall within the scope

Table 1: Principles of accountability, direction and control (after BS 15300)

Area	Principles
Governance accountability	The governing body (individual or group of people ultimately responsible for the long-term direction and control of the institution) needs to: <ul style="list-style-type: none"> ■ Identify, consult with and report to relevant stakeholder. ■ Exhibit leadership. ■ Determine the institution's best long-term interests. ■ Sustain clarity on the institution's purpose and values. ■ Establish an effective governance culture. ■ Establish governance competence and capacity. ■ Recognise and respond appropriately to governance performance. ■ Demonstrate sufficient transparency for accountability.
Implementing governance direction	The governing body needs to: <ul style="list-style-type: none"> ■ Understand and ensure the integrity of founding documentation. ■ Understand the institution's context. ■ Establish and regularly review governance policies. ■ Ensure that governance policies set standards for all aspects of organisational performance. ■ Establish governance role clarity. ■ Uphold good delegation principles. ■ Ensure that the ownership of policies is clear.
Implementing governance control	The governing body needs to: <ul style="list-style-type: none"> ■ Set out and embed governance controls. ■ Ensure governance policies are monitored. ■ Ensure appropriate response to monitoring results.

Table 2: Design services

Service	Principal activities
Architectural design	Plan, design and review the construction, extension or refurbishment of buildings, spaces, structures and associated site works for the use of people, by the creative organisation of materials and components with consideration to mass, space, form, volume, texture, structure, light, shadow, materials and the project brief.
Civil engineering	Plan, design and review the construction of site works comprising a structure such as a road, pipeline or sewerage system, or the results of operations such as earthworks or geotechnical processes.
Electrical engineering	Plan, design and review the installation of the electrical and electronic systems for and in a building or structure.
Fire safety	Plan, design and review the fire protection system to protect people and their environments from the destructive effects of fire and smoke.
Landscape architectural design	Plan, design and review the construction of outdoor and public spaces to achieve environmental, socio-behavioural, or aesthetic outcomes, or any combination thereof.
Mechanical engineering	Plan, design and review the construction, as relevant, of the gas installation, compressed air installations, thermal and environmental control systems, materials handling systems or mechanical equipment for and in a building.
Structural engineering	Plan, design and review the construction of buildings and structures, or any component thereof, to ensure structural safety and structural serviceability performance during their working life in the environment in which they are located when subject to their intended use in terms of one or more of the following: <ul style="list-style-type: none"> ■ external and internal environmental agents; ■ maintenance schedule and specified component design life; or ■ changes in form or properties.
Wet services	Plan, design and review the construction, within buildings or from a point of drainage, installations intended for the reception, conveyance, storage or treatment of sewage, and water installations which convey water for the purpose of fire-fighting or consumption, and roof drainage arrangements within a building.

of the built environment professions. The scope of these services is well understood and is described in documents published by the Council for the Built Environment (CBE), the Engineering Council of South Africa (ECSA), the South African Council for the Architectural Profession (SACAP), the South African Council for the Landscape Architectural Profession (SACLAP), the South African Council for the Project and Construction Management Professions (SACPCMP) and the South African Council for the Quantity Surveying Profession (SACQSP). There are, however, many overlaps between these professions, particularly in the control of costs and the management of projects, and between the engineering disciplines. As a result it is possible for a built environment professional to perform more than one of the functional roles indicated in Figure 2 on a project.

The project management service can, as indicated in Figure 2, be broken down into a number of discrete areas, namely the management of the design (project leader), the management of the procurement processes (procurement leader) and management of the contract (contract management). The design services provided by the architectural and landscape architectural professionals and major discipline-specific engineering professionals are outlined in Table 2. The client team needs to brief, give direction to and accept the outputs of the design team.

The client (any person for whom construction work is being performed), the designer and the contractor are responsible for ensuring compliance with the provisions of the Construction Regulations issued in terms of the Occupational Health and Safety Act of 1993. These regulations permit a client to assign their functional responsibilities to health and safety agents. Health and safety professionals are registered in terms of the Project and Construction Management Professions Act.

NOTE

Further insights and information can be obtained from:

BS 13500:2013. Code of practice for delivering effective governance of organisations. British Standards Institute.

Kershaw, S & Hutchison, D 2009. *Client Best Practice Guide*. Institution of Civil Engineers (UK). ●



Guidance on portfolio, programme and project management

The *Standard for Infrastructure Procurement and Delivery Management (SIPDM)* defines the following two generic terms:

- **Portfolio:** collection of projects or programmes and other work that are grouped together to facilitate effective management of that work to meet a strategic objective.
- **Programme:** the grouping of a set of related projects in order to deliver outcomes and benefits related to strategic objectives which would not have been achieved had the projects been managed independently.

Projects can be linked to programmes and portfolios. It is therefore important to understand how projects are managed within an infrastructure context at a project, programme and portfolio level, and what the linkages are between these different types of management.

INTRODUCTION

Organisations generally establish strategy based on their mission, vision, policies and factors outside the organisational boundary. Organisational strategy identifies opportunities which are then evaluated and documented. Selected opportunities are further developed in a business case or other similar document, and can result in one or more projects that provide deliverables which are used to realise benefits, as illustrated in Figure 1.

Projects are often the means to accomplish strategic goals. SANS 21500 (Guidance on Project Management) suggests that a project “consists of a unique set of processes consisting of coordinated and controlled activities with start and end dates, performed to achieve project objectives. Achievement of the project objectives requires the provision of deliverables conforming to specific requirements”.

Projects may be organised within:

- programmes – the grouping of a set of related projects in order to deliver outcomes and benefits related to strategic objectives which would not have been

achieved had the projects been managed independently; and

- portfolios – the collection of projects or programmes and other work that are grouped together to facilitate effective management of that work to meet a strategic objective.

The contribution of projects, programmes and portfolios to organisational goals are highlighted in Table 1 and Figure 2.

PORTFOLIO MANAGEMENT

Generic principles

Although there are many similarities between portfolio and programme management, there are significant differences. Programme management relates to the coordinated management of a set of related projects where projects are typically mutually dependent on one another, and are all required to create the required capability and project benefits. On the other hand, portfolio management is generally applied to unrelated projects.

Portfolio management refers to the centralised management of one or more

portfolios, which includes identifying, prioritising, authorising, directing and controlling projects, programmes and other related work, to achieve specific strategic goals. Portfolio managers help translate an organisation's strategy into a portfolio of project benefits and results, which are delivered by programme and project managers and their teams. Portfolio managers accordingly work in a synergic way with programme and project managers to realise strategic goals through projects.

Portfolio managers are responsible for monitoring and managing assigned portfolios by (PMI 2013):

- establishing and guiding the selection, prioritisation, balancing and termination processes for components to ensure alignment with organisational strategy;
- providing key stakeholders with timely assessment of portfolio and component performance;
- assisting decision-makers with the review, reprioritisation and optimisation of the portfolio;
- ensuring timely and consistent communication to stakeholders on progress,

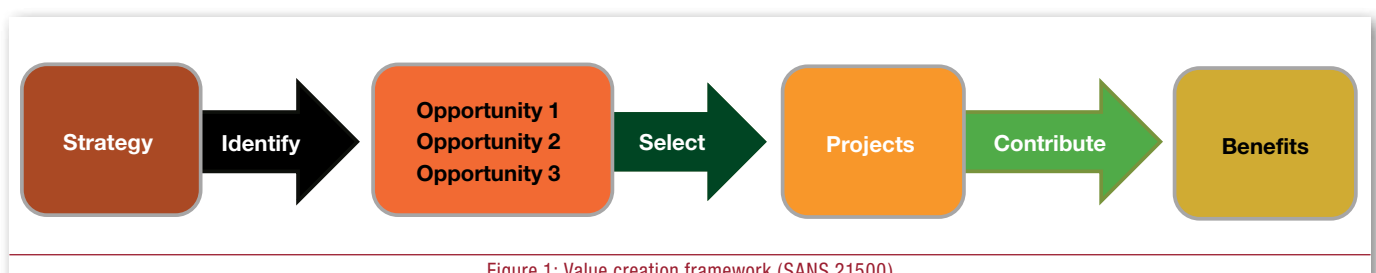


Figure 1: Value creation framework (SANS 21500)

impacts and changes associated with management of the portfolio; and

- participating in programme and project reviews to reflect senior level support, leadership and involvement in important matters.

Application in an infrastructure delivery context

Portfolio management, in an infrastructure context, is the combination of management practices applied to various aspects of infrastructure with the objective of developing, implementing, monitoring and controlling works based on long-term plans and available budgets. It includes the identification and managing of non-asset solutions to provide the required environment for the delivery of an organ of state’s services.

Portfolio management needs to be linked to and aligned with an organ of state’s strategic plan to provide its mandated services. It needs to link an organ of state’s strategic service delivery plan with the infrastructure that it will require to deliver those services in an efficient, effective and reliable manner. Portfolio management plays a major role within Stage 1 (infrastructure planning) and Stage 2 (strategic resourcing) of the control framework included in the National Treasury SIPDM. It is nevertheless a continuous management function throughout the project life cycle that produces plans, reports and management actions linked to asset registers, budget allocations, service delivery mandates, performance management, infrastructure strategy, long-term asset priorities, legislation and policies, asset management plans, infrastructure plans, feedback from the implementation of projects, risk mitigation, etc.

PROGRAMME MANAGEMENT

Generic principles

Programmes are the means by which strategy is delivered through a number of projects which are typically reliant on one another in order to achieve a single overall larger objective or vision. Programmes typically have three stages:

- An initiation phase during which the necessary governance arrangements are established, key members of the programme management team are appointed, programme-wide processes are established, programme assurance and audit arrangements are agreed, training needs are agreed, programme management offices which offer strategic

support are established, programme support and resources are established, financial and reporting arrangements are established, special management techniques are identified, programme plans are prepared, etc.

- An execution phase during which component projects are defined and initiated by the programme team and delegated to individual project teams, project plans and schedules are coordinated, risks, issues, stakeholders and communications are managed, progress is reported, programme plans are reviewed and updated, and progress reviews are undertaken.
- A closure phase when all projects have been completed and the new capabilities have been handed over to and accepted, all necessary records are in place and lessons learned and other valuable knowledge have been captured.

Programme management refers to the centralised and coordinated management of a programme to achieve the programme’s strategic goals and benefits. Programme management as such straddles

the interface between those responsible for deciding strategy and those responsible for managing the component projects and activities. Accordingly, programme management responsibilities typically include:

- interpreting organisational strategy in a manner which creates practical programmes of improvement and change;
 - selecting, initiating and monitoring projects which make up a programme, including the definition of the scope of individual projects;
 - coordinating between component projects in order to maximise the value of the combined deliverables of the constituent projects into fully usable capabilities that may be used to deliver the desired benefits;
 - cancelling projects or changing the scope of projects in response to changes to the organisational strategy and environment; and
 - identifying, supporting, measuring and monitoring the delivery of benefits.
- Project management is focused on the delivery of specific outputs, whereas

Type of management	Contributions to organisational goals
Project	Develops and implements plans to achieve a specific scope that is driven by the objectives of its programme and, ultimately, organisational strategy. It is largely concerned with achieving specific deliverables that support specific organisational objectives.
Programme	Harmonises its project and programme components, and manages their interdependencies in order to realise specified benefits. It focuses on achieving the cost, schedule and performance objectives of the projects within the programme or portfolio.
Portfolio	Aligns with organisational strategies by selecting the right programmes or projects, prioritising the work, and providing the needed resources. It balances conflicting demands between programmes and projects, allocates resources based on organisational priorities and capacity, and manages so as to achieve the benefits identified.

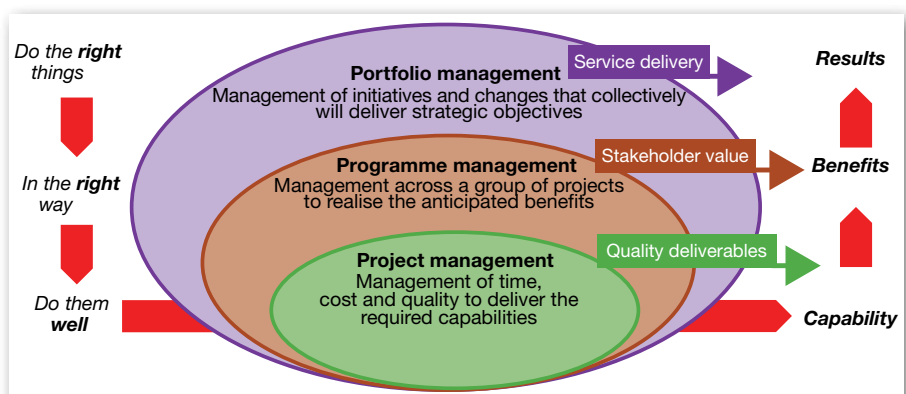


Figure 2: Contributions of the different types of management to strategic goals

programme management is focused on outcomes. The key differences between these types of management are outlined in Table 2.

Application in an infrastructure programme context

Programme management involving infrastructure projects is more complex than project management, design management or construction management, as it straddles all three these types of management across multiple projects on a single site or several sites. The programme manager, as the client's single point of contact, integrates the activities of all participants in the delivery process to ensure the overall success of the programme, which typically revolve around limited staff resources, tight schedules and strict budgets, and in the public sector the three-year medium term expenditure framework. Each infrastructure project within a programme has its own restraints of time, cost and resources which must be seen in terms of its effect on other projects and resources. Programme management accordingly differs from project management in that it aims to develop growing synergy in respect of time, cost and performance across a number of projects, as illustrated in Figure 3.

Programme management combines the ability and resources to define, plan,

implement and integrate every aspect of a comprehensive programme of multiple projects from concept to completion, using a team whose sole focus is to achieve the client's design and build requirements according to pre-set performance indices, milestones, specifications and budget. The main role of a programme manager – often referred to as a programme director, programme leader or projects director – is to oversee multiple project managers who are executing various aspects of works. Such a person functions at a higher level of authority than a project manager and, apart from overseeing project managers simultaneously, also supervises the procurement process, technical aspects of the programme (such as quality, planning, scheduling, reporting, communication, updating and cost control), manages a range of stakeholders and resolves issues amongst delivery team participants and those raised by stakeholders.

Programme management in an infrastructure context:

- is performed either by the client or on behalf of the client;
- is applied to many projects simultaneously within a defined budget and schedule and stated or implied performance requirements; and
- combines the ability and resources to define, plan, implement and integrate

every aspect of multiple infrastructure projects from conception to completion with the sole focus of achieving the client's requirements according to key performance indices, milestones, specifications, schedule and budget.

Programme management in infrastructure projects accordingly focuses on:

- scope management, which sets the boundaries for the projects to meet a client's programme goals for space, function, features, impacts and level of quality;
- cost management, which measures and analyses costs at each stage of the project life cycle, establishes control budgets for projects, monitors programme expenditure against control budgets, manages programme contingencies and manages programme annual expenditure against an annual budget;
- schedule management, which establishes a time line for delivering projects within a programme against programme objectives and performance requirements, tracks progress and takes corrective action where necessary to avoid the missing of deadlines for key project components within a programme.

Programme managers also need to inform procurement tactics that are adopted, plan the commissioning of the works so that

Table 2: Key differences between programmes and projects (APM 2007)

Aspect	Programmes	Projects
Clarity of scope	Programmes involve uncertainty in funding, impact and range.	Projects require clearly defined scope, budget and time frames.
Clarity of deliverables	Specific deliverables to be created are usually unclear at the start.	The required deliverables are usually clearly defined at the start.
Structure	Separately managed projects, which must be coordinated. This structure may be unclear at the start and may change throughout the life of the programme.	Projects form a single managed entity, which is clear at the start and will not usually change significantly during the life of a project.
Methodologies or approaches	Frequently involves coordinating and managing several different organisations, each of which is responsible for one or more discrete projects, and each of which may be used with a different methodology or project approach.	A single project is normally the responsibility of a single organisation, working to a single methodology or project approach.
Clarity of budgets and time scales	At the start, the time and budget required will often be unclear, and part of the role of the programme will be to define these.	Projects start with a project initiation document, project management plan, business case or equivalent that defines expected costs and time scales.
Approach to change	Because the scope and deliverables are unclear, change to priorities and requirements is constant and a major feature of the programmes.	Changes to scope or desired deliverables are generally unwelcome and subject to rigorous control.
Critical activities	A major element is managing people and organisational issues necessary to ensure that the new capabilities will be used to deliver the desired benefits.	The major element is managing the technology or specialist skills necessary to create the deliverables.
Measure of success	The creation of useable capability and/or the delivery of business benefits.	The creation of the specified deliverables within agreed time and cost constraints.

benefits are realised in accordance with schedule requirements, manage statutory compliances and manage risks across the programme. They need to track projects and to report to the portfolio manager and governance structure at regular intervals on progress against defined milestones, financial progress (expenditure against budget and cash flow projection), physical progress once a project is in the works stage, developmental impact, problems encountered and the actions proposed to solve the problems, and information required which has an impact on the projects, etc. They also need to monitor progress made in respect of each project within the life cycle of projects and track planned versus actual completion, and quickly formulate corrective action to resolve delays and get back on programme.

Infrastructure spending by various organs of state is often characterised by poor expenditure patterns resulting in either under or over-expenditure in a financial year. For example, very little expenditure occurs in the first three quarters of the financial year, followed by a sudden flurry of expenditure in the fourth quarter. This results in what has become known as the “fourth quarter expenditure spike”. Associated with this trend is either under-spending which results in rollovers, or over-spending, which results in organs of state running out of money before the financial year has been completed, or rushed expenditure on goods and services that may not be in accordance with long-term infrastructure management plans. Stages for infrastructure projects may straddle across a number of years in the

medium-term expenditure framework, as illustrated in Figure 4. One of the key functions of a programme manager is to plan infrastructure projects in such a manner that such spikes and under- or over-expenditure are eliminated.

The SIPDM requires that:

- budget submissions for approval to advance a project or package relating to the delivery or planned maintenance of infrastructure in a financial year be broken down into the stages in the control framework for the planning, design and execution of infrastructure projects which have been completed; and
- implementation plans relating to new infrastructure or the rehabilitation, refurbishment or alteration of existing infrastructure be developed for each project or package which is to be delivered in a financial year.

The SIPDM requires that the implementation plan should not only be aligned with the accepted delivery and procurement strategy developed during Stage 2 of the control framework, but should also:

- identify the objectives of each project or programme of projects;
- identify the scope, budget and schedule for each project or package;
- outline the procurement strategy in respect of each project or package;
- provide a time management plan for each project, i.e. the baseline against which progress towards the attainment of milestone (key deliverables) target dates can be measured;
- provide the projected budget and cash flows which will enable planned and actual expenditure to be compared and revisions to the budget to be approved, and multiple project budgets to be managed;
- document the key success factors and the key performance indicators which need to be measured, monitored and evaluated;
- contain a procurement plan which indicates the time line for advertising and closing of tenders, and the obtaining of gate approvals leading up to the award of the contract or the issuing of an order;
- identify the major risks and how such risks are to be mitigated or managed;
- indicate how quality requirements and expectations are to be met and managed;
- outline the controls and measures which will address health, safety, socio-economic or environmental risks;
- provide a communication plan which determines the lines of communication

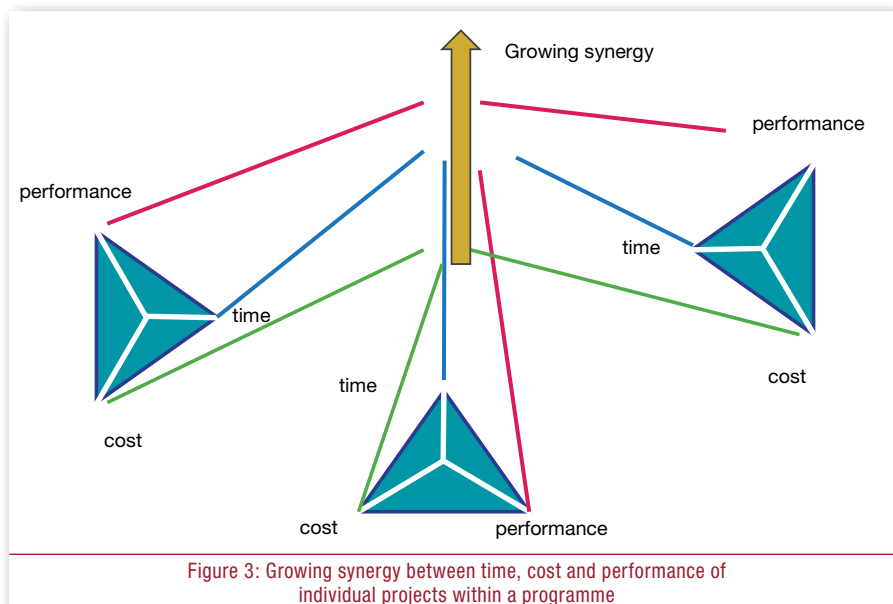


Figure 3: Growing synergy between time, cost and performance of individual projects within a programme

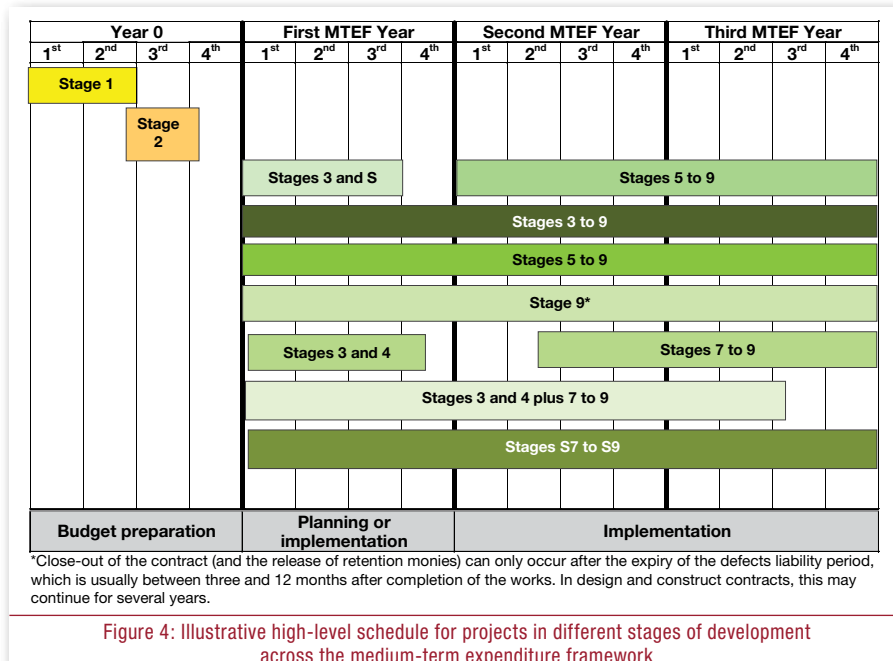


Figure 4: Illustrative high-level schedule for projects in different stages of development across the medium-term expenditure framework

Table 3: Project management process groups (SANS 21500)

Process group	Description
Initiating	Used to start a project phase or project, to define the project phase or project objectives and to authorise the project manager to proceed with the project work.
Planning	Used to develop planning detail sufficient to establish baselines against which project implementation can be managed and project performance can be measured and controlled.
Implementation	Used to perform the project management activities and to support the provision of the project's deliverables in accordance with the project plans.
Controlling	Used to monitor, measure and control project performance against the project plan. Consequently, preventive and corrective actions may be taken and change requests made, when necessary, in order to achieve project objectives.
Closing	Used to formally establish that the project phase or project is finished, and to provide lessons learned to be considered and implemented as necessary.

Table 4: Project management subject groups (SANS 21500)

Subject group	Description
Integration	Includes the processes required to identify, define, combine, unify, coordinate, control and close the various activities and processes related to the project.
Stakeholder	Includes the processes required to identify and manage the project sponsor, customers and other stakeholders.
Scope	Includes the processes required to identify and define the work and deliverables, and only the work and deliverables required.
Resource	Includes the processes required to identify and acquire adequate project resources such as people, facilities, equipment, materials, infrastructure and tools.
Time	Includes the processes required to schedule the project activities and to monitor progress to control the schedule.
Cost	Includes the processes required to develop the budget and to monitor progress to control costs.
Risk	Includes the processes required to identify and manage threats and opportunities.
Quality	Includes the processes required to plan and establish quality assurance and control.
Procurement	Includes the processes required to plan and acquire products, services or results, and to manage supplier relationships.
Communication	Includes the processes required to plan, manage and distribute information relevant to the project.

Table 5: Generic mapping of key actions within subject and group project management processes

Subject group	Process group				
	Initiating	Planning	Implementation	Controlling	Closing
Integration	Develop project charter	Develop project plans	Direct project work	Control	Close project phase or project Collect lessons learned
Stakeholder	Identify stakeholders		Manage stakeholders		
Scope		Define scope Create work breakdown structure Define activities		Control scope	
Resource	Establish project team	Estimate resources Define project organisation	Develop project team	Control resources Manage project team	
Time		Sequence activities Estimate activity durations Develop schedule		Control schedule	
Cost		Estimate costs Develop budget		Cost control	
Risk		Identify risks Assess risks	Treat risks	Control risks	
Quality		Plan quality	Perform quality assurance	Perform quality control	
Procurement		Plan procurement	Select suppliers	Administer procurement	
Communication		Plan communications	Distribute information	Manage communications	

and the key activities associated therewith; and

- indicate the assigned internal and external resources with implementation responsibilities.

The SIPDM furthermore requires that certain financial data needs to be gathered to enable a financial report to be generated at regular intervals. It also requires reporting on a number of key performance indicators.

PROJECT MANAGEMENT

Generic principles

SANS 21500 describes project management as “the application of methods, tools, techniques and competencies to a project” which can be applied to a project as a whole or to an individual phase, or to both. Project management differs from other management disciplines by the temporary and unique nature of projects. Managing a project typically includes:

- identifying requirements;
- addressing the various needs;
- balancing competing project constraints, including:
 - scope (the work that must be performed to deliver a product, service, or result, with the specified features and functions)
 - quality (the degree to which inherent characteristics meet requirements)
 - schedule (the planned dates for performing schedule activities and the planned dates for meeting milestones)
 - budget (the approved estimate for a project)
 - resources (skilled human resources, equipment, services, supplies, commodities, materials, budgets or funds)
 - risk (an uncertain event or condition which, if it occurs, has a positive or negative effect on the project objectives).

Project management is performed through processes. The generic project management processes may be viewed from two different perspectives, namely as process groups (see Table 3) or subject groups (see Table 4). Table 5 provides a generic mapping of the key actions associated with these two groups of processes. The purpose of the key actions of the subject groups and process groups are outlined in SANS 21500.

Application in an infrastructure project context

The generic project management processes need to be made context-specific

and integrated with delivery and support processes which are unique to infrastructure projects, and with the project cycle as defined by the stages and gates within the control framework for planning, design and execution of infrastructure projects provided in the *National Treasury Standard for Infrastructure Procurement and Delivery Management (SIPDM)*.

Acceptance of the end-of-stage deliverable in this control framework provides the necessary authorisation to apply resources to the next stage in the project life cycle and provides an opportunity to identify those responsible for taking the project forward during the subsequent stage.

Infrastructure projects are usually packaged during Stage 2 (strategic resourcing) of the control framework, i.e. the works are grouped together for delivery under a single contract or a package order. Accordingly the information at any point in time, following the identification of a package, is contained in one or more of the following documents:

- the brief which is progressively developed from time to time;
- the design documentation, including specifications, data schedules and drawings;
- the schedule which identifies key dates and time periods for the performance of the works and services associated with the package, and
- the cost plan.

The SIPDM defines a control budget as the “the amount of money which is allocated or made available to deliver or maintain infrastructure associated with a project or package, including site costs, professional fees, all service and planning charges, applicable taxes, risk allowances and provision for price adjustment for inflation”. This control budget needs to be established in the strategic brief during Stage 3 (preparation and briefing) and is confirmed at the conclusion of Stage 4 (concept and viability), and reconfirmed at the conclusion of the Stage 5 (design development). A conscious decision is required to revise the control budget at each of these stages, as costs need to be proactively managed through these instruments. Control budgets change the delivery culture from “pay for what is designed” to “deliver infrastructure within an agreed budget”.

Project management services associated with the delivery of works can be assigned to different persons as follows:

- project leader who 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;
- procurement leader who oversees the development of the procurement documents and manages the procurement process; and
- contract manager who administers a contract or an order on behalf of the employer.

The SIPDM furthermore requires that contract managers gather and report on certain data on a regular basis and maintain risk registers.

NOTE

Further insights and information can be obtained from:

Barnes, P T, Haidar, A D & Wells, P D 2015.

Programme Management in Construction.

Thomas Telford.

CIDB 2011. *Delivery Management Guidelines*

Practice – Delivery Process 1 – Portfolio

Management. Construction Industry

Development Board and National Treasury.

CIDB 2011. *Delivery Management Guidelines*

Practice – Delivery Process 2 – Project

Management. Construction Industry

Development Board and National Treasury.

Project Management Institute. Portfolio Management Professionals (PfMP) Credential

FAQs. Available at:

www.pmi.org/certification/~media/pdf/certifications/pfmp_faqs_v3.ashx

Project Management Institute 2013. *A Guide*

to the Project Management Body of

Knowledge (PMBOK Guide), Fifth Edition,

Project Management Institute.

Project Management Institute 2013. *The*

Standard for Program Management, Third

Edition, Project Management Institute.

Project Management Institute 2013. *Standard for*

Portfolio Management, Third Edition, Project

Management Institute.

Raynier, P 2007. *APM Introduction to*

Programme Management. Association of

Project Managers.

SANS 21500:2014 ISO 21500:2012. *Guidance*

on project management. South African

Bureau of Standards. ●

Promoting social and economic objectives through procurement

The Standard for Infrastructure Procurement and Delivery Management (SIPDM) establishes developmental or secondary procurement policy relating to Broad-Based Black Economic Empowerment (B-BBEE), and where appropriate, work opportunities for target groups and national development goals. The SIPDM furthermore establishes targeted procurement procedures that may be used to promote social and economic objectives, as well as those for specifying minimum local content. It is important to understand the context within which developmental procurement policies are implemented and how targeted procurement procedures are applied.

LEGISLATION GOVERNING THE USE OF PROCUREMENT AS AN INSTRUMENT OF POLICY

Public procurement, because of its nature and size, can have a significant impact on social and economic development. Procurement has been used internationally for several decades to, amongst other things, stimulate regional and national economic activity, protect local industries, develop competitive local suppliers, develop supply chains, address regional, gender and racial inequities and disparities, create jobs particularly for local labour, create short-term work opportunities for unskilled and semi-skilled workers, employ the youth and people with disabilities, and improve working conditions.

The Constitution of the Republic of South Africa of 1996 (Act 108 of 1996) requires that the public procurement system be “fair, equitable, transparent, competitive and cost-effective”. The Constitution, however, establishes a procurement policy providing for “categories of preference in the allocation of contracts” and “the protection or advancement of persons, or categories of persons, disadvantaged by unfair discrimination”, provided that such a policy is implemented in accordance with a framework provided for in national legislation. The Preferential Procurement Policy Framework Act of 2000 (Act No 5 of 2000) gives effect to these Constitutional provisions by providing a framework for the implementation of the procurement policy.

The Preferential Procurement Policy Framework Act requires organs of state to determine their preferential procurement policy and to implement it within a framework. The framework provided by the Act requires that a preference point system must be followed, namely:

- for contracts with a Rand value above a prescribed amount, a maximum of 10 points may be allocated for specific goals, provided that the lowest acceptable tender scores 90 points for price;
- for contracts with a Rand value equal to or below a prescribed amount, a maximum of 20 points may be allocated for specific goals provided that the lowest acceptable tender scores 80 points for price;
- any other acceptable tenders which are higher in price must score fewer points on a pro rata basis, calculated on their tender prices in relation to the lowest acceptable tender in accordance with a prescribed formula; and
- the contract must be awarded to the tenderer who scores the highest points unless objective criteria in addition to that pertaining to specific goals justify the award to another tenderer.

The framework states that specific goals may include contracting with persons, or categories of persons, historically

disadvantaged by unfair discrimination on the basis of race, gender or disability, and implementing the programme of the Reconstruction and Development Programme as published in Government Gazette No 16085 dated 23 November 1994. Regulations have been issued in terms of the Preferential Procurement Policy Framework Act to implement the Act. The 2011 Preferential Regulations include regulations relating to local (as opposed to imported) production and content whereby a minimum local content can be specified and applied.

The Broad-Based Black Economic Empowerment Act of 2003 (Act 53 of 2003) requires that organs of state and all public entities take into account and, as far as is reasonably possible, apply any relevant code of good practice issued in terms of this Act in developing and implementing a preferential procurement policy. This Act accordingly expands the framework provided in the Preferential Procurement Policy Framework Act to take into account and to apply codes of good practice.

The Promotion of Equality and the Prevention of Unfair Discrimination Act of 2000 (Act 4 of 2000) expressly prohibits the state and all persons (natural and juristic) from discriminating unfairly against any person on the grounds of race or gender through the denial of access to contractual opportunities for rendering services, or by failing to take steps to reasonably accommodate the needs of such persons. A schedule attached to the Act provides an illustrative list of unfair practices in certain sectors. This list cites “unfairly limiting access to contractual opportunities for supplying goods and services” as an unfair practice.

Figure 1 illustrates the manner in which these pieces of legislation relate to one another.

NATIONAL PLANNING CONCERNS

The application of the 90–10 points system provided for in the Preferential

Procurement Policy Framework Act of 2000 can lead to the state paying a price premium of up to 11.1% on an individual transaction. On the 80–20 points system the price premium can be as high as 25%. This maximum price premium is only payable when a tenderer who has the lowest price claims no preference, and the tenderer who claims the maximum preference obtains the same number of points and is awarded the contract. The average price premium is usually significantly lower than this, as most tenderers would qualify for a preference.

The National Planning Commission in the *National Development Plan 2030: Our*

future – make it work points out that “the state’s ability to purchase what it needs on time at the right quality and for the right price is central to its ability to deliver on its priorities”. The Commission also recognises that “public-sector procurement expenditure also needs to be used to drive national priorities such as localisation and economic transformation”.

This report does acknowledge that economic rent is paid through the procurement system to reduce racial patterns of ownership of wealth and income, i.e. there is a difference between the selling price and the costs to provide the goods or services due to distortions in com-

petition to achieve these objectives. The Commission does, however, caution that efforts to “stimulate local procurement should not reinforce higher costs for the public sector and business because this will undermine growth and job creation”. It furthermore suggests in the context of using procurement to drive national priorities that “procurement systems tend to focus on procedural compliance rather than value for money, and place an excessive burden on weak support functions”.

There is accordingly a fine balance between leveraging objectives through the procurement process and specifying deliverables. The preferences offered can, within acceptable limits of economic rents, leverage objectives. The specifying of deliverables associated with a secondary or developmental objective, even if preferences are offered to leverage beyond minimum performance, can lead to higher prices being paid. It is therefore essential that the specifying of a deliverable or the formulation of eligibility criteria (criteria which a tenderer needs to satisfy in order for their submission to be evaluated) be set as far as possible on a cost-neutral basis.

KEY PERFORMANCE INDICATORS

A key performance indicator (KPI) is a quantifiable performance measurement of an individual, group or organisation against strategic or operational objectives. KPIs are commonly used to evaluate success in projects, to understand progress being made towards objectives, or as a tool to manage, control and achieve desired outcomes. A well formulated KPI translates complex metrics into a simple indicator.

ISO DIS 19208 defines an indicator as “a quantitative or qualitative measure of impacts” and an impact as “any change that may be beneficial or adverse”. This draft international standard requires that “indicators be objective, verifiable and reproducible and, wherever possible, linked to predetermined benchmarks, reference levels or scales of value which are within levels acceptable to the user and meet the expectations of the community and society”. It also suggests that an indicator be accompanied by an explanation that describes how to assign the value of the indicator.

KPIs in the context of contracts invariably relate to targets. For example, a key performance indicator is defined in the NEC3 Engineering and Construction Contract as “an aspect of performance for which a target is set”. This allows

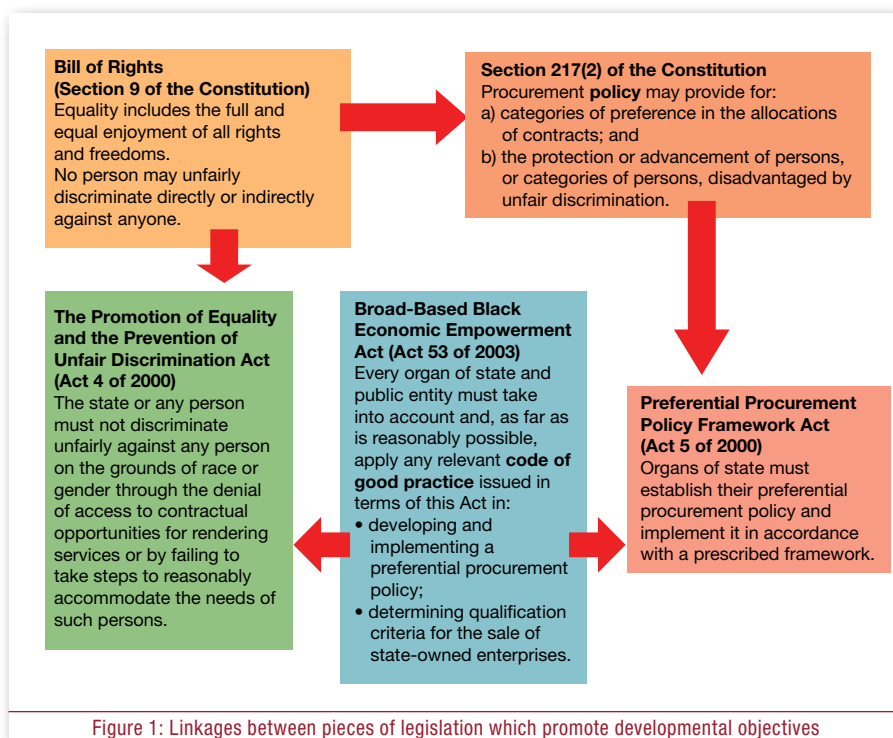


Figure 1: Linkages between pieces of legislation which promote developmental objectives

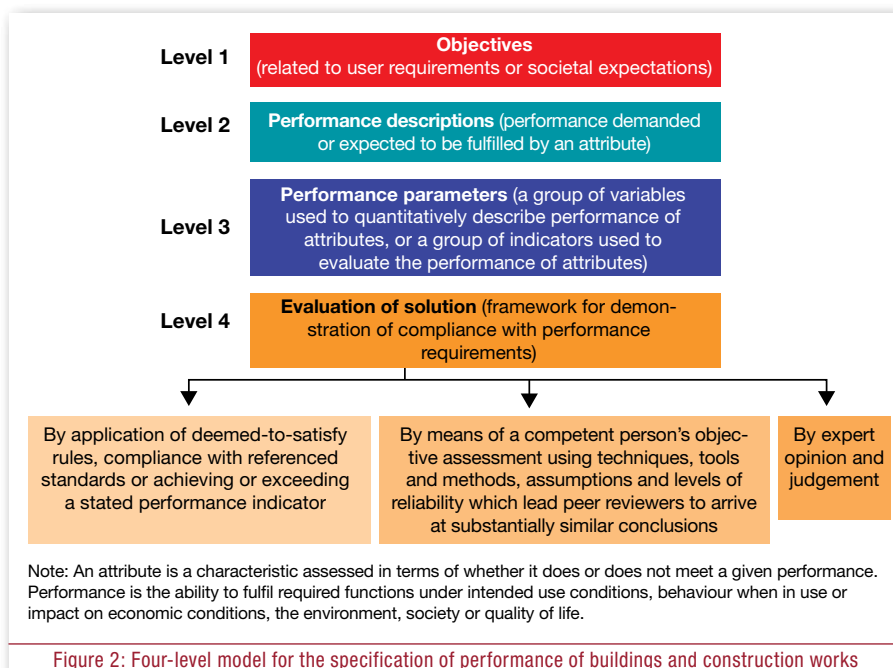


Figure 2: Four-level model for the specification of performance of buildings and construction works

payment in terms of this contract to be made in accordance with an incentive schedule “if the target stated for a key performance indicator is improved upon or achieved”. SANS 10845-1, when discussing targeted procurement procedures, links KPIs to contract-specific goals for which a quantifiable target can be established in a contract. This enables preferences to be applied in the evaluation of tenders, financial incentives to be paid to encourage beyond-minimum levels of performance and sanctions including penalties (low performance damages) to be applied should a contractual KPI not be achieved in the performance of the contract.

KPIs associated with a contract need to be linked to clear objectives or goals (desired results) and to be formulated in such a manner that they are contractually enforceable. They need as such to be described in qualitative terms, and to be linked to measureable and quantifiable targets and a means of verifying and auditing claims regarding performance in relation to a target. Figure 2 provides a four-level model for specifying performance of buildings and construction works as a whole or as a part, to satisfy specified user requirements and societal expectations, based on the provisions of ISO DIS 19208. A performance parameter in terms of this model may be regarded as a KPI.

Figure 2 provides a suitable framework within which performance related to developmental objectives can be specified and solutions tested for compliance with requirements. Table 1 illustrates the structure of a performance standard relating to the participation of target groups in contract as provided for in some of the parts of ISO 10845. The objective (Level 1) of Parts 4, 6, 7 and 8 of ISO 10845 focuses on different aspects of the participation of target groups in a contract. Clause 3 of each of these standards establishes qualitative (Level 2) and quantitative (Level 3) requirements in relation to the objective (Level 1), and how credits towards the contract participation goal can be obtained. The remainder of the clauses establish the means for verifying and auditing the attainment of the contract participation goals (key performance indicators).

The approach to leveraging objectives through the codes of good practice issued in terms of the Broad-Based Black Economic Empowerment Act of 2003 can also be viewed in terms of the framework

for the specifying of performance contained in Figure 2. This is illustrated in Table 2. The B-BBEE status level of a contributor is a performance parameter or KPI. This KPI is used to award preferences, i.e. the percentage preferences of the maximum points granted for Levels 1 to 8 contributors are 100, 90, 80, 50, 40, 30, 20 and 10%, respectively. Non-compliant contributors are assigned zero preference points.

The 2011 Preferential Procurement Regulations, issued in terms of the Preferential Procurement Policy Framework Act of 2000, establish requirements for local production and content, i.e. local goods, services or works. The requirements for local content can also be viewed in terms of the framework for the specifying of performance contained in Figure 2. This is illustrated in Table 3. Local content is a performance parameter or KPI. This KPI forms part of the eligibility criteria which needs to be satisfied in order for a tender to be evaluated, and upon the award of the contract becomes a contractual requirement.

TARGETED PROCUREMENT PROCEDURES

SANS 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”. This standard also defines a secondary procurement policy as “procurement policy that promotes objectives additional to those associated with the immediate objective of the procurement itself”. SANS 10845-1 provides guidance on the implementation of targeted procurement procedures. It also provides guidance regarding the definition of target groups. Targeted procurement procedures can be used to promote objectives other than those relating to employment and business opportunities, e.g. training and work place experiential learning opportunities. Such procedures can be linked to the implementation of any well formulated KPI.

The SIPDM permits the use of the targeted procurement procedures outlined in Table 4 to promote social and economic goals (desired results). This standard does, however, require that a minimum of 50% of the points allocated to preferences in a points-scoring system in the evaluation of tenders need to be allocated to B-BBEE goals.

KPIs need to be well formulated and documented to enable targeted procurement procedures to be understood by tenderers, and to be implemented by contractors and those responsible for administering a contract. Returnable schedules need to be developed to enable the tenderer to communicate his understanding of requirements or to verify his claims for achieving or exceeding a KPI. The scope of work in the contract needs to capture requirements where KPIs need to be achieved or improved upon during the performance of a contract.

Care needs to be taken to promote social and economic goals on, as far as possible, a cost-neutral basis to minimise economic rents being paid. The consequences of not attaining KPIs in the performance of the contract need to be considered. Low-performance damages may be required in the contract to discourage substandard performance.

In framework agreements a contractor’s performance in attaining social and economic goals may be a justifiable reason for issuing further orders.

NOTE

Further insights and information can be obtained from:

Construction Industry Development Board
2013. Standard for Developing Skills through Infrastructure Contracts. Board Notice 180 of 2013. *Government Gazette* No 36760 of 8 August 2013.

Construction Industry Development Board
2013. Standard for Indirect Targeting for Enterprise Development through Construction Works Contracts. Board Notice 21 of 2013. *Government Gazette* No 36190 of 25 February 2013.

ISO/DIS 19208:2014. Framework for specifying performance in buildings. International Organisation for Standardisation.

SANS 10845-1:2015 ISO 10845-1:2010.
Construction procurement – Part 1: Processes, methods and procedures. South African Bureau of Standards.

SANS 10845-5:2015 ISO 10845-5:2011.
Construction procurement – Part 5: Participation of targeted enterprises in contracts. South African Bureau of Standards.

SANS 10845-6:2015 ISO 10845-6:2011.
Construction procurement – Part 6: Participation of targeted partners in joint ventures in contracts. South African Bureau of Standards.

SANS 10845-7:2015 ISO 10845-7:2011.
Construction procurement – Part 7:

Table 1: Performance framework for the engagement of target groups in contracts				
Performance framework	Subject matter of standard			
	Participation of targeted enterprises in contracts	Participation of targeted partners in joint ventures in contracts	Participation of local enterprises and labour in contracts	Participation of targeted labour in contracts
Level 1: Objective	Provide business opportunities to specified targeted enterprises.	Provide joint venture partner opportunities to specified target groups.	Provide business and employment opportunities to local enterprises and targeted labour.	Provide employment opportunities to specified targeted labour.
Level 2: Performance descriptions	Engage targeted enterprises directly or indirectly in the performance of the contract.	Enter into a joint venture agreement at a main contract level with one or more targeted partners to perform the contract.	Engage targeted labour and targeted enterprises directly in the performance of the contract.	Engage targeted labour directly in the performance of the contract.
Level 3: Performance parameters	The contract participation goal (value of goods, services and works for which the contractor contracts targeted enterprises expressed as a percentage of the contract amount) is not less than . . . %.	The contract participation goal (sum of the participation parameters in respect of each targeted partner multiplied by the contract amount of the contract, expressed as a percentage of the contract amount) is not less than . . . %.	The contract participation goal (amount equal to the sum of the wages and allowances for which the contractor contracts to engage targeted labour and the value of goods, services and works for which the contractor contracts targeted enterprises, expressed as a percentage of the contract amount) is not less than . . . %.	The contract participation goal (sum of the wages and allowances expressed as a percentage of the contract amount) is not less than . . . %.
Level 4: Evaluation of solution	Apply the relevant provisions of SANS 10845-5.	Apply the relevant provisions of SANS 10845-6.	Apply the relevant provisions of SANS 10845-7.	Apply the relevant provisions of SANS 10845-8.

Table 2: The specification of performance of B-BBEE contributors in terms of the ISO DIS 19208 framework		
Performance framework	Subject matter of codes	
Objective	Advance economic transformation and enhance the economic participation of black people in the South African economy.	
Performance description	Structure and manage the entity to meet a number of targets and conditions relating to the advancement of the objective, which may include ownership, management control, skills development, enterprise and supplier development, and socio-economic development commensurate with the turnover of the entity.	
Performance parameter	B-BBEE status level of a contributor as measured in terms of prescribed criteria (Exempted Micro Enterprise) or a score in terms of a balanced scorecard which measured performance against a number of targets and sub-targets as indicated below.	
	B-BBEE status level of contributor	Overall performance of a measured entity in terms of the generic score card
	Level 1 contributor	≥ 100
	Level 2 contributor	≥ 95 but < 100
	Level 3 contributor	≥ 90 but < 95
	Level 4 contributor	≥ 80 but < 90
	Level 5 contributor	≥ 75 but < 80
	Level 6 contributor	≥ 70 but < 75
	Level 7 contributor	≥ 55 but < 70
	Level 8 contributor	≥ 40 but < 55
Non-compliant contributor	< 40	
Evaluation of solution	Measurement against relevant criteria and compliance targets stated in a balanced scorecard contained in the relevant gazetted code of good practice issued in terms of the Broad-Based Black Economic Empowerment Act of 2003. Sufficient evidence of compliance: <ul style="list-style-type: none"> ■ Exempted micro enterprise: a sworn affidavit on an annual basis, confirming the annual total revenue of R10 million or less and the level of Black ownership. ■ Qualifying small enterprise: a sworn affidavit on an annual basis, confirming the annual total revenue of R50 million or less and the level of Black ownership. ■ Other: a valid original or certified copy of the certificate issued by a verification agency accredited by the South African National Accreditation System (SANAS) or registered auditors approved by the Independent Regulatory Board for Auditors (IRBA). 	

Participation of local enterprises and labour in contracts. South African Bureau of Standards.
 SANS 10845-8:2015 ISO 10845-8:2011. Construction procurement – Part 8: Participation of targeted labour in contracts. South African Bureau of Standards.
 SATS 2011. Local goods, services and works – measurement and verification of local content.

Technical Specification. South African Bureau of Standards.
 Watermeyer, R B 2000. The use of Targeted Procurement as an instrument of Poverty Alleviation and Job Creation in Infrastructure Projects. *Public Procurement Law Review*, No 5, pp 201–266.
 Watermeyer, R B 2004. Facilitating Sustainable Development through Public and Donor

Regimes: Tools and Techniques. *Public Procurement Law Review*, No 1, pp 30–55.
 Watermeyer, R B 2006. Poverty reduction responses to the Millennium Development Goals. *The Structural Engineer*, 84(9): 27–34. ●

Table 3: The specification of requirements for local production and content in terms of the ISO DIS 19208 framework

Performance framework	Subject matter
Objective	Support economic growth and the creation of jobs within South Africa.
Performance description	Provide goods, services or work with local production and content.
Performance parameter	The local content (the portion of the tender price which is not included in the imported content, provided that local manufacture does take place) is not less than . . . %.
Evaluation of solution	Measured and declared in terms of SATS 1286, local goods, services and works – measurement of the verification of local content, published by the South African Bureau of Standards.

Table 4: Targeted procurement procedures

Targeted procurement procedure	Description of procedure
Granting of preferences	Tender evaluation points for contract-specific goals can be granted using one of the following methods: a) award a fixed number of points for attaining a specific KPI; b) award a variable number of points in proportion to the degree to which a tenderer responds to a particular KPI (i.e. in proportion to the quantum of the KPI offered); c) award points on a comparative basis in terms of which the best offer received scores the maximum number of allotted points, the worst offer scores no points, and remaining offers are scored between these limits. Claims for preferences where tenderers are not eligible for such preferences are rejected. Financial offers are reduced to a common base and scored out of 90 or 80 depending upon the financial value of the procurement. Preference points are added to points for financial offers and the contract. The tenderer with the highest number of tender evaluation points (financial offer and preference) is recommended for the award of the contract, unless there are compelling and justifiable reasons, including other objective criteria, not to do so.
Accelerated rotations on electronic databases	Target groups are identified and accelerated at a faster rate than non-target groups on electronic databases linked to the nominated procurement procedure. The formulation for accelerating work opportunities for target groups needs to be such that non-targeted groups obtain a reasonable opportunity to tender for work, and the rate of rotation for target groups decreases as the number of such enterprises grows, so that a point is reached whereby the accelerated rotation serves no further purpose.
Granting of up to 10% of the total number of evaluation points used to short-list tenderers following a call for expressions of interest	Where a points-scoring system is used to shortlist respondents following a call for expressions of interest in the qualified procedure, up to 10% of the points may be linked to the attainment of KPIs linked to the promotion of social and economic objectives.
Financial incentives for the attainment of key performance indicators in the performance of the contract	Payment is linked to the improvement upon or attainment of a KPI in the execution of a contract.
The creation of contractual obligations to engage target groups in the performance of the contract by establishing requirements for the tendering of subcontracts in terms of a specified procedure, or establishing obligations to attain contract participation goals in accordance with the relevant provisions of SANS 10845	Contractors can be required, as a contractual obligation, to subcontract a percentage of the work to targeted enterprises, or contract goods or services from targeted enterprises. They may also be required to enter into joint ventures with targeted enterprises or engage targeted labour in the performance of a contract. This can most readily be achieved by requiring contractors to achieve a minimum contract-participation goal in accordance with the requirements of ISO 10845-5, ISO 10845-6, ISO 10845-7 or ISO 10845-8. Alternatively, contractors may be required to subcontract specific portions of a contract to targeted enterprises. Requirements for subcontracting work, including subcontracting procedures, if any, should be established in the scope of work. Main contractors may be free to negotiate the prices and terms for subcontracting, or be required to invite competitive tenders from amongst targeted enterprises in terms of a specified procedure and specific forms of subcontract.

Procurement strategy

The *Standard for Infrastructure Procurement and Delivery Management* introduces a stage in the delivery management control framework for strategic resourcing. This stage requires that a procurement strategy be developed. This standard defines a procurement strategy as the “selected packaging, contracting, pricing and targeting strategy and procurement procedure for a particular procurement”. Users of the standard need to understand what precisely a procurement strategy is.

INTRODUCTION

Strategy in the delivery and maintenance of infrastructure may be considered as the skilful planning and managing of the delivery process. It involves a carefully devised plan of action which needs to be implemented. The *Standard for Infrastructure Procurement and Delivery Management* (SIPDM) includes a Stage 2 (strategic resourcing) which requires that a delivery and/or procurement strategy be developed for a portfolio of projects which identifies the delivery strategy in respect of each project or package and, where needs are met through own procurement, a procurement strategy. This standard requires that:

a) The delivery management strategy:

- be developed following the conducting of a spend, organisational and market analysis;
- indicates how needs are to be met for each category of spend through one or more of the following:

- a public-private partnership
- another organ of state on an agency basis
- another organ of state’s framework agreement
- own resources
- own procurement system.

b) The procurement strategy:

- be based on a spend, organisational and market analysis;
- documents the selected packaging, contracting, pricing and targeting strategy and procurement procedure for all required goods or services or any combination thereof, including professional services; and
- includes the rationale for adopting a particular option.

A procurement strategy only needs to be developed where the delivery management strategy selects the “own procurement system” option.

SANS 10845-1 defines procurement strategy as “the selected packaging, con-

tracting, pricing and targeting strategy, and procurement procedure for a particular procurement” (see Figure 1).

Strategy is all about taking appropriate decisions in relation to available options and prevailing circumstances in order to achieve optimal outcomes.

PRIMARY AND SECONDARY OBJECTIVES

Procurement objectives are required in the formulation of a construction procurement strategy. They inform the choices that are made when selecting an option from the available menu of options. Procurement objectives relate to the delivery of the product (primary objectives), and what can be promoted through the delivery of the product (secondary or developmental objectives).

Primary objectives relating to the delivery and maintenance of infrastructure accordingly include:

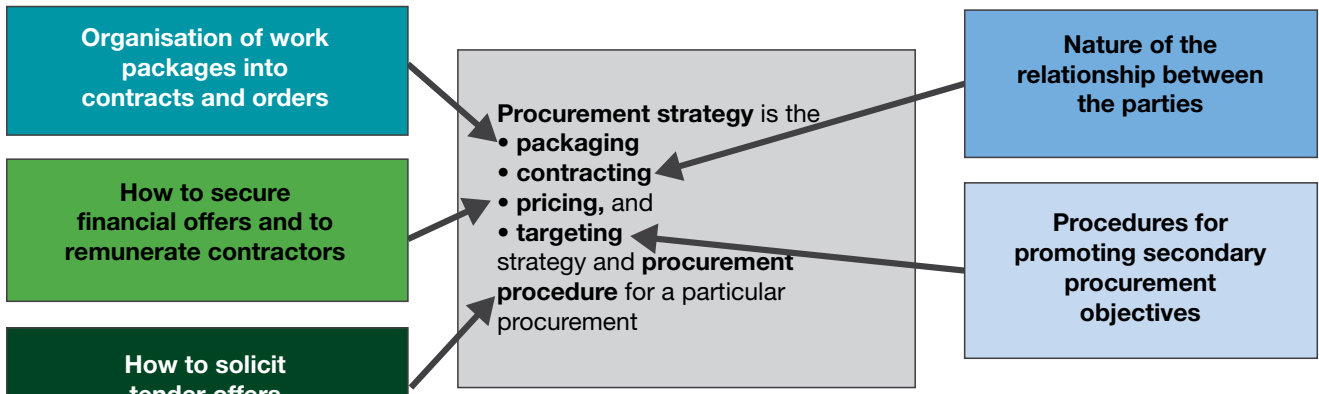
- tangible objectives, including budget (cost of the works), schedule (time for completion), quality and performance characteristics required from the completed works and rate of delivery (how quickly portions of the works or a series of projects can be delivered or funds can be expended);
- intangible 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 and 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, minimising the transmission of HIV-AIDS, reduction of environmental impacts, improvement in health and safety performance, etc.

Secondary or developmental procurement objectives are additional to those associated with the immediate



Note: Procurement strategy is all about the choices made in determining how best to achieve objectives.

Figure 1: Components of a procurement strategy

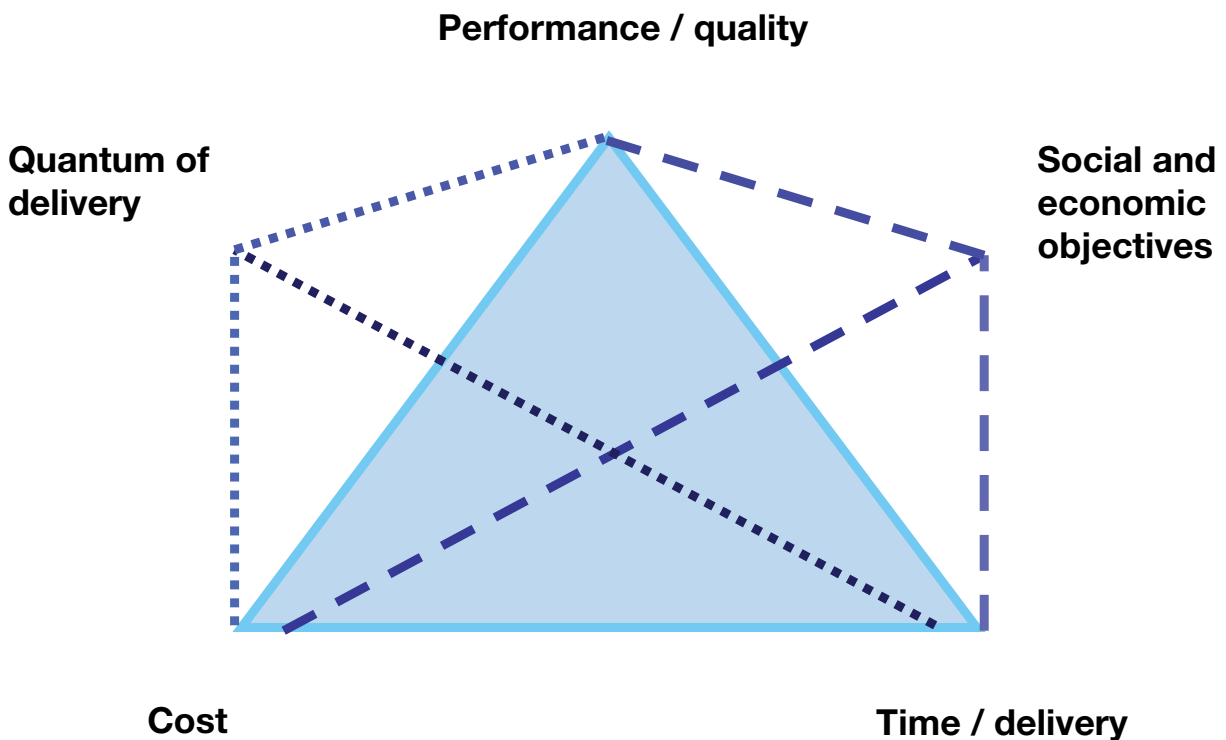


Figure 2: Competing procurement objectives

objective of the procurement itself. Secondary procurement policy objectives influence procurement strategies both directly and indirectly. Competing objectives (see Figure 2) need to be balanced when formulating a strategy.

PACKAGING STRATEGY

A packaging strategy is, according to SANS 10845-1, the “organisation of work packages into contracts”.

Work packages can be linked either to contracts or to a series of orders issued in terms of a framework agreement over a term. The number of packages within a portfolio of projects establishes the number of contractual relationships which an employer and his management team have to manage and administer. It also establishes the number of procurement transactions which need to be processed. The packaging strategy determines the quantum of resources that an employer has to have at his disposal to procure infrastructure or services relating to the maintenance thereof. The packaging strategy has accordingly a major impact on an organisation’s capacity to deliver and maintain infrastructure against a budget, particularly a multi-year budget.

There are a number of factors that need to be considered when packaging works. These include interdependencies between projects and programmes, whether or not framework agreements will be put in place, levels of competition amongst contractors, organisational and managerial complexities, the spatial location of projects, the scale and nature of the work, economy of scale, the manner in which interfaces between packages are to be managed and controlled, project risk, risk allocations, programming (scheduling) requirements, attractiveness to markets, matching contractor skills and capabilities, commissioning requirements, deployment of administrative resources, scope of service and secondary (developmental) procurement policy objectives.

CONTRACTING STRATEGY

A contracting strategy according to SANS 10845-1 is “the strategy that governs the nature of the relationship which the employer wishes to foster with the contractor, which in turn determines the risks and responsibili-

ties between the parties to the contract and the methodology by which the contractor is to be paid”. A contracting strategy determines not only the risk allocations between the parties to a contract, but also the project management demands, the design strategy and the nature and number of professional service agreements that are entered into (see Table 1).

PRICING STRATEGY

A pricing strategy, according to SANS 10845-1, is the “strategy which is adopted to secure financial offers and to remunerate contractors in terms of the contract”. There are two types of pricing strategies – price-based and cost-based. The range of commonly encountered options are indicated in Table 2.

TARGETING STRATEGY

SANS 10845-1 defines a targeted procurement procedure as “the process used to create a demand for the services or goods of, or to secure the participation of, targeted enterprises and targeted labour in contracts in response to the objectives of a secondary procurement policy”. There are a number of targeted procurement procedures which can be used to promote secondary procurement objectives, as indicated in Table 3.

PROCUREMENT PROCEDURE

A procurement procedure is, according to SANS 10845-1, the “selected procedure for a specific procurement”. The *Standard for Infrastructure Procurement and Delivery Management* permits the use of the procedures described in Table 4.

DEVELOPING A PROCUREMENT STRATEGY

A 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. Choices are informed by project objectives, namely the reason for undertaking the project, as well as broader societal objectives. Project objectives need to be translated into procurement objectives.

The activities identified in Table 5 should be undertaken to produce a

delivery and procurement strategy at a portfolio level for implementing projects in an infrastructure plan over at least a three-year period.

The framework as set out in Figure 3 enables choices to be made and aligned with project objectives in the development of a procurement strategy to be systematically developed and documented. The application of the framework can rationalise the delivery of projects within a programme or portfolio of projects, and minimise the contractual relationships which are entered into. This can be utilised to address public sector capacity constraints in spending budgets, as it can be used to reduce the number of contracts that need to be procured and managed, and taps into the resources of the private sector without compromising objectives. The application of the framework can also be used to improve upon secondary procurement outcomes.

>> Please turn over for Tables 1–5 and Figure 3.

NOTE

Further insights and information can be obtained from:

- BS 8534:2011. *Construction procurement policies, strategies and procedures – Code of Practice*. British Standards Institute.
- CIDB 2011. *Delivery Management Guidelines Practice Guide 2 – Construction Procurement Strategy*. Construction Industry Development Board and National Treasury.
- SANS 10845-1:2015 ISO 10845-1:2010. *Construction procurement – Part 1: Processes, methods and procedures*. South African Bureau of Standards.
- Watermeyer, R B 2010. Alternative models for infrastructure delivery. *IMIESA*, 68, October.
- Watermeyer, R B 2012. A framework for developing construction procurement strategy. *Proceedings of the Institution of Civil Engineers, Management, Procurement and Law*, Volume 165, Issue 4, pp 223–237 (15).
- Watermeyer, R B 2012. Selecting a suitable NEC3 form of contract. *Civil Engineering*, 20(1): 14–18.
- Watermeyer, R B 2014. Realising value for money through procurement strategy in the delivery of public infrastructure. 8th CIDB Post-Graduate Conference, University of the Witwatersrand, Johannesburg, February.

>> Please turn over for Tables 1–5 and Figure 3.

Table 1: Contracting strategy options

Contracting strategy	Description
Design by employer	Contract under which a contractor undertakes only construction on the basis of full designs issued by the employer. (Design is a separate function to construction and is managed by the client or his agent.)
Develop and construct	Contract based on a scheme design prepared by the client under which a contractor finalises the production information and constructs it. (The final design details are integrated with construction and are managed by the contractor.)
Design and construct	Contract in which a contractor designs the works based on a brief provided by the client and constructs it. (Design is integrated with construction and is managed by the contractor.)
Construction management	Contract under which a third party (professional service provider) provides consultation during the design stage and is responsible for planning and managing all post-contract activities for a group of contractors appointed by the employer.
Management contractor	Contract under which a contractor is responsible for planning and managing all post-contract activities, including, if required, any design of the works or portion thereof, and for the performance of the whole of the contract.

Table 2: Pricing strategy options

Pricing strategy	Description
Price-based	
Lump sum	Contract in which a contractor is paid a lump sum to perform the works. (Interim payments which reflect the progress made towards the completion of the works may be made.)
Bill of quantities	Contract in which a bill of quantities lists the items of work and the estimated / measured quantities and rates associated with each item to allow contractors to be paid, at regular intervals, an amount equal to the agreed rate for the work multiplied by the quantity of work actually completed. (A bill of quantities is prepared in accordance with a standard system of measurement.)
Price list / price schedule	Contract in which a contractor is paid the price for each lump sum item in the Price List / Schedule that has been completed and, where a quantity is stated in the Price List / Schedule, an amount calculated by multiplying the quantity which the contractor has completed by the rate.
Activity schedule	Contract in which the contractor breaks the scope of work down into activities which are linked to a programme, method statements and resources, and prices each activity as a lump sum, which he is paid on completion of the activity. The total of the activity prices is the lump sum price for the contract work.
Cost-based	
Cost reimbursable	Contract in which the contractor is paid for his actual expenditure plus a percentage or fee.
Target cost	Cost reimbursable contract in which a target price is estimated and, on completion of the works, the difference between the target price and the actual cost is apportioned between the employer and contractor on an agreed basis.

Table 3: Targeting strategy options

Method	Description
Evaluation points	Give a weighting to social and economic policy objectives along with the usual commercial criteria, such as quality, which are scored at the short-listing stage or the admission to a database.
	Give a weighting to social and economic policy objectives along with price and where relevant, quality, during the evaluation of tenders.
Incentives for KPIs	Incentive payments are made to contractors should they achieve a specified target (key performance indicator) associated with a social or economic goal in the performance of a contract.
Mandatory subcontracting	Require contractors to invite competitive tenders from targeted enterprises for specified portions of the works in terms of a specified procedure and specific forms of subcontract. Upon the award of the contract, the subcontractor becomes a domestic subcontractor.
Contractual obligations	Make policy objectives a contractual condition, e.g. <ul style="list-style-type: none"> ■ a fixed percentage of the work is required to be subcontracted out to enterprises that have prescribed characteristics, or a joint venture shall be entered into; and ■ parts of the works are to be executed using employment-intensive methods.

Table 4: Procurement procedure options

Procedure		Description
1	Negotiation procedure	A tender offer is solicited from a single tenderer.
2	Competitive selection procedure	Any procurement procedure in which the contract is normally awarded to the contractor who submits the lowest financial offer or obtains the highest number of tender evaluation points.
	A	Nominated procedure Tenderers that satisfy prescribed criteria are entered into an electronic database. Tenderers are invited to submit tender offers based on search criteria and, if relevant, their position on the database. Tenderers are repositioned on the database upon appointment or upon submission of a tender offer.
	B	Open procedure Tenderers may submit tender offers in response to an advertisement by the employer to do so.
	C	Qualified procedure A call for expressions of interest is advertised, and thereafter only those tenderers who have expressed interest, who satisfy objective criteria and who are selected to submit tender offers, are invited to do so.
	D	Quotation procedure Tender offers are solicited from no less than three tenderers in any manner the employer chooses, subject to the procedures being fair, equitable, transparent, competitive and cost-effective.
	E	Proposal procedure using the two-envelope system Tenderers submit technical and financial proposals in two envelopes. The financial proposal is only opened should the technical proposal be found to attain the minimum threshold score.
	F	Proposal procedure using the two-stage system Non-financial proposals are called for. Tender offers are then invited from those tenderers who submit acceptable proposals based on revised procurement documents. Alternatively, a contract is negotiated with the tenderer scoring the highest number of evaluation points.
	G	Shopping procedure Written or verbal offers are solicited in respect of readily available goods obtained from three sources. The goods are purchased from the source providing the lowest financial offer once it is confirmed in writing.
	H	Confined market procedure Tenders are invited from a very limited number of contractors who are able to provide goods, services or works which are not freely available in the market, or which are provided solely for the employer in accordance with unique requirements.
3	Competitive negotiation procedure	A procurement procedure which reduces the number of tenderers competing for the contract through a series of negotiations until the remaining tenderers are invited to submit final offers.
	A	Restricted competitive negotiations A call for expressions of interest is advertised and thereafter only those tenderers who have expressed interest, who satisfy objective criteria and who are selected to submit tender offers, are invited to do so. The employer evaluates the offers and determines who may enter into competitive negotiations.
	B	Open competitive negotiations Tenderers may submit tender offers in response to an advertisement by the employer to do so. The employer evaluates the offers and determines who may enter into competitive negotiations.

Table 5: Activities, sub-activities, steps and outputs associated with the development of a delivery and procurement strategy

Sub-activity		Step		Output
#	Description	#	Description	
1 Develop a delivery management strategy	1.1 Gather and analyse information	1	Conduct a spend analysis	Spatially located work items in the infrastructure plan grouped into categories of spend with common attributes
		2	Conduct an organisational analysis	Descriptions of client organisational characteristics
		3	Conduct a market analysis	Descriptions of market characteristics
	1.2 Formulate procurement objectives	1	Formulate primary procurement objectives	Identified primary procurement objectives
		2	Formulate secondary (developmental) procurement objectives	Documented and prioritised secondary (developmental) procurement objectives
	1.3 Make strategic delivery management decisions	-	Decide on how needs are to be met	A delivery strategy which indicates how each of the categories of spend or portions thereof are to be delivered
	1.4 Package works	1	Identify opportunities for framework agreements	Categories of spend, or portions thereof, to be implemented through own framework agreements
		2	Identify packages	A package plan for construction, supply and maintenance projects, or a combination thereof, which states the mode of delivery for, and identifies each package
2 Decide on contracting arrangements	2.1 Allocate risks for packages	1	Decide service requirements and/or contracting strategy	Service requirements and risk allocations for each package, i.e. allocation of responsibilities, pricing strategy and standard form of contract
		2	Decide on pricing strategy	
		3	Decide on form of contract	
	2.2 Establish requirements for outsourced professional services	-	Identify services areas that are required	Identified professional services which need to be procured
	2.3 Package professional service contracts	1	Decide on contracting strategy	Requirements for outsourced professional services categorised as single discipline or multidisciplinary
		2	Decide on the type of contract	Requirements for outsourced professional services linked to a specific package or a programme or a number of undefined packages or programmes
	2.4 Allocate risks for professional service contracts	1	Decide on pricing strategy	Identified pricing strategy for required professional services
		2	Decide on form of contract	Identified standard form of contract for a professional service contract
3 Decide on procurement arrangements	Decide on procurement procedure	-	-	A suitable procurement procedure
	Decide on targeted procurement strategy	-	-	Suitable targeted procurement procedures
4 Document the identified procurement strategy	-	-	-	A documented procurement strategy that documents the logic behind the choices that are made at each step
5 Accept procurement strategy	-	-	-	An accepted procurement strategy

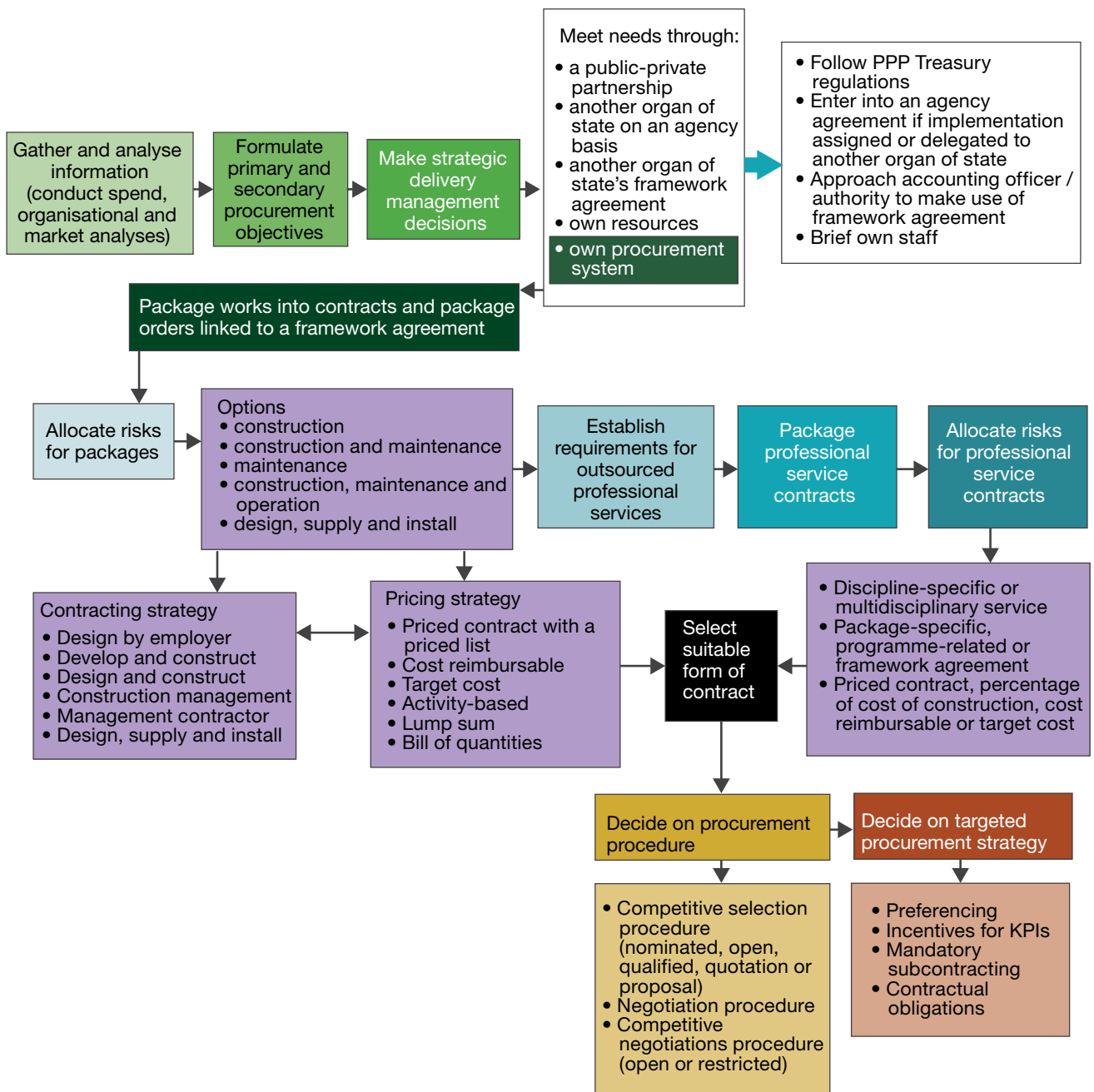


Figure 3: Framework for developing a procurement strategy



Framework agreements

The *Standard for Infrastructure Procurement and Delivery Management* includes provisions for framework agreements. Framework agreements have similarities with term service and transversal contracts, but are different in several important aspects. Internationally framework agreements have different meanings. It is therefore important to understand what precisely a framework agreement is and how it is to be implemented in terms of the National Treasury *Standard for Infrastructure Procurement and Delivery Management*.

INTRODUCTION

A framework agreement is defined in the *Standard for Infrastructure Procurement and Delivery Management* (SIPDM) as “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”. Framework agreements enable an employer to procure engineering and construction works, goods and services on an instructed basis (call-off) over a term without any commitment to the quantum of work instructed in the absence of a fully developed scope of work (see Figure 1). This may be achieved by issuing a package (engineering and construction contract), batch (supply contract) or task order (service contract) in terms of a framework contract during the term of the contract, i.e. an instruction to provide works, to supply items of goods in a batch, or work within a service within a stated period of time.

Price in the context of a framework agreement may be considered to be a 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. Accordingly, framework contracts contain prices for work to be executed over a term or cost parameters which enable

prices to be determined once the scope of work has been determined. They may also contain a combination of prices and cost parameters.

Framework agreements reduce the employer’s need to re-advertise and approach the market for goods, services or works falling within the scope of the agreement over the term of the agreement and the number of relationships to be managed. They also provide employers with programming flexibility to manage expenditure relating to the delivery and maintenance of infrastructure over time, and enable collaborative relationships to develop in order to deliver better value and project outcomes, particularly those relating to contractor development, community participation and skills development. They also provide an opportunity

for contractors to improve their internal management systems, to develop their supply chains and improve their Broad-Based Black Economic Empowerment status during the term of the contract through continuity of work over a longer term than is the case in non-framework contracts.

Framework agreements enable lessons learned in one package or task order to be taken to the next, and enable a team to work together on an integrated approach over a period of time. The promotion of secondary (developmental) procurement objectives in this contracting arrangement is also very flexible and, unlike most other delivery models, allows the employer to change the deliverables associated with such a policy over time in response to emerging needs and changing circum-

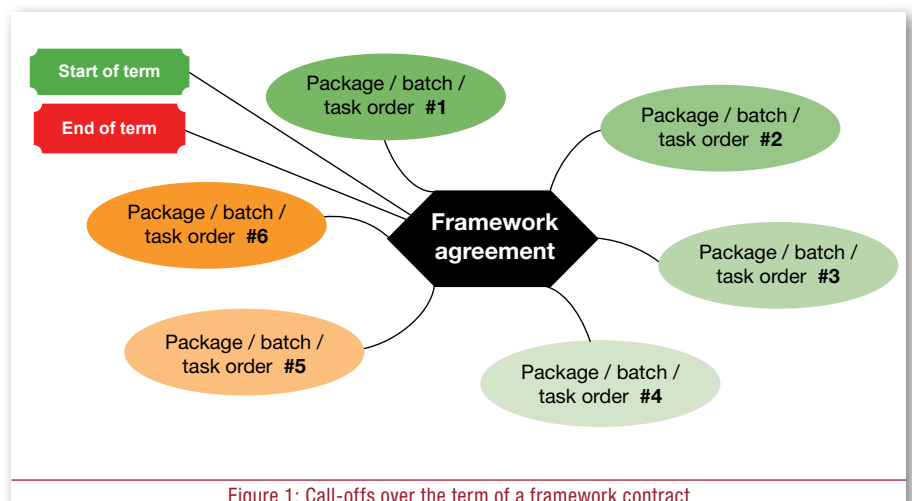


Figure 1: Call-offs over the term of a framework contract

stances. This enables meaningful development of local enterprises and labour to take place over the term of the contract.

It is also possible, with careful planning, for one organisation to make use of another organisation's framework agreement to satisfy their needs. This can be used to overcome public sector capacity constraints through the establishment of regional framework agreements.

FUNDAMENTAL PRINCIPLES

Framework agreements are only entered into with contractors (including suppliers and service providers) who have the resources and the capability to carry out work that is likely to be instructed. They may be entered into with contractors for a term not exceeding three years in the case of all organs of state other than public entities listed in Schedules 2 (major public entities), 3B (National Government Enterprise) and 3D (Provincial Government Enterprise) of the Public Finance Management Act who are permitted to enter into a term not exceeding four years. Suitable framework contracts are entered into with a single or a limited number of contractors, based on the projected demand and geographic location for goods, services or works.

Framework contracts need to contain terms which establish:

- the rights and obligations of the contracting parties, and the agreed procedures for the administration of the contract and the issuing of orders;
- the term of the agreement during which an order may be issued;
- the scope of work which may be included in an order to enable decisions

to be made as to what is covered in the agreement and what needs to be procured outside of the agreement;

- the basis by which contractors will be remunerated for work performed in terms of an order, if and when such an order is issued; and
- where a framework contract is entered into with more than one contractor, the manner in which competition amongst framework contractors for a package order is to be conducted.

Framework agreements that are entered into may not commit an organ of state to any quantum of work beyond the first batch, task or package order. Furthermore, such agreements may not bind an organ of state to make use of such agreements to meet needs. The market needs to be approached for goods, services and works whenever better value in terms of time, cost and quality may be obtained.

Batch, task or package orders:

- may only cover goods, services and work falling within the scope of work associated with the agreement which may not be amended for the duration of the contract;
- may not be issued after the expiry of the term of the framework agreement (see Figure 2); and
- may be completed even if completion of the order is after the expiry of the term (see Figure 2).

Contractors may not proceed with work associated with a batch, task or work package until such time that an order has been issued in terms of the contract.

Call-offs from framework agreements (issuing of batch, task or package orders) with a number of framework contractors

covering the same scope of work may be made with and without requiring competition. Where competition takes place amongst framework contractors, it needs to be conducted in a non-discriminatory manner such that competition is not distorted.

Competition amongst framework contractors for call-offs needs to take place where:

- there is no justifiable reason for issuing a batch, task or package order to a particular framework contractor;
- the terms in the framework agreement are insufficiently precise or complete to cover the particular requirement, e.g. delivery time scales or time estimates to complete the batch, task or package order (productivity); and
- a better quality of service can be obtained through a competitive process.

Justifiable reasons for issuing a batch, task or package order to a particular framework contractor include:

- the framework contractor provided the most economical transaction when the financial parameters included in the contract are applied and has the capacity to deliver;
- the required goods, services or construction works cannot technically or economically be separated from another contract or batch, task or package order previously performed by a specific contractor;
- the service or construction works being instructed are largely identical to work previously executed by that contractor;
- the value of the batch, task or package order is less than the threshold for the quotation procedure;

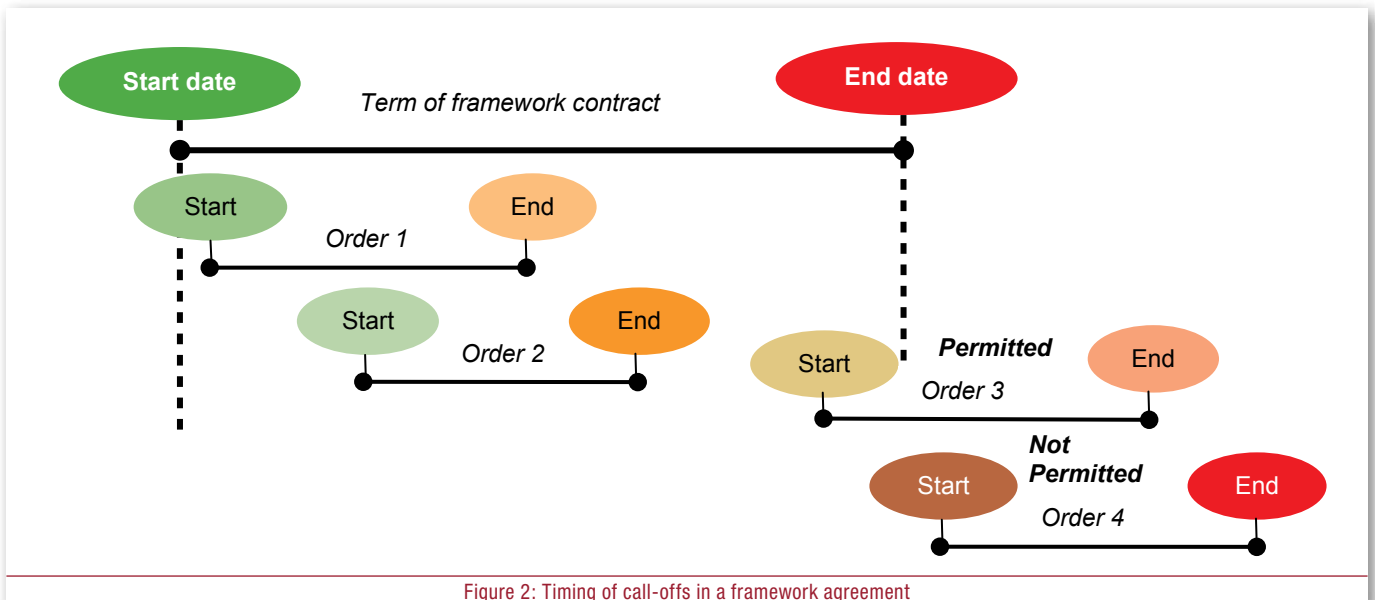


Figure 2: Timing of call-offs in a framework agreement



- the schedule for delivery necessitates that each of the framework contractors be issued with batch, task or package orders on a continuous basis; and
- capacity to execute the batch, task or package order.

The opening of competition amongst framework contractors is only necessary when no justifiable reasons for not doing so cannot be found.

PUTTING A FRAMEWORK CONTRACT IN PLACE

Framework agreements may be entered into with contractors for a term by:

- inviting tender offers to enter into a suitable contract for the term, 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 services; and
- entering into a limited number of contracts based on the projected demand and geographic location for such services.

The process for putting in place a framework agreement is the same as that for any other contract, i.e. it follows the normal construction procurement procedures. The principal difference between a framework and a non-framework contract is that the contract at the time of the award has no price attached. An assumption is made that the 90:10 preference points scoring system applies. Tendered financial parameters, which may include the price for a first order and the financial parameters which are to be applied over the term, are reduced to a common base for comparative purposes.

When putting tender documents together, care needs to be taken to ensure that tenders can be compared on a comparative basis. The tendering of rates in the absence of quantities, for example, does not allow tenders to be competitively compared. Procurement tactics need to be carefully considered if value for money is to be obtained over the term of the contract.

A call for expression of interest is usually required to establish the CIDB contractor grading designation requirements, as no price is tendered for the framework contract. The CIDB contractor grading designation should be based on the anticipated annual value the work will execute through the framework contract in accordance



with the provisions of the Construction Industry Development Regulations.

A key consideration in entering into a framework agreement is to decide on how contractors are to be paid for broadly-defined work which is usually not sufficiently scoped to enable it to be priced at the time when the agreement is

entered into. This requires the use of price lists with a transparent methodology to determine the price of items that are not included in the price list at the time of tender or cost-based pricing strategies. It should be noted that the FIDIC, JBCC and SAICE forms of contract for works do not make provision for cost-based

pricing strategies and do not provide a transparent means for determining the price of items that are not included in the price list at the time of tender. The NEC3 family of contracts addresses both these requirements and more.

The NEC3 family of contracts facilitates the implementation of sound project

Table 1: Procurement activities, key actions, responsibilities and gates associated with the issuing of orders

Activity*	
1 FG1	Confirm justifiable reasons for selecting a framework contractor where there is more than one framework agreement covering the same scope of work.
2	Prepare procurement documents.
3 FG2	Obtain approval for procurement documents.
4 FG3	Confirm that budgets are in place.
5	Quotations amongst framework contractors not invited: Issue draft order documentation, consult with contractor and prepare evaluation report. Quotations amongst framework contractors invited: Invite quotations from all framework contractors participating in the agreement, receive and evaluate submissions and prepare evaluation report.
6 FG4	Authorise the issuing of the order.
7	Log order onto management system.
8	Issue order to contractor.
9	Notify issuing of order to oversight person.
10	Administer orders in accordance with contract and confirm compliance with requirements.

*Shaded cells indicate the presence of a framework gate

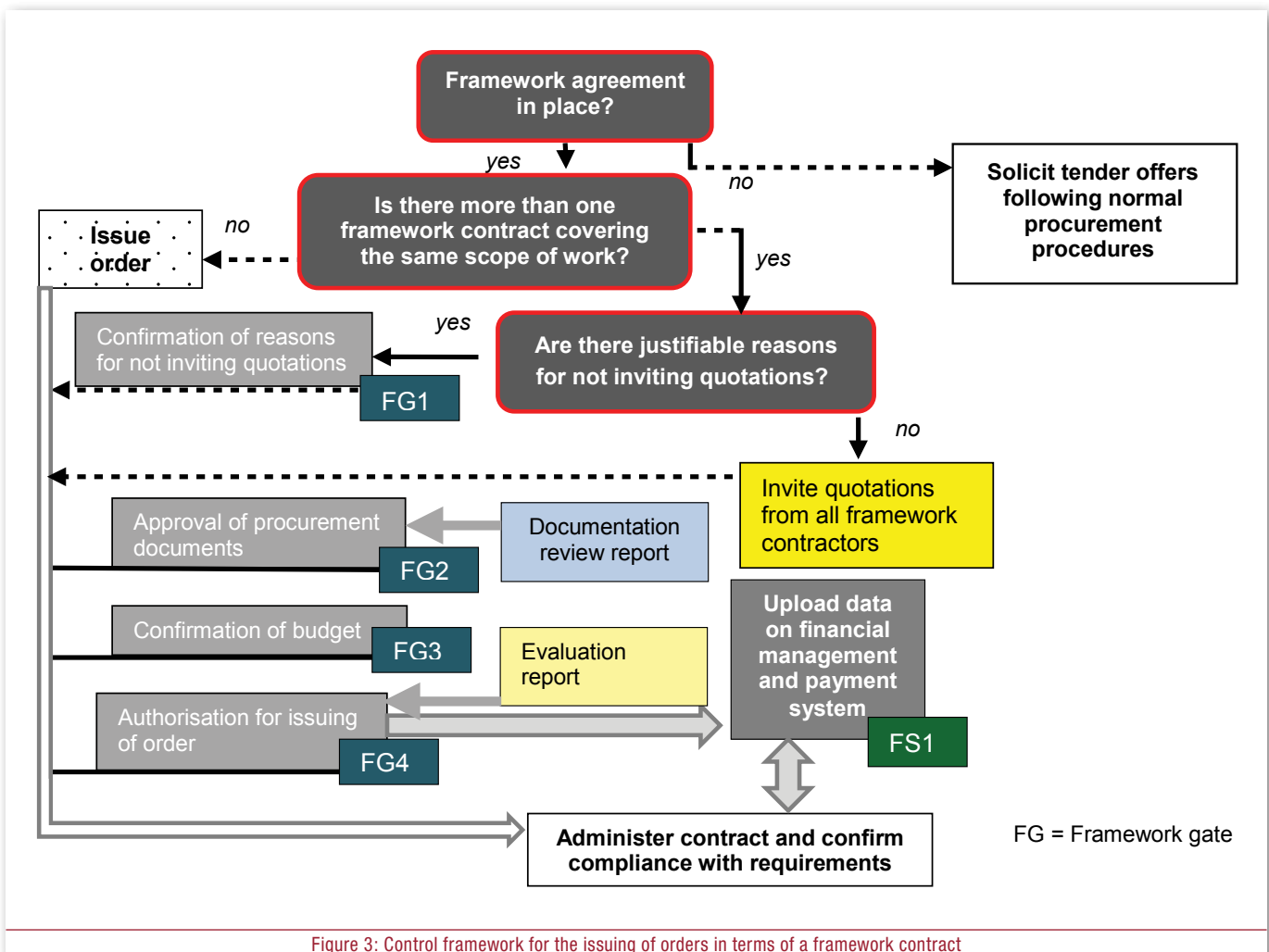


Figure 3: Control framework for the issuing of orders in terms of a framework contract

management principles and practices, as well as defining legal relationships. It is drafted on a relational contracting basis based on the belief that collaboration and teamwork across the whole supply chain optimises the likely project outcomes and is therefore based on *discussion at the time* rather than *argument later*. It contains clear procedures with defined time limits for actions to be taken and provides for effective control of change, speedy agreement of time, quality and cost impacts of change, and improved forecasting of end costs and end dates. It also includes requirements for the parties to issue to each other early warnings of risks relating to time, cost and quality. It assesses compensation events (events for which the employer is at risk) which entitle the contractor to more money on the basis of cost as defined in terms of the contract, uplifted by any percentages for overheads and profit or fees provided for in the contract for work already done or a forecast for the work not yet done. The NEC3 family of contracts is accordingly well suited to form the basis of framework agreements.

ISSUING OF TASK, BATCH AND PACKAGE ORDERS

The activities, key actions, responsibilities and gates associated with the issuing of batch, task or package orders are indicated in Table 1. The control framework for the issuing of orders against a framework agreement is indicated in Figure 3.

The review of procurement documentation associated with the issuing of an order needs to confirm that:

- any standard templates required by the organ of state have been correctly applied and the necessary approval has been obtained for additional clauses or variations to the standard clauses in the conditions of contract not provided in the organ of state's approved templates or in the contract;
 - the scope of work adequately establishes what is required, and the constraints to the manner in which the contract work is to be provided;
 - the provisions for competition amongst framework contractors, if relevant, and the selected options are likely to yield best value outcomes; and
 - the risk allocations are appropriate.
- An evaluation report covering the application of the negotiated procedure for the issuing of an order needs to

confirm that the negotiated amounts are market-related and represent value for money. Where the total of the prices associated with a target cost contract is negotiated, the total of prices need to be certified as being fair and reasonable by a professional quantity surveyor registered in terms of the Quantity Surveying Profession Act or a professional engineer registered in terms of the Engineering Profession Act.

The person responsible for authorising an order, prior to authorising the issuing of an order, needs to:

- confirm that the required goods or services, or any combination thereof, are within the scope of work associated with the relevant framework contract; and
- consider the recommendations of the evaluation report where competition amongst framework contracts takes place or a significant proportion of the total of the prices is negotiated, based on the financial parameter contained in the framework contract, and either confirm the reasonableness of such recommendations and sign the acceptance of the order, or refer the evaluation report and recommendation back to those who prepared it.

DIFFERENCES BETWEEN TERM CONTRACTS AND FRAMEWORK AGREEMENTS

A term contract is a contract that enables the employer to order work over a fixed term at agreed rates. Such contracts have, at the time that they are entered into, a contract value. Those who administer such contracts are authorised to instruct the required work over the term against such contracts.

Some forms of contract, such as the NEC3 family of contracts, contain a procedure to issue orders during the term of the contract to enable the amount to be paid to a contractor for carrying out a specified task to be determined. This feature within a contract provides the employer with a facility to control work and the costs relating thereto on a task by task basis. There is no need for the person administering the contract to obtain permission to issue an order provided that the price for executing the order falls within the sanctioned contract amount at the start of the contract. There is also no need for a formal review of the order prior to being issued to the

contractor, as the work that is required is sufficiently scoped and described at the time that it is priced and the terms sufficiently precise and complete to cover the instructed work.

A framework contract is different to a term contract in that it has no value at the time of its formation and more than one contract covering the same scope of work may be entered into. Framework contracts frequently have no fixed rates. Consequently the terms of the contract may have to be applied in order to arrive at a price. Those administering such contracts require authorisation to issue an order for three basic reasons:

- authority to incur the required expenditure;
- confirmation that the goods, services or works fall within the scope of the framework contract approved at the time that the framework contract was entered into; and
- where more than one framework agreement covers the same scope of work, the acceptability of the reasons for selecting a particular framework contractor.

MAKING USE OF ANOTHER ORGAN OF STATE'S FRAMEWORK AGREEMENT

The SIPDM permits one organ of state to make use of another organ of state's framework agreement, provided that it was put in place following a competitive tender process, the agreement is suitable for the intended use, the required goods, services and works fall within the scope of such contract, the framework contractor agrees to accept an order from that organ of state who undertakes to pay the contractor in accordance with the terms and conditions of the agreement, and the term of the framework agreement does not expire before the issuing of the required orders.

NOTE

Further insights and information can be obtained from:

Watermeyer, R B 2012. A framework for developing construction procurement strategy.

Proceedings of the Institution of Civil Engineers, Management, Procurement and Law, 165 (4): 223–237.

Watermeyer, R B 2013. Unpacking framework agreements for the delivery and maintenance of infrastructure. *Civil Engineering*, 21(1): 21–26. ●

Infrastructure procurement system

A procurement system comprises procedures and methods, procurement documents, governance or quality arrangements to manage and control procurements, and organisational procurement policies. The Constitution of South Africa in this regard requires the public procurement system to be fair, equitable, transparent, competitive and cost-effective. It also permits procurement policy which provides for categories of preference in the allocation of contracts and the protection or advancement of persons, or categories of persons, disadvantaged by unfair discrimination.

The National Treasury *Standard for Infrastructure Procurement and Delivery Management* (SIPDM) establishes a control framework and minimum requirements for infrastructure procurement. An organ of state's Supply Chain Management (SCM) Policy for Infrastructure Procurement and Delivery Management is required in terms of the SIPDM as a minimum to assign responsibilities for approving or accepting deliverables associated with a gate (control point) in the control framework or authorising a procurement process or procedure, establish committees which are required by law (or the equivalent thereof) and delegate authority for the award of contracts and orders.

There is a need to understand the thrust and intent behind this control framework and the minimum requirements for infrastructure procurement when establishing a suitable SCM policy and the setting up and implementation of an infrastructure procurement system within an organ of state which complies with the requirements of the SIPDM.

INTRODUCTION

Procurement is the process which creates, manages and fulfils contracts. Procurement commences once a need for goods, services, engineering and construction works or disposals have been identified, and it ends when the goods are received, the services or engineering and construction works are completed or the asset is disposed of. There are six basic activities associated with procurement processes which establish actions and deliverables / milestones associated with the procurement process as indicated in Figure 1.

A system is a set of interrelated or interacting elements. It is an established way of doing things that provides order and a platform for the methodical planning of a way of proceeding. Systems are

underpinned by processes (sets of inter-relating activities which transform inputs into outputs), procedures (specified ways to carry out an activity or process) and methods (documented, systematically ordered collections of rules or approaches).

A procurement system comprises (see Figure 1):

- rules and guidelines governing procedures and methods;
- procurement documents which include terms and conditions, procedures and requirements;
- governance/quality arrangements to manage and control procurement; and
- organisational policies which deal with issues such as:
 - the usage and application of particular procurement procedures

- requirements for recording, reporting and management of risk
- procedures for dealing with specific procurement issues
- the usage of procurement to promote social and developmental objectives
- the assignment of responsibilities for the performance of activities associated with the various processes.

Activity 1 initiates the procurement process (see Figure 1). Procurement strategy (Activity 2) is all about the choices made in determining which of the required goods and services, or combinations thereof, are to be delivered through a particular contract, the procurement and contracting arrangements and how procurement is to be used to promote policies, if any are to be promoted. Conditions for the calling for

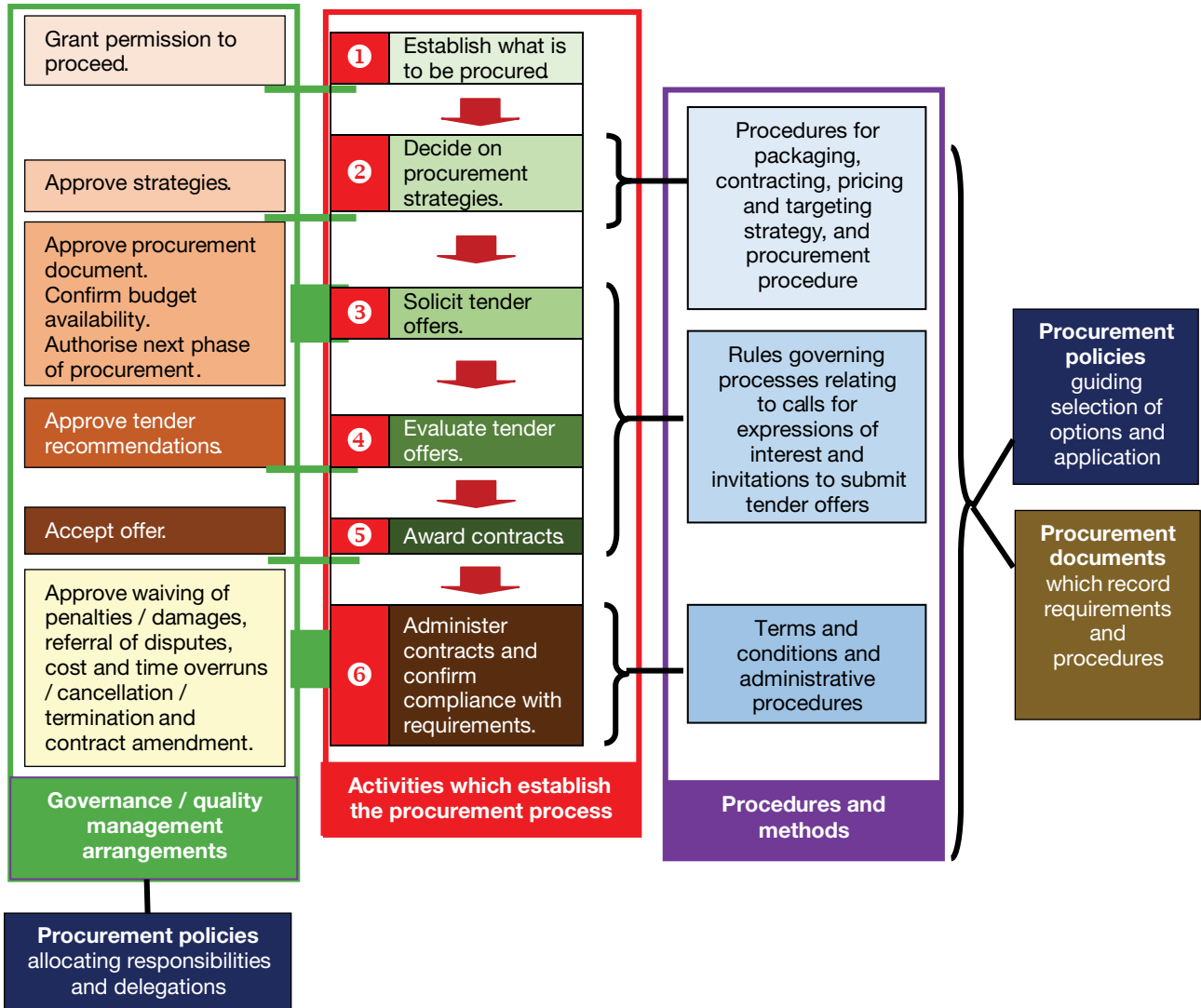
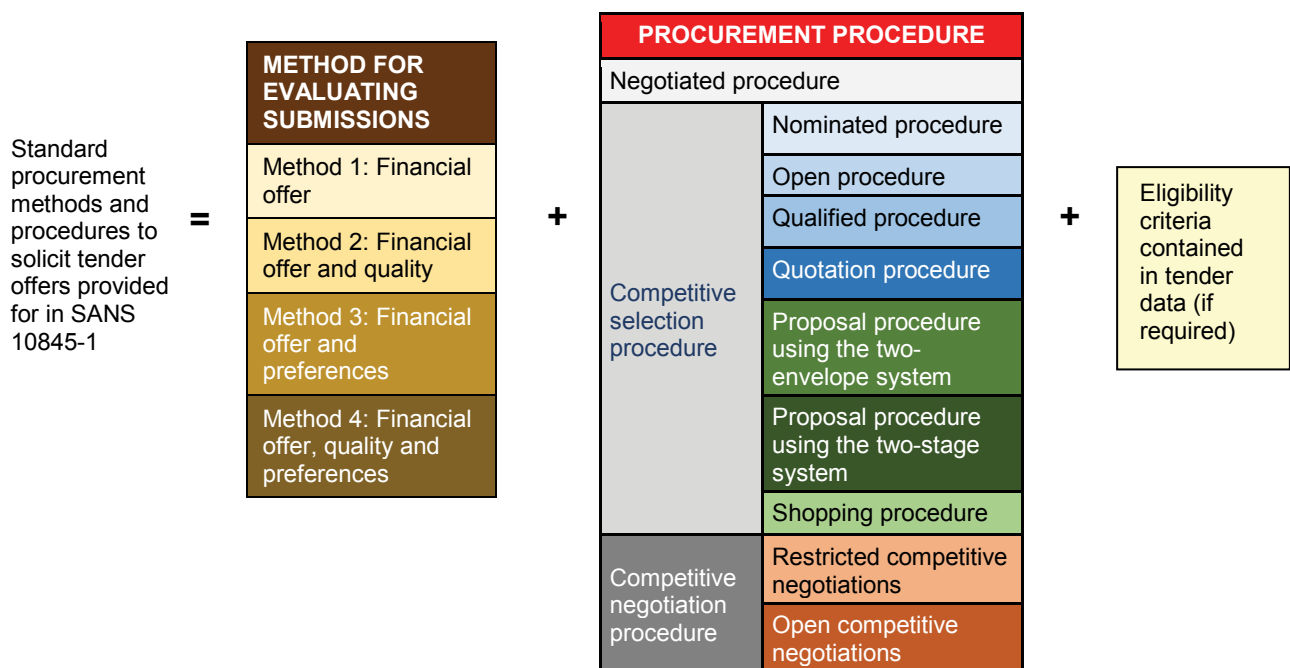


Figure 1: Components of a procurement system



NOTE: Eligibility criteria need to be satisfied in order for a submission to be evaluated.

Figure 2: Standard procurement methods and procedures provided in SANS 10845-1 for the soliciting of tender offers

expressions of interest to prequalify to participate in a specific contract, project or programme, and conditions of tender govern Activities 3 to 5. Conditions of contract (i.e. terms that collectively describe the rights and obligations of contracting parties and the agreed procedures for the administration of their contract) govern Activity 6.

Procurement documents relating to calls for expressions of interest identify procedures and returnable documents required for evaluation purposes and, where appropriate, indicate the nature of what is to be delivered. They identify, in the case of a tender, tender procedures and returnable documents required for

evaluation purposes and contain the draft contract that will be entered into. Such documents, in the case of a contract, contain the agreement that is concluded, the conditions of contract, pricing data and scope of work and, where relevant, provide site information.

SANS 10845 FAMILY OF CONSTRUCTION PROCUREMENT STANDARDS

The starting point in the standardisation of procurement methods and procedures is to determine the objectives for the system. Objectives associated with a procurement system typically relate to good governance (primary ob-

jectives) and to the use of procurement to promote social and national agendas (secondary, non-commercial objectives or developments).

The SANS 10845 family of standards for construction procurement, which are based on the Construction Industry Development Board's Standard for Uniformity in Construction Procurement (2004) and a number of South African National Standards which have recently been withdrawn, are framed around the following system objectives:

- **Primary objectives:** the procurement system shall be fair, equitable, transparent, competitive and cost-effective.
- **Secondary objectives:** the procurement system may, subject to applicable legislation, promote objectives additional to those associated with the immediate objective of the procurement itself.

These system objectives, or end outcomes, may be expressed in qualitative terms as follows:

- **Fair:** the process of offer and acceptance is conducted impartially without bias, and provides participants with simultaneous and timely access to the same information.
- **Equitable:** the only grounds for not awarding a contract to a tenderer who complies with all requirements are restrictions from doing business with the organisation, lack of capability or capacity, legal impediments and conflicts of interest.
- **Transparent:** the procurement process and criteria upon which decisions are to be made shall be publicised, decisions shall be made publicly available together with reasons for those decisions, and it must be possible to verify that criteria were applied.
- **Competitive:** the system provides for appropriate levels of competition to ensure cost-effective and best-value outcomes.
- **Cost-effective:** the processes, procedures and methods are standardised with sufficient flexibility to attain best-value outcomes in respect of quality, timing, price and the least resources to effectively manage and control procurement processes.
- **Promotion of other objectives:** the system may incorporate measures to promote objectives associated with a secondary procurement policy subject to qualified tenderers not being

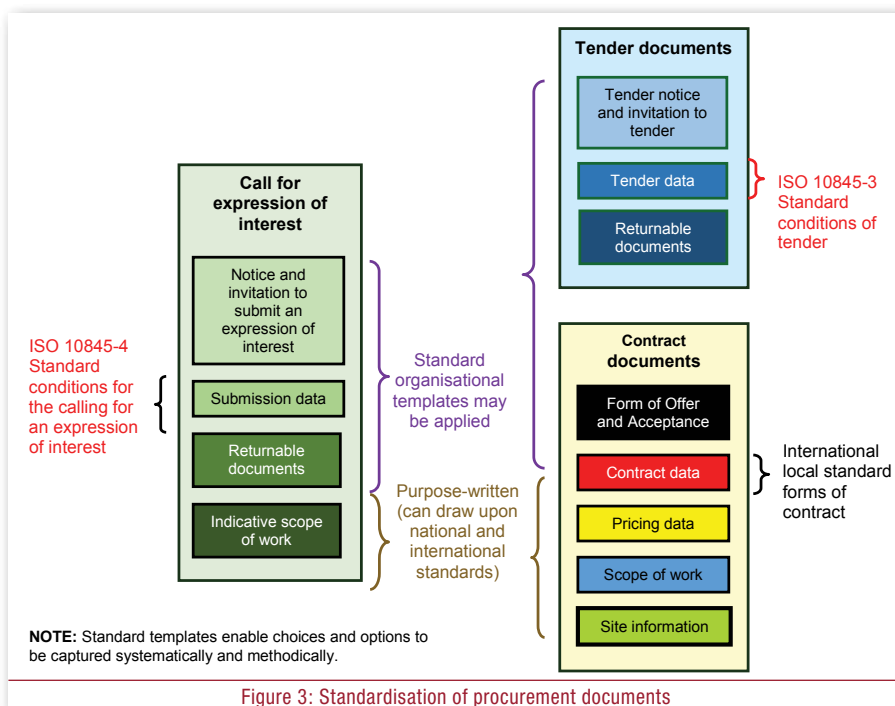


Figure 3: Standardisation of procurement documents

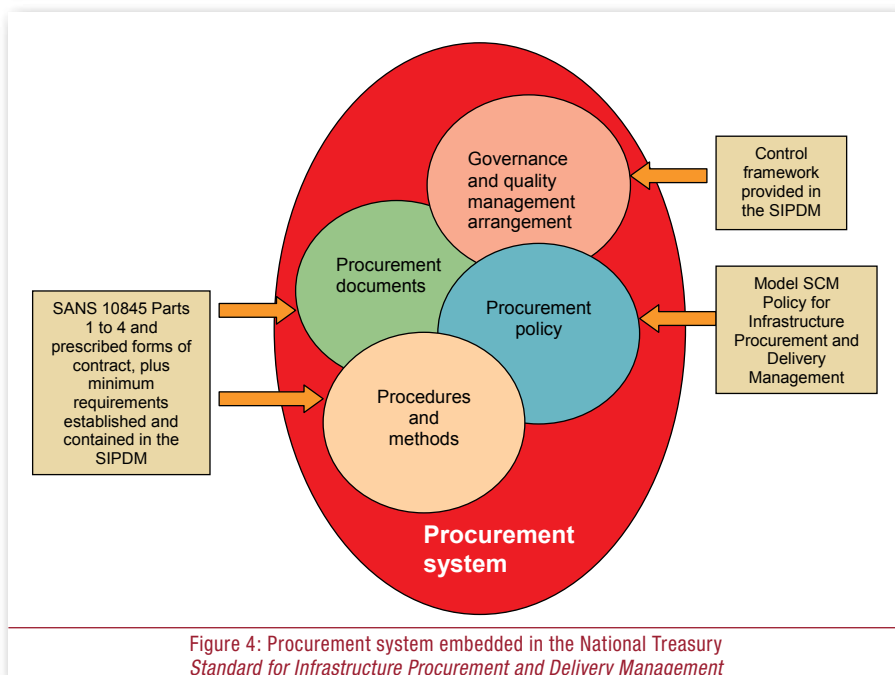


Figure 4: Procurement system embedded in the National Treasury Standard for Infrastructure Procurement and Delivery Management

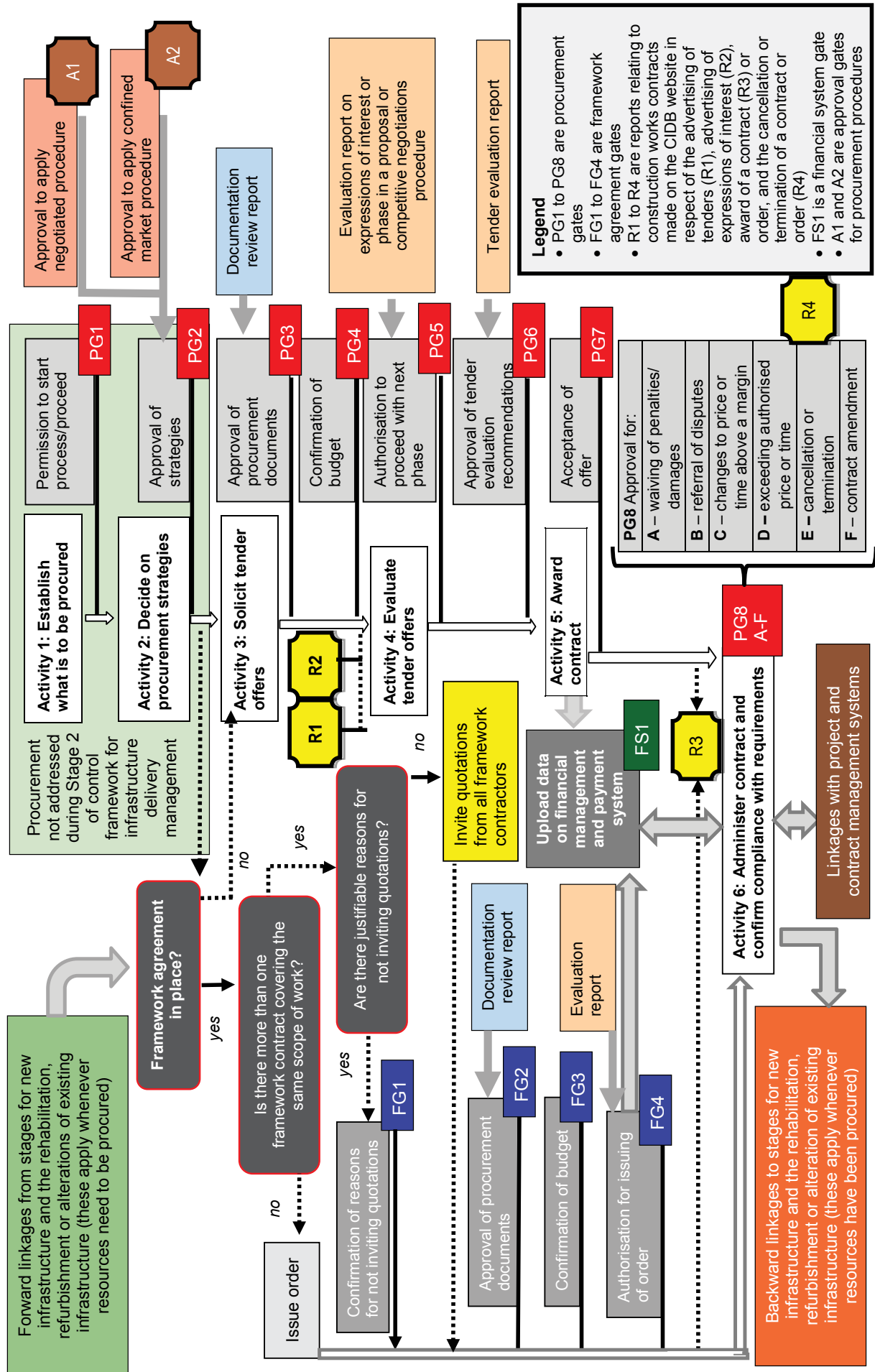


Figure 5: National Treasury's control framework for infrastructure procurement

excluded and deliverables or evaluation criteria being measurable, quantifiable and monitored for compliance.

SANS 10845-1 establishes rules for the application of a wide range of methods and procedures that are used in soliciting tenders and awarding contracts (see Figure 2). This standard also provides guidance on targeted procurement procedures, i.e. the process used to create a demand for services or goods from, or to secure the participation of targeted enterprises and targeted labour in contracts in response to, the objectives of a secondary procurement policy.

SANS 10845-4 establishes what is required for a respondent to submit a compliant submission, makes the evaluation criteria known to respondents, and establishes the manner in which the procuring entity conducts the process of calling for expressions of interest. SANS 10845-3 establishes what a tenderer is required to do to submit a compliant tender, makes the evaluation criteria known to tenderers, establishes the manner in which the employer conducts the process of offer and acceptance, and provides the necessary feedback to tenderers on the outcomes of the process.

Procurement documents communicate a procuring entity's procedures and requirements relating to procurement processes up to the award of a contract and establish the basis for the contract that is entered into with the successful tenderer. A uniform format for the compilation of procurement documents provides the platform for the standardisation of the component documents and improved communications between those engaged in the procurement process. SANS 10845-2 establishes a format for the compilation of calls for expressions of interest, tender and contract documents, and the general principles for compiling procurement documents for supply, services and engineering and construction works contracts, at both main and subcontract levels (see Figure 3). This standard is based on the principle that each subject within a procurement document can only be addressed once, and in only one component document. It also enables SANS 10845-3, SANS 10845-4 and standard international forms of contract to be readily referenced in procurement documents.

REQUIREMENTS FOR INFRASTRUCTURE PROCUREMENT ESTABLISHED IN THE NATIONAL TREASURY STANDARD

The National Treasury *Standard for Infrastructure Procurement and Delivery Management* (SIPDM) requires that infrastructure be procured in accordance with the provisions of all applicable legislation, the requirements of Parts 1 to 4 of SANS 10845, the administrative procedure embedded in a list of approved standard forms of contract and a number of requirements established in the standard relating to:

- the publication of all awards made in terms of the competitive selection or competitive negotiations procedure above the threshold for the quotation procedure;
- the soliciting of tenders from a confined market (sole contractor or very limited number of tenderers);
- the conditions including thresholds under which the standard procedures provided in SANS 10845-1 may be used;
- framework agreements;
- design competitions;
- procurement documentation including matters such as standard returnable schedules, specific requirements for tender, submission and auction data, the use of approved standard forms of contract, the use of tender assessment schedules, guarantees, retention monies, the language of communications, ownership of intellectual property rights, provisions for budgetary items and professional indemnity insurances; and
- developmental procurement policy and permitted targeted procurement procedures.

The SIPDM also requires that an infrastructure procurement system be implemented in accordance with the provisions of a control framework which contains procurement gates, framework agreement gates, reporting points for interfacing with the Construction Industry Development Board (CIDB) register of projects, and a gate relating to the interface with a financial management system. It also has specific requirements for the reviewing of procurement documents, the evaluation of submissions, and the authorising of the issuing of an order in terms of a framework contract with a number of reporting requirements.

An organ of state needs to establish its SCM Policy for Infrastructure

Procurement and Delivery Management which, as a minimum:

- assigns responsibilities for approving or accepting deliverables at gates or authorising a procurement process or procedure;
- establishes procurement documentation (bid specification), evaluation (bid evaluation) and tender (bid adjudication) committees, if required by law, or the equivalent thereof;
- establishes delegations for the awarding of a contract or the issuing of an order in terms of a framework contract;
- establishes ethical standards for those involved in the procurement and delivery of infrastructure.

Figure 4 presents an overview of the procurement system which is established through the SIPDM.

CONTROL FRAMEWORK FOR INFRASTRUCTURE PROCUREMENT

Governance activities need to be linked to the milestones in the procurement process as indicated in the control framework for infrastructure procurement contained in the National Treasury SIPDM, as shown in Figure 5.

Projects involving construction, refurbishment, rehabilitation, extension, alteration, planned maintenance, demolition or the design, supply and installation of plant are invariably initiated during Stage 0 (project initiation) and budgeted for in Stage 1 (infrastructure planning), while a procurement strategy is developed during Stage 2 (procurement planning) (also see the control framework provided in the SIPDM for the planning, design and execution of infrastructure projects). As a result, Activities 1 and 2 indicated in Figure 5 only take place for ad hoc procurements, i.e. procurement activities which do not emanate from Stages 1 and 2 of the control framework for the planning, design and execution of infrastructure projects.

The SIPDM requires that no provision for contingencies or price adjustment for inflation be included in the contract price at the time that the contract is awarded or an order is issued. Such a price needs to be the nett contract price, i.e. the value of the contract, based on the production information (information enabling either construction where the constructor is able to build directly from the information prepared or the production of manufacturing and installation

information for construction) at the start of the contract or order. The SIPDM discourages budgetary items, but permits estimates of likely costs to cover identified work or services to be performed by a subcontractor appointed in terms of the contract, or the making of assumptions

which can be priced and adjusted in terms of the contract should these assumptions be incorrect.

Contingencies are provisions for a possible event or circumstance. Contingencies typically make provision for costs associated with risk events which are retained

by the client, changes to the production information after work on site or manufacturing has commenced which enhance the quality or performance of works or addresses shortcomings which if not corrected will impair the functioning of the works, and risks retained by the client

Table 1: Risks retained by the client in applying a particular pricing strategy to a contract

Pricing strategy	Payment to contractor	Client's risk of price increase
Price-based		
Lump sum	Lump sum amounts	None
Bill of quantities	Lump sum amounts plus quantities multiplied by rates	At risk for increase in quantities and omissions and errors in the bill of quantities
Price list / price schedule	Lump sum amounts plus quantities multiplied by rates	At risk only for increase in quantities
Activity schedule	Amounts for each completed activity	None
Cost-based		
Cost reimbursable	Cost plus a fee to cover overheads, profit, finances, etc	At full risk unless cost is disallowed in terms of the contract
Target cost	Cost plus a fee to cover overheads, profit, finances, etc; at completion receives (gain) or pay in (pain) a portion of the difference between agreed target price and cost plus a fee paid up to that point	At risk for a portion of cost plus the fee in excess of the agreed target price

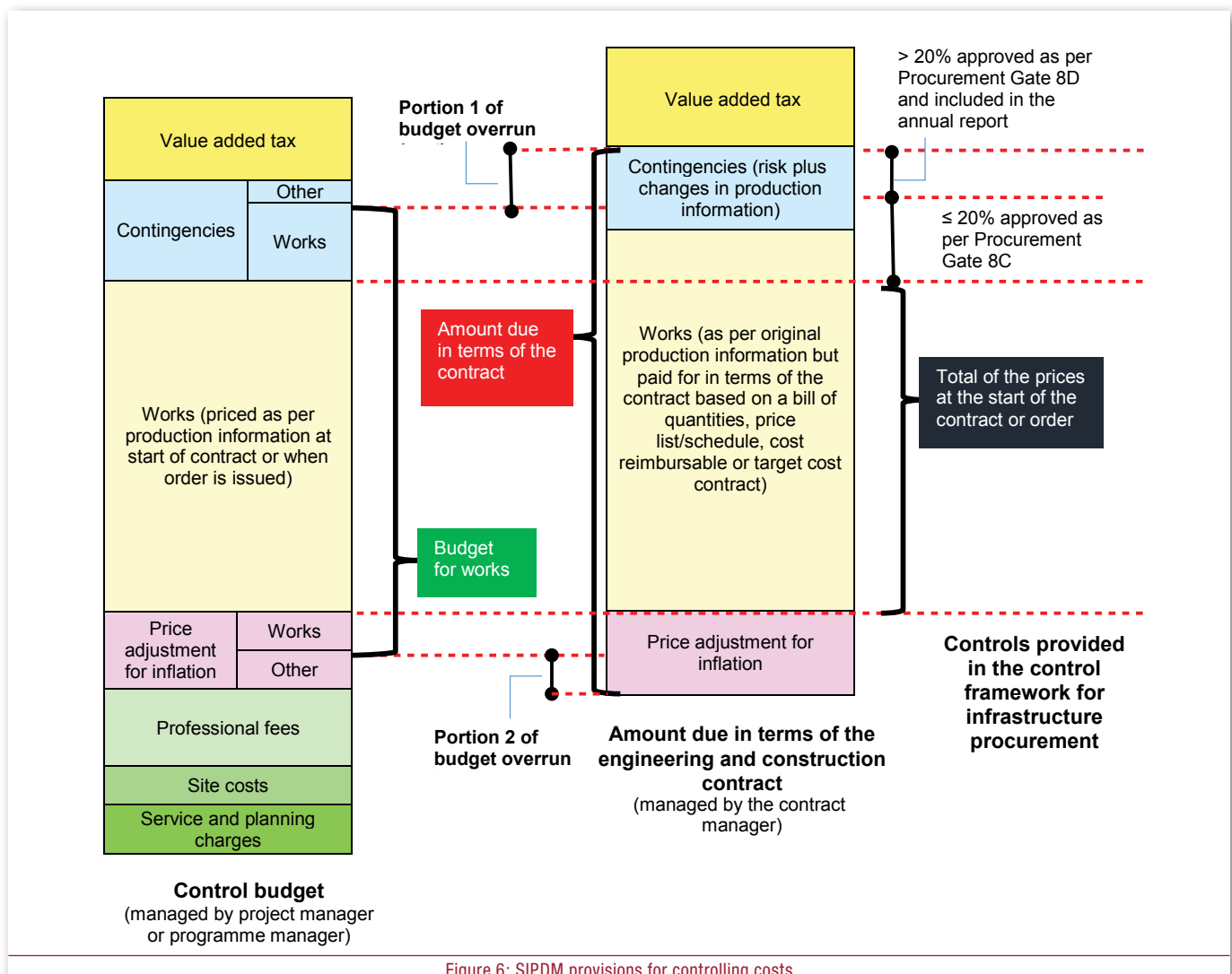


Figure 6: SIPDM provisions for controlling costs

in applying a particular pricing strategy to a contract as indicated in Table 1. Contingencies as such are owned by the programme or portfolio of projects. The SIPDM requires that project costs be managed through the setting and proactive monitoring of control budgets for projects through the planning, detailed design and site processes. Contingencies are managed by the programme manager across a portfolio of projects. They are not owned by those responsible for managing a contract.

Figure 6 illustrates the provisions for cost control following the award of a contract or the issuing of an order. A contract is awarded or an order issued if the total of the prices for the works, with allowances for contingencies and price adjustment for inflation, is within the allowable amounts of the control budget (Procurement Gate 4). Approval is required at Procurement Gate 6C to increase the total of the prices at the start of the contract or order for a reason other than price adjustment for inflation. An organ of state's SCM Policy for Infrastructure Procurement and Delivery Management needs to make provision for stepped approvals at this gate. For example, a contract manager may be authorised to increase the total of prices up to a specified percentage, and thereafter the approval of the programme manager is required to do so. Once the value exceeds 20%, the accounting officer or accounting authority or their delegate has to approve the increases at Procurement Gate 8D. The onus is on the contract manager to obtain timeous approval so that payment to the contractor is not disrupted.

Data pertaining to contracts needs to be uploaded in the Financial Management System Gate FS1. In the procurement of general goods and services, prices are typically fixed and no provision for price adjustment for inflation is made, there are seldom unforeseen risks and the client rarely is at risk for price increases due to pricing strategies. Changes in these prices are usually driven by extensions to the contract. As a result, the total of the prices at the award of the contract is commonly uploaded at this gate. This gate becomes the financial control for procurement. It is, however, not advisable to follow this approach in the case of infrastructure projects, because the cost controls lie elsewhere, as indicated in Figure 6. There will inevitably be regular increases in the total of the prices as risks

materialise, changes are implemented to enhance the quality or performance of the works or to address shortcomings, and the prices are adjusted for the effects of inflation. To do so encourages the inflation of the total of the prices to accommodate risks and changes, thereby avoiding the hassle of getting increases approved which in turn feeds the culture of "if we have the money in the contract, it is ours to spend". Accordingly, it is preferable to upload a value which equates to the total of prices at award excluding contingencies, plus an estimate for increases in the total of the prices associated with price adjustment for inflation, if provided for, and a reasonable percentage for contingencies. Procedures need to be put in place to enable the financial control value in the financial management system to be increased should approval be obtained at either Procurement Gate 8C or Procurement Gate 8D to do so.

There are a number of different types of controls, in addition to the gates in the SIPDM. Stipulated monetary values set the limits for the application of the shopping, nominated and quotation procurement procedure and, in certain instances, the use of the negotiation procedure.

Approvals for the reasons for pursuing a particular procurement procedure are also necessary, i.e. where the confined procedure, negotiated procedure and proposal procedure using a two-envelope or a two-stage system are being selected as procurement routes (see approval Gates A1 and A2). The approval confirms that the use of such procedures is in line with the provisions of the documented procurement system.

Approvals are also necessary for undertaking certain courses of action, e.g. any departure from the documented procurement policy, processes, procedures, methods and delegations, removal of a name from a list of pre-approved contractors, etc. These matters need to be addressed in an organ of state's SCM Policy for Infrastructure Procurement and Delivery Management.

ALLOCATION OF RESPONSIBILITIES FOR APPROVING OR TAKING THE NECESSARY ACTIONS AT EACH GATE

Regulations issued in terms of the Public Finance Management Act of 1999 and the Local Government: Municipal Finance Management Act of 2003 require that a committee system be used to approve

tender documents, evaluation reports and make recommendations regarding the award of a contract. Accordingly, these regulations impact on the allocation of responsibilities at Gates PG3, PG5 and PG6. It should be noted that the tender or adjudication committee is a governance committee, and in all probability will be common to the supply chains for infrastructure procurement and delivery management and general goods and services.

The SIPDM requires that the approval of procurement documents at Procurement Gate 3 or Framework Agreement Gate 2 be based on a procurement documentation review report which satisfies stipulated requirements. Where the procurement relates to the provision of new infrastructure or the rehabilitation, refurbishment or alteration of existing infrastructure, such a report needs to be prepared by a registered professional architect, professional senior architectural technologist, a professional landscape architect, professional landscape technologist, professional engineer, professional engineering technologist or professional quantity surveyor. This standard also requires that the authorisation to proceed with the next phase at Procurement Gate 5, the approval of tender evaluation recommendations at Procurement Gate 6 and the authorisation to issue an order at Framework Gate 4, be based on the contents of an evaluation report. Such a report is required to be prepared by one or more of the aforementioned registered professionals or a registered project construction manager or registered construction manager, who are familiar with the subject matter of the procurement documents. The standard establishes the content of the evaluation reports which provide all the necessary information for those responsible for approving such reports to do so.

As a general rule, the person designated to take a decision at a gate should be the person best able to do so on the information presented in the context of the project or programme of projects. In many instances this will be the programme manager, e.g. at PG2, PG3, PG4, PG8C, FG2 and FG3. In some instances it should be the delegate of the accounting officer or authority, e.g. at PG7, PG8D, PG8E, FG1 and FG4. In other instances it may be appropriate to designate a governance structure to do so, e.g. at PG8A and PG8B.

PERFORMANCE REPORTING REQUIREMENTS

The SIPDM also requires that an annual report be prepared which reflects the performance for each portfolio of projects. Such a report is required to reflect performance against the following procurement metrics:

- the average time taken to award a contract measured from the closing date for tender submissions or the final submission made in terms of the a proposal or competitive negotiations procedure to:
 - the acceptance of the tender evaluation report
 - a decision being taken to award the contract, i.e. the signing of the acceptance of a contract;
- the average number of days that payment is later than that required under the terms of the contract.

The annual report also needs to provide, in respect of procurement undertaken during the financial year:

- an overview and brief explanation for all packages (work which is grouped together for delivery under a single contract or an order issued in terms of a framework agreement) where the total of the prices and the time for completion at completion exceed that at the start by more than 20%;

- an outline of the scope, value and duration of all contracts which were awarded as a result of an unsolicited proposal; and
- particulars relating to:
 - the cancellation or termination of contracts and disputes arising from contracts which have been referred to arbitration or a court of law for settlement
 - the use of a negotiated or confined market procurement procedure or the evoking of emergency procurement procedures where such transactions exceed a threshold
 - the approvals granted to increase the total of the prices or the time for completion at Procurement Gate 8D.

The SIPDM also requires reporting to the relevant treasury on the award of contracts or orders above a specified threshold within one month of such award.

NOTE

Further insights and information can be obtained from:

- SANS 9000:2015 ISO 9000:2015. Quality management systems – fundamentals and vocabulary. South African Bureau of Standards.
- SANS 10845-1:2015 ISO 10845-1:2010. Construction procurement – Part 1: Processes, methods and procedures. South African Bureau of Standards.
- SANS 10845-2:2015 ISO 10845-2:2011.

- Construction procurement – Part 2: Formatting and compilation of procurement documents. South African Bureau of Standards. SANS 10845-3:2015 ISO 10845-3:2011.
- Construction procurement – Part 3: Standard conditions of tender. South African Bureau of Standards. SANS 10845-4:2015 ISO 10845-4:2011.
- Construction procurement – Part 4: Standard conditions for the calling for expressions of interest. South African Bureau of Standards. Watermeyer, R B 2011. Building trust – a platform for best practice construction procurement. Special Report. *ISO Focus +*, 24–26 September.
- Watermeyer, R B 2011. Standardising construction procurement systems. Report. *The Structural Engineer*, 89(20): 5–8, October.
- Watermeyer, R B 2011. Regulating public procurement in Southern Africa through international and national standards. Public Procurement Regulation in Africa Conference, 25 October, Stellenbosch, South Africa.
- Watermeyer, R B 2015. Design and Adoption of Innovative Procurement Systems in Infrastructure Delivery. West Africa Built Environment Research Conference, Accra, Ghana, August. ●



Infrastructure contracts and contract management

The *Standard for Infrastructure Procurement and Delivery Management (SIPDM)* establishes requirements for infrastructure contracts and contract management. Organs of state are required to select and use a contract selected from a prescribed list of standard forms of contract. Those responsible for the management or administration of the contract on behalf of an organ of state need to act as stated in the contract that is entered into. They also need to be professionally registered with an appropriate built environment council where such contracts involve the provision of new infrastructure or the rehabilitation, refurbishment or alteration of existing infrastructure.

Infrastructure procurement involves the development or maintenance of a product on a site. A central issue that needs to be dealt with in infrastructure projects is the financial liability related to uncertainty of future events, who takes the risk for the difference between the actual prices paid in terms of the contract and those estimated at the time of tender, and how changes to the information are used to produce the works assessed and paid for. Standard forms of contract have been developed by industry to enable risks to be allocated between the parties to a contract. Those responsible for administering a contract on a client's behalf need to do so in accordance with the provisions of these standard forms of contract. The provisions in the SIPDM for infrastructure contracts and contract management need to be understood in this context.

INTRODUCTION

A contract in law is an agreement entered into voluntarily, usually by two parties, each of whom intends to create one or more legal obligations between them. It sets aside rights and duties that exist under common law and creates new rights

and duties, as the parties to a contract can give up or waive rights under common law. The elements of a contract are "offer" and "acceptance" by "competent persons" having legal capacity who exchange "considerations" to create "mutuality of obligations". Figure 1 illustrates the basic

generic concepts, i.e. what is exchanged, what are the objectives of the two parties and what are the risks.

SANS 10845-2 defines conditions of contract as "terms that collectively describe the rights and obligations of contracting parties and the agreed

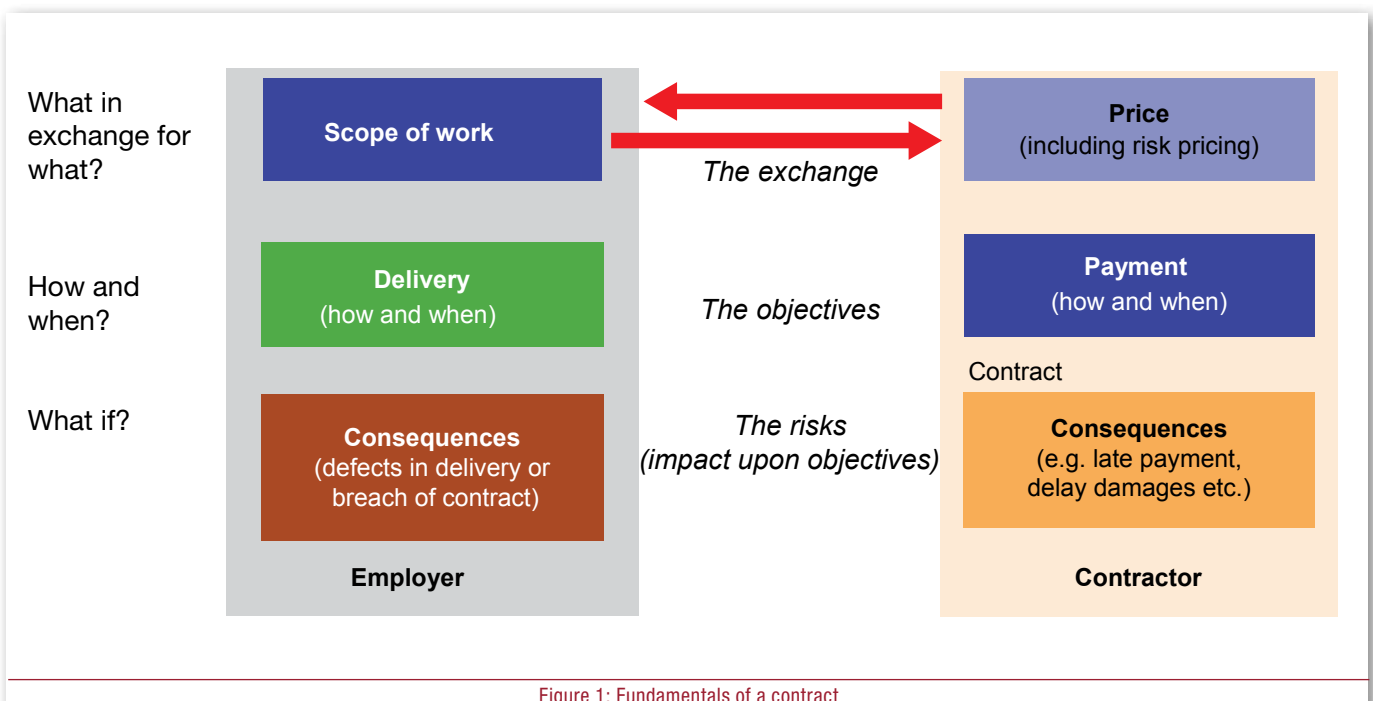


Figure 1: Fundamentals of a contract

procedures for the administration of their contract". ISO 6707-2 defines conditions of contract as a "document that contains the detailed provisions incorporated in a contract, laying down the rights and duties of the parties, the functions of the people connected with the contract and the procedures for administering the contract".

DEALING WITH RISK IN INFRASTRUCTURE-RELATED CONTRACTS

Risk is defined in the ISO Guide 73 as the "effect of uncertainty on objectives". A more expansive definition of risk is the deviation, positive or negative, from the expected on an organisation's objectives arising from the deficiency of information relating to the understanding of an event, its consequence or likelihood.

Risk is characterised by reference to:

- potential events, i.e. the possible occurrence or change of a particular set of circumstances or something not happening; and
- consequences, i.e. the outcome of an event affecting objectives which can be expressed quantitatively or qualitatively.

Risk is often expressed in terms of a combination of events, including changes in circumstances and the likelihood (chance of something happening) of the occurrence. Risks are linked to hazards (source of potential harm). It is frequently measured in terms of consequences and likelihood, i.e. the outcome of an event expressed qualitatively or quantitatively, being a loss, injury, disadvantage or gain (consequences) and a qualitative description of probability of frequency (likelihood).

Risks in contracts involving general goods and services (off-the-shelf readily available commodities, and standard, well-defined, scoped and specified services which require little or no management) are low and well understood, and rarely result in an increase in the total of the prices from the time that the contract was entered into. This is seldom true in infrastructure projects. Not all risks can be accurately forecasted or controlled during project planning and implementation. Risks can influence the delivery of a project with respect to time, cost and quality, and in extreme cases, the completion of the contract. The generic sources of risk on such projects include commercial and legal relationships, economic circumstances,

human behaviour, natural events, weather, inherent site conditions, political circumstances, community unrest, technology and technical issues, management activities and controls and individual activity. Risks can also manifest in weak clients who are not capable of making timeous decisions, or who have difficulty in providing information timeously or paying promptly or providing access to the site for the contractor timeously.

Accordingly, risk taking is necessary in infrastructure projects. Risk management in this context is all about identifying the salient risks, assessing their likelihood and deciding on how best to manage the project in the light of this information. The parties to a contract face choices on how to deal with the inherent project risks. Risks can be transferred or accepted. In some instances, insurances can be taken out to cover risks, e.g. as a hedge against adverse currency exchange rate fluctuations or to cover storm damage to the works.

RISK ALLOCATION IN CONTRACTS INVOLVING THE DELIVERY, REHABILITATION, REFURBISHMENT OR ALTERATION OF INFRASTRUCTURE

The distribution of risk between the parties to a contract involving the delivery, rehabilitation, refurbishment or alteration of infrastructure can generally be arranged to suit the parties. Good practice is to assign risk to the party that is best able to manage risk, or enter into collaborative contracting arrangements which enable risks to be proactively managed by both parties. The focus in the distribution of risk is, however, on the payment and responsibility for the cost of the event, should it materialise. The contractor tries to limit liability in contracts to a foreseeable figure. The client needs to bear in mind that increasing the risk borne by the contractor inevitably increases the price of the contract.

In single one-off projects, a client may wish to pay a price premium in exchange for price, as illustrated in Option 1 of Figure 2. Where there are a number of projects within a programme, risk can be spread across projects, in which case it may be preferable for a client to retain risk and realise savings as indicated in Option 2 of Figure 2.

The price of a project depends to a large extent on the risks taken by the par-

ties, and if risk is retained, how well risks can be mitigated during the execution of the contract or order.

RISKS ASSOCIATED WITH THE DIFFERENCE BETWEEN WHAT IS PAID AND WHAT WAS ESTIMATED AT THE TIME OF TENDER

Another issue that needs to be addressed is who takes the risk for the difference between the actual prices paid in terms of the contract and those estimated at the time of tender, and how changes to the works are assessed and paid for. The contractor is at risk where payment is based on lump sums or activity schedules. The client is at risk where the contractor is paid on a cost-plus basis. This risk is shared by both the client and the contractor for other pricing strategies as indicated in Figure 3.

CHANGES TO THE PRODUCTION INFORMATION AFTER THE AWARD OF THE CONTRACT OR THE ISSUING OF AN ORDER

The total of the prices in contracts involving the delivery, rehabilitation, refurbishment or alteration of infrastructure can also increase due to changes introduced into the production information (information enabling either construction where the constructor is able to build directly from the information prepared, or the production of manufacturing and installation information for construction) by the client after work on site or manufacturing has commenced. Such changes may be required to enhance the quality or performance of the plant, services or works, or address shortcomings which, if not corrected, would impair the functioning of the plant or works. These changes can, however, present contract management challenges, which in turn result in time and cost overruns. Contractors need to assess two types of impacts of such changes, namely:

- direct impacts which are assessed in terms of the material, labour, equipment, etc. required to implement or accommodate a requested change; and
- secondary impacts (disruption, cumulative impact, productivity loss, knock-on impact or ripple effect) which consider the effect of executing or accommodating a change on the ability to perform the unchanged work (base scope of work) at planned productivity.

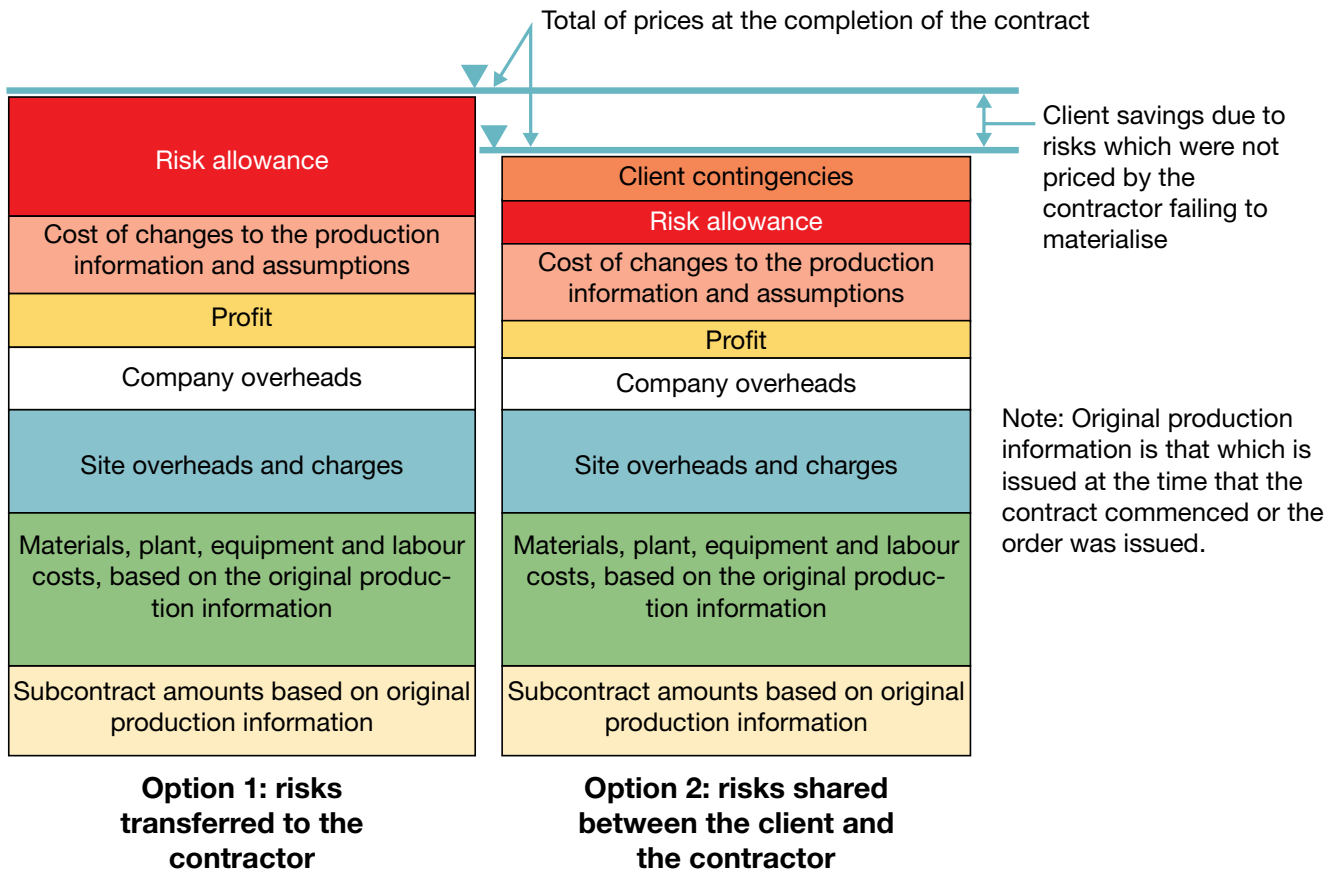


Figure 2: The make-up of the final cost of an engineering and construction works contract

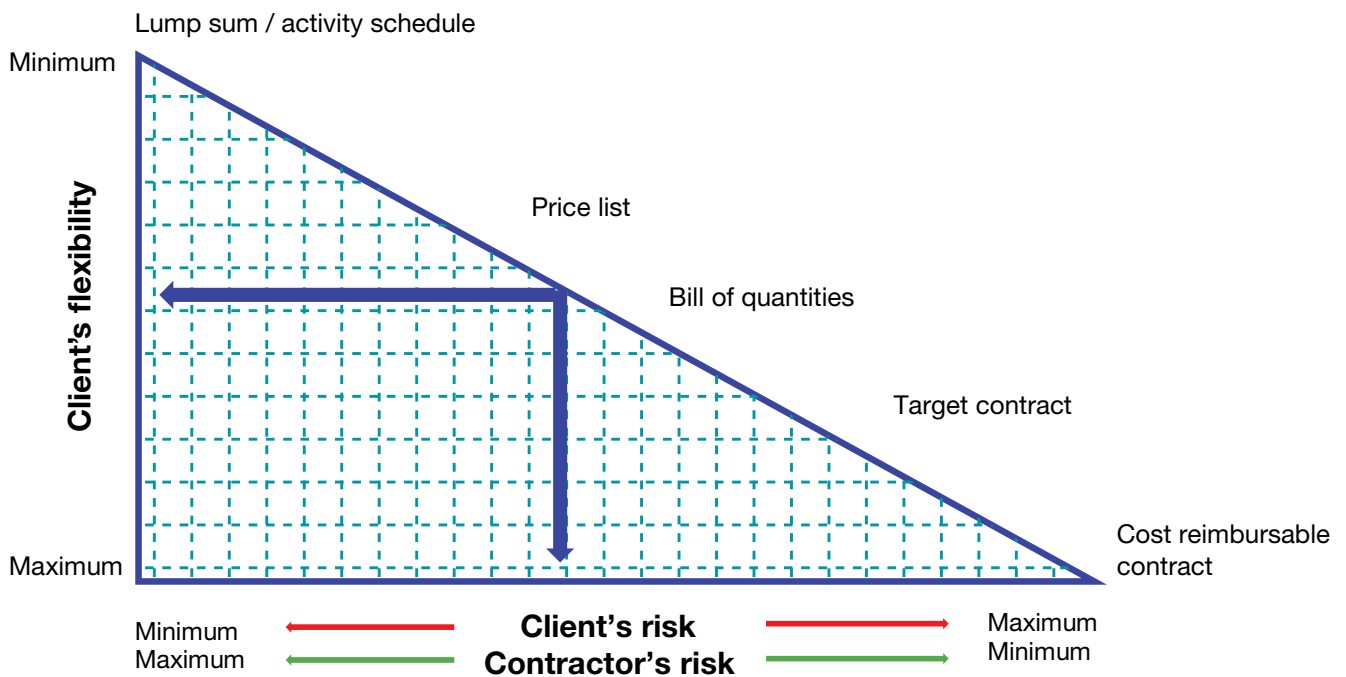


Figure 3: The relationship between risk/flexibility and pricing strategies

Secondary impacts, which grow disproportionately over successive changes can be very large, and in some instances larger than the direct impacts of the requested change. This may be due to the difficulty in managing the impacts of change for a number of reasons:

- impacts may be widely separated in space and time from causes, synergistic across a large number of changes, propagating through projects, and as a result cannot readily be traced to the original change, and are difficult to quantify and accurately assess;
- productivity loss due to factors that are hard to measure, such as out-of-sequence effect, rework effect, availability of required expertise to effect changes and staff morale, as well as the effort required in rework;
- causes and drivers are difficult to discern, and timing and strength of cause are difficult to identify;
- underestimation of the influence of bringing in new resources to accommodate the requested changes; and

- uncertainty in knowing which mitigating actions will be the most effective. Contracts need to make provision for not only the changing or varying production information, but also the assessment of the impact of such changes on costs and time for completion.

STANDARD FORMS OF CONTRACT

A standard form of contract or standard contract is commonly used on infrastructure projects. Such contracts are published by an authoritative industry body. They provide fixed terms and conditions which are deemed to be agreed, and are not subject to further negotiation or amendment when applied to a particular tender.

The standard forms of contract, apart from dealing with rights and duties of the parties to the contract (employer and contractor) commonly make provision for matters such as:

- procedures for making changes to the scope of work (documents that specify and describe the goods, services, or

engineering and construction works which are to be provided, and any other requirements and constraints relating to the manner in which the contract work is to be performed) after the formation of a contract;

- procedures to address the impacts on time, cost and quality or performance of changes made to the scope of work after the formation of a contract and the occurrence of events for which the contractor is not at risk;
- the seeking of instructions on how to proceed when particular events occur or circumstances arise;
- the risks which are borne by each party and how the contractor is compensated for risk events for which he is not at risk;
- how defects (parts of the goods, and services of works which are not in accordance with the scope of work) are to be dealt with;
- procedures for termination, and the determination of what is due to the contractor upon termination;

Table 1: Approved forms of contract related to the delivery and maintenance of infrastructure

Contract type and SANS 10845-2 definition	National Treasury approved standard forms of contract
Engineering and construction contract: contract for the provision of a combination of goods and services arranged for the development, extension, refurbishment, rehabilitation or demolition of a fixed asset, including building and engineering infrastructure	FIDIC Short Form of Contract
	FIDIC Conditions of Contract for Construction for Building and Engineering Works designed by the Employer
	FIDIC Conditions of Contract for Plant and Design-build for Electrical and Mechanical Plant, and for Building and Engineering Works, designed by the Contractor
	FIDIC Conditions of Contract for EPC Turnkey Projects
	FIDIC Conditions of Contract for Design, Build and Operate Projects
Service contract: contract for the provision of labour or work, including knowledge-based expertise, carried out by hand or with the assistance of equipment and plant	JBCC Principal Building Agreement
	JBCC Minor Works Agreement
	NEC3 Engineering and Construction Contract
	NEC3 Engineering and Construction Short Contract
	SAICE General Conditions of Contract for Construction Works
Supply contract: contract for the provision of goods, including materials or commodities made available for purchase and, where relevant, associated services	CIDB Standard Professional Service Contract
	NEC3 Professional Services Contract
	NEC3 Professional Services Short Contract
	CIDB General Conditions of Service
	NEC3 Term Service Contract
	NEC3 Term Service Short Contract
Supply contract: contract for the provision of goods, including materials or commodities made available for purchase and, where relevant, associated services	CIDB General Conditions of Purchase
	CIDB Contract for the Supply and Delivery of Goods
	NEC3 Supply Contract
	NEC3 Supply Short Contract

- the certification of amounts due in terms of the contracts;
- the certification of delivery or completion of the works;
- the actions of an agent of the employer; and
- the resolution of disputes.

Standard forms of contract make provision for the adjustment of both the prices and the time for completion for changes in the scope of work and for risk events for which the contractor is not at risk. Increases in the prices after the award of a contract or the issuing of an order arising from changes in the scope of work or risks events do not constitute an amendment to the contract.

Standard forms of contract enable tenderers to take into account the allocation of risks embedded in such contracts when preparing tenders for infrastructure projects, and enable tenders to be evaluated on a comparative basis. There is also no need for tenderers who are familiar with a particular form of contract to price risks arising from uncertainties as to how particular issues will be viewed or handled in terms of the contract.

Risks need to be unambiguously stated and understood when tenders are priced, so as to avoid excessive risk pricing. The difficulty in tampering with the standard clauses of a contract is that the bespoke provisions in many instances change the allocation of risks between the parties or introduce conflicts, ambiguities and uncertainties in the provisions of the contract. If a party fails to appreciate what has been changed, it may result in an inability to resolve issues, which in turn can lead to litigation and poor contractor performance. If contractors do pick it up at tender stage, they will simply walk away from the project or risk-price it. Those that do not pick it up will inevitably grossly under-price the tender and will not be able to cope if anything subsequently goes wrong. The cost to complete the works where a contractor goes insolvent is considerably higher than the cost of the outstanding work. Performance bonds are usually insufficient to cover such increased costs.

The SIPDM requires that an appropriate standard form of contract (latest edition) be selected from a prescribed list (see Table 1). Such forms of contract are required to be used with minimal contract amendments which do not change their intended usage and should only be amended when absolutely necessary to

accommodate special needs. Adjudication is required to be used to resolve disputes arising during the performance of a contract prior to proceeding to either arbitration or litigation.

The forms of contract contained in Table 1 are drafted around significantly different objectives and principles which enable risks to be allocated and managed in a number of different ways, ranging from risk sharing to risk transfer in return for a price premium. The standard forms of contract provide contracts with fixed risk allocations, based on the traditional approach to delivering infrastructure at one end of the spectrum to collaborative working at the other. They also have different approaches to dealing with the effects of delays and disruptions in the delivery of infrastructure. Some have back-to-back subcontracts and an open-book approach to the cost of change. Collectively they cover the range of contracting and pricing strategies that are encountered in the delivery of infrastructure. Each of these forms of contract has its advantages and disadvantages.

The NEC3 family of contracts includes a framework contract as a head contract for this type of contracting arrangement. The NEC3 Framework Contract needs to be used in conjunction with one of the NEC3 engineering and construction, supplies, professional services or term services contracts. It does not promise work, but sets out how a framework contractor is selected, the management of the process of defining the scope of work and agreeing the price, what the conditions will be and how the work will be executed. This contract makes provision for the payment of advice on a time-charge basis. Framework contracts can be entered into using the different forms of NEC3 contracts without using this head contract through Z-clauses and the careful formulation of contract data. The SIPDM contains detailed provisions for framework contracts and does not require a head contract such as that provided in the NEC3 family of contracts to establish many of the principles associated with this form of contract. The NEC3 Framework Contract is used to establish a means of entering into contracts, whereas the SIPDM requires that a contract be entered into before an order is issued. The omission of the NEC3 Framework Contract from Table 1 is accordingly not an error or oversight. The use of the NEC3

Framework Contract is not endorsed for use in the public sector in South Africa.

CONTRACT MANAGEMENT

Contract management or contract administration (terms which are frequently used interchangeably) relates to the performance of the functions of persons connected with the contract in administering the contract. A contract manager is the person who performs a contractual role to oversee the employer's interests and acts on behalf of the employer in terms of the contract. Such a person, depending upon the form of contract that is selected (see Table 1) and the severity of the risks carried by both parties may be identified in the contract as "principal agent", "employer's agent", "project manager", "supply manager", "services manager" or "engineer" where the risks are high, and "employer's representative" or "employer's delegate" where the risks are low.

Typically, the responsibilities of such a person comprise the management of all actions after the award of a contract, including ensuring compliance with the terms and conditions, assessment and certification of contractual payments and risk events, documenting and agreeing any changes to the information provided to the contractor (variations) that may arise during its execution, and providing the contractor with information, access or things required in terms of the contract. In engineering and construction works contracts, the contract manager needs to maintain a direct decision-making link between the design and construction processes, and needs to communicate to the contractor any changes in information provided, or obtain outstanding information.

The contract manager, in overseeing the employer's as opposed to the contractor's interests, has full authority and obligation to act in terms of the contracts. An assumption is made by the drafters of the contract that the contract manager has the employer's authority to carry out the actions and make the decisions required of him. His obligations and duties are, however, governed by his contract or relationship with the employer. If this constrains him in any way, it is his responsibility to ensure that all the necessary approvals are obtained timeously to enable him to comply with the provisions of the contract. He is free to seek the employer's views as much or as little as his relationship and contract with

the employer requires. He will normally maintain close contact with the employer so that his decisions reflect the employer's business objectives.

The SIPDM defines contract management as "applying the terms and conditions, including the agreed procedures for the administration thereof". This standard establishes requirements for those administering a contract or order on behalf of the employer to:

- act as stated in the contract, subject to any constraints that may be imposed by the employer or the employer's Supply Chain Management (SCM) Policy for Infrastructure Procurement and Delivery Management;
- provide certain data associated with the contract within stipulated time frames, including cash flows, insurance claims, revised estimates of prices and provisions for price adjustments for inflation, revisions to the total of the prices or completion or delivery date for the contract or an order, etc;
- retain, on a contract file, copies of certificates of insurances, bonds and the like;
- make an assessment of the amount due to the contractor (the other party to the contract) where required in terms of the contract, or review the contractor's assessment of the amount due and timeously certify payment;
- develop and maintain a contract risk register; and
- report on a number of key performance indicators.

To act as stated in the contract is to perform the actions or carry out the duties assigned to the employer's agent in the standard form of contract and to take any necessary decisions associated therewith. This requires a comprehensive understanding of not only the fundamental rights and duties of the parties to a particular form of contract but, more importantly, the context and detailed procedures for the effective administration of such a contract. This requirement in effect makes the administrative procedures of the selected form of contract an integral part of an organisation's standard operating procedures. It is therefore important that an organ of state's procurement system should be designed around the administrative procedures and not impose changes on or tamper with such procedures. If, for example, the JBCC form of contract is

selected, the JBCC administrative provisions need to be applied consistently throughout the procurement system.

The SIPDM requires that the person responsible for the administration of a contract or order (i.e. the agent of the employer) relating to the provision of new infrastructure or the rehabilitation, refurbishment or alteration of existing infrastructure, is required to be registered in a professional category of registration in terms of the Architectural Profession Act, the Engineering Profession Act, Landscape Architectural Profession Act, the Project and Construction Management Professions Act or Quantity Surveying Profession Act. It should be noted that contract management forms part of the normal services of built environment professionals and is included in the recommended scope of services and associated guideline fees published by the various councils.

Contract management, as defined in the SIPDM, does not extend to the management of payment to contractors and the management and administration of finances for a portfolio or programme of projects.

The SIPDM under Procurement Gate 8 provides a number of controls associated with the administration of a contract which are linked to an organisation's SCM Policy for Infrastructure Procurement and Delivery Management. Accordingly, the employer's agent is constrained in carrying out some of the actions or duties assigned in terms of the standard form of contract. Approval needs to be obtained from the relevant designated person identified in the organ of state's SCM policy to obtain approval to:

- waive penalties or low performance damages (Procurement Gate 8A);
- notify and refer a dispute to an adjudicator, or for final settlement to an arbitrator or court of law (Procurement Gate 8B);
- increase the total of prices, excluding contingencies and price adjustment for inflation, or the time for completion at the award of a contract, or the issuing of an order up to a specified percentage (Procurement Gate 8C);
- exceed the total of prices, excluding contingencies and price adjustment for inflation, or the time for completion at award of a contract or the issuing of an order by more than 20% and 30%, respectively (Procurement Gate 8D);

- cancel or terminate a contract (Procurement Gate 8E); and
- amend a contract (Procurement Gate 8F).

NOTE

Further insights and information can be obtained from:

- Construction Industry Development Board (2005). Best Practice Guideline #C2: Choosing an appropriate form of contract for engineering and construction works. Available at: www.cidb.org.za/publications/Documents/Choosing%20an%20Appropriate%20Form%20of%20Contract%20for%20Engineering%20and%20Construction%20Works.pdf.
- Hughes, W, Champion, R & Murdoch, J 2015. *Construction Contracts: Law and management*. Fifth Edition. Routledge: London.
- Macdonald, H 2009. Managing the Secondary Impacts of Project Change. Engineering and Construction Risk Institute. Document number ECRI-CM-005. Available at: <http://ecrionline.org/s/PPIlibrary/ECRI-CM-005-Presentation.pdf>.
- SANS 10845-2:2015 ISO 10845:2011. Construction procurement – Part 2: Formatting and compilation of procurement documents. South African Bureau of Standards.
- ISO 6707-2:2014. Buildings and civil engineering works – Vocabulary – Part 2: Contract terms. International Organisation for Standardisation.
- ISO Guide 73:2009. Risk management – Vocabulary. International Organisation for Standardisation.
- Watermeyer, R B 2014. Realising value for money through procurement strategy in the delivery of public infrastructure. 8th CIDB Post-Graduate Conference, University of the Witwatersrand, Johannesburg, February. ●

Procurement documents for infrastructure projects

The *Standard for Infrastructure Procurement and Delivery Management (SIPDM)* defines procurement documents as “documentation used to initiate or conclude (or both) a contract or the issuing of an order”. Procurement documents need to:

- present requirements in a clear, unambiguous, comprehensive and understandable manner;
- require tenderers to submit particulars sufficient for the employer to evaluate their tenders;
- set out the criteria by which tenders are to be evaluated;
- define the risks, liabilities and obligations of the parties to the contract and the procedures for the administration of the contract;
- define the nature, quality and quantity of goods, services or works to be provided in the performance of the contract; and
- establish the means by which the contractor is paid for performing the contract.

Procurement documents as such capture the procurement strategy and tactics that are decided upon. They are in effect a tool for identifying a suitable contractor during the tender process and managing risks during the execution of a contract. The SIPDM establishes a number of requirements for procurement documents. It is important to have a working knowledge of these requirements, as procurement documents form the backbone of the infrastructure procurement system.

INTRODUCTION

Procurement documents are required primarily to solicit tender offers and thereafter to form the basis for a contract. Procurement documents as such:

- establish the process of admitting a respondent to an electronic database, or the process of short-listing or pre-qualifying respondents to be invited to submit a tender offer;
- establish the manner in which the process of offer and acceptance is to be conducted;
- solicit information to enable the employer to evaluate submissions and appoint a suitable contractor;
- enable potential contractors to communicate their credentials and make an offer to an employer;
- capture the allocation of risks, liabilities and obligations of the parties, the procedures for the administration of the contract and the manner in which disputes may be resolved; and
- provide the basis for paying the contractor and specifying any measurable, tangible, verifiable outcome, result or item that is to be produced or completed (deliverable), and the constraints in doing so.

Procurement documents enable procurement strategy and tactics to be implemented. Figure 1 illustrates the concept

of offer and acceptance that results in a contract being entered into. Procurement documents provide tenderers with the necessary inputs to allow them to compile their tender submissions. Their tender

submissions are in turn inputs into the contract that may be concluded following the acceptance of their tender offer.

The National Treasury SIPDM requires that procurement documents be

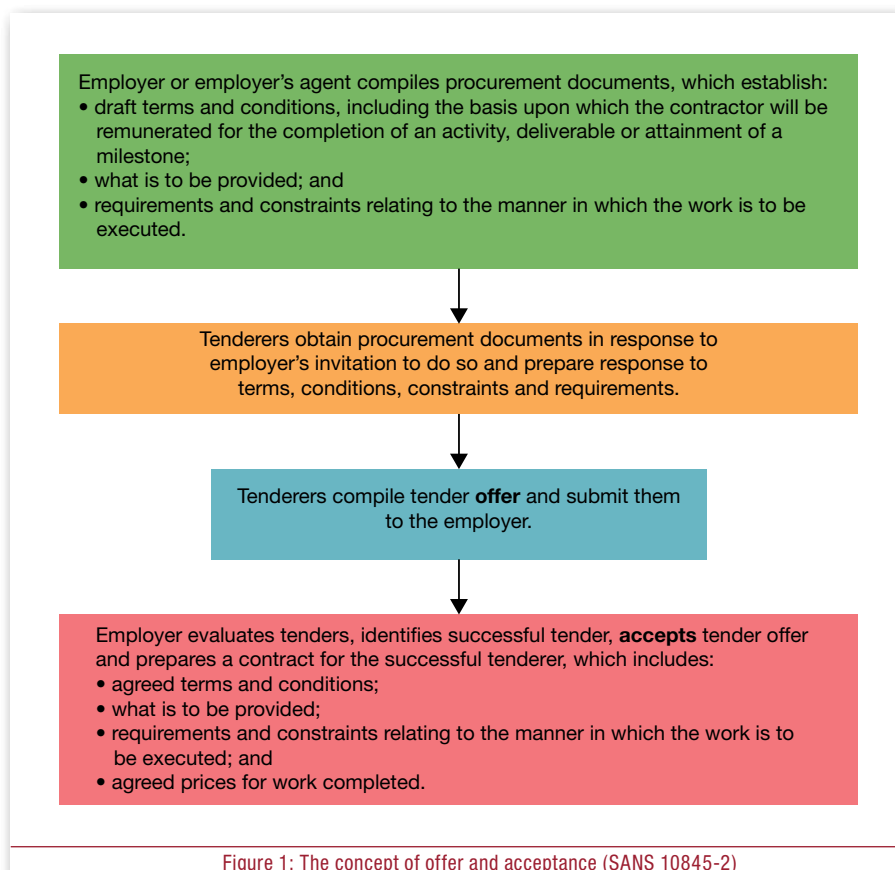


Figure 1: The concept of offer and acceptance (SANS 10845-2)

prepared in accordance with the relevant provisions of SANS 10845-2. SANS 10845-2 provides a standard format for the compilation and formatting of procurement documents, based on the logical flow of documents in the process of offer and acceptance, as indicated in Figure 1.

FORMATTING AND COMPILING PROCUREMENT DOCUMENTS IN A STANDARD MANNER

SANS 10845-2 provides a common framework within which procurement documents may be developed for:

- **expressions of interest**, i.e. requests for respondents to register their interest in undertaking a specific contract or to participate in a project or programme and to submit their credentials so they may, in terms of the employer's procurement procedures, be invited to submit a tender offer should they qualify or be selected to do so;
- **tenders**, i.e. written offers for the provision of goods, or to carry out a service or engineering and construction works under given conditions, usually at a stated price, and which are capable of acceptance and conversion into binding contracts; and
- **contracts**, i.e. legally enforceable agreements to supply goods, execute work or provide services.

SANS 10845-2 requires that the headings and structure of component documents contained in Tables 1, 2 and 3 be used for expressions of interest, tenders and contracts. The headings are not to be changed to suit personal preferences, e.g. scope of work being changed to "terms of reference" or "specification". Likewise the documents are not to be renumbered. To do so defeats the objective of having a uniform set of headings.

The uniform format for the compilation of procurement documents is based on the principle that there is a complete separation in the component documents that make up a procurement document, i.e. the conditions of tender, the conditions of contract, the specifications and methods of measurement and payment. The separation of component documents in this manner ensures that:

- each subject within a tender and within the subsequent contract can only be addressed once and in only one component document;
- issues relating to the tender fall away once the contract is in place;

- changes in conditions of contract do not affect other aspects of the contract, such as specifications, measurement and payment; and
- changes in measurement and payment systems do not affect other aspects of the contract, such as the conditions of contract and specifications.

Guidance and commentary on each of the component documents may be found in SANS 10845-2. The structure and format for procurement documents provided in SANS 10845-2 facilitates the use of standard component documents which can be changed without impacting significantly upon the remaining component documents, e.g. a change in a standard form of contract.

Calls for expressions of interest are used to establish electronic databases required to support the use of the nominated procedure, or to prequalify respondents in the qualified procedure or the restricted competitive negotiations procedure provided in SANS 10845-1. Tenders are thereafter invited from pre-qualified respondents, using the tender document (Table 2) which includes a draft contract (Table 3).

The tender documents outlined in Table 2, together with a draft contract (Table 3), are used in all the competitive selection and competitive negotiation procurement procedures provided in SANS 10845-1, as well as the solicitation of tenders from a confined market. In the negotiation procedure, only the draft contract (Table 3) is issued to a sole tenderer to conclude a contract.

The proforma form of offer and acceptance (document C1.1 in Table 3) provided in SANS 10845-2 is used to conclude a contract. This form comprises three parts – firstly an offer to provide the goods, services or engineering and construction works for a price, or in accordance with the terms of the financial proposal made; secondly, confirmation from the employer of acceptance of the offer following the evaluation of tenders and that a contract therefore exists; and thirdly a schedule of deviations which records any agreed changes to the documentation that occur between receipt of the tender offer and award of contract. Where there are small variances between the draft contract and the accepted offer, the changes permitted in terms of the conditions of tender, e.g. addenda issues to tenderers or acceptable amendments

and qualifications, are detailed in the schedule of deviations. Where these variations are substantial, the draft contract is refreshed to form the final contract, and the schedule of deviations provides the high-level record of changes that have been affected between the draft and the final contract.

STANDARD COMPONENT DOCUMENTS

The SIPDM requires that, where applicable, procurement documents reference SANS 10845-4 (standard conditions for the calling for expressions of interest), SANS 10845-3 (standard conditions of tender) and a standard form of contract selected from a list of standard forms of contract (see Table 4).

SANS 10845-4 sets out standard conditions for the calling for expressions of interest which bind the employer and respondent to behave in a particular manner, establish what is required for a respondent to submit a compliant submission, make known to respondents the evaluation criteria, and establish the manner in which the employer conducts the process of calling for expressions of interest. The submission data in an SIPDM compliant document references SANS 10845-4 and provides the data necessary to make the SANS 10845-4 applicable to a particular procurement process (see Annexes A and B of SANS 10845-4 for commentary and guidance on the setting up of submission data).

SANS 10845-3 sets out standard conditions of tender which bind the employer and tenderer to behave in a particular manner, establish what a tenderer is required to do in order to submit a compliant tender, make known the evaluation criteria to tenderers, establish the manner in which the employer conducts the process of offer and acceptance, and provides the necessary feedback to tenderers on the outcomes of the process. The tender data in an SIPDM compliant document references SANS 10845-3 and provides the data necessary to make the SANS 10845-3 applicable to a particular procurement process (see Annexes A and B of SANS 10845-3 for commentary and guidance on the setting up of tender data).

SANS 10845-4 and SANS 10845-3 enable expressions of interest and tender offers received in terms of a competitive selection procedure to be evaluated in a standard manner, as indicated in Table 5.

Table 1: Documents that relate to a call for expressions of interest		
Contents		Function and broad outline of contents
Number	Heading	
E1: Submission procedures		
E1.1	Notice and invitation to submit an expression of interest	Alerts respondents to submit their credentials in order to be admitted to an electronic database or to be invited to submit tenders should they satisfy the stated criteria.
E1.2	Submission data	Establishes the rules from the time a call for an expression of interest is advertised to the time that any submission is evaluated.
E2: Returnable documents		
E2.1	List of returnable documents	Ensures that everything the employer requires a respondent to include in his submission is included in, or returned with, such a submission.
E2.2	Submission schedules	Contains documents that the respondent is required to complete for the purpose of evaluating submissions.
E3: Indicative scope of work (where appropriate)		
E3	Indicative scope of work	Indicates to respondents what the contract is likely to entail so that they can make an informed decision as to whether or not they wish to respond and, if so, to structure their submission around the likely demands of the project.

Table 2: Documents that relate to the tender		
Contents		Function and broad outline of contents
Number	Heading	
T1: Tendering procedures		
T1.1	Tender notice and invitation to tender	Alerts tenderers to the nature of the goods, services and engineering and construction works required by the employer and should contain sufficient information to enable them to respond appropriately.
T1.2	Tender data	Establishes the rules from the time that tenders are invited to the time that a tender is awarded.
T2: Returnable documents		
T2.1	List of returnable documents	Ensures that everything the employer requires a tenderer to submit with his tender is included in, or returned with, his tender submission.
T2.2	Returnable schedules	Contains documents that the tenderer is required to complete for the purpose of evaluating tenders and other schedules which upon acceptance become part of the subsequent contract.

Table 3: Documents that relate to the contract		
Contents		Broad outline of contents
Number	Heading	
C1: Agreements and contract data		
C1.1	Form of offer and acceptance	Formalises the legal process of offer and acceptance.
C1.2	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		
C2.1	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.
C2.2	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		
C3	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)		
C4	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.

Activities associated with a competitive negotiation procedure are very similar to the competitive selection procedure for the first five activities and the last two activities. Activities 6 to 8 in this procedure relate to the determination of the acceptability of preferred tenderers, the negotiation of procurement needs with preferred tenderers and the evaluation of revised or best and final offer, respectively. Comprehensive guidance and step-by-step actions for each activity in these procurement procedures are contained in Annex C of SANS 10845-3 and SANS 10845-4. The SIPDM establishes comprehensive requirements for the contents of evaluation reports, which are aligned with the provisions of these South African national standards.

The contract data establishes the conditions of contract that describe the responsibilities, liabilities and obligations of the contracting parties and the agreed procedures for the administration of the contract. It does so by identifying the standard form of contract identified from Table 4 and providing the contract variables or information needed to operate the contract, including the choice of options. Standard forms of contract that are not listed in the approved list of standard forms of contract in Table 4 may not be used in public sector contracts, e.g. the NEC3 Framework Agreement, the Professional Consultants Services Agreement Committee's (PROCSA) Client/Consultant Professional Services Agreement, Consulting Engineer's South Africa Model Professional Services Agreement and Specific Data August 2014, and the FIDIC Client/Consultant Model Services Agreement.

The SIPDM provides the following standard forms which, if applicable, need to be included in the Returnable Schedules:

- Record of Addenda to Tender Documents which requires tenderers to confirm that they have taken into account addenda, if any, issued prior to the closure of tenders;
- Proposed Amendments and Qualifications which requires tenderers to record any deviations or qualifications permitted in terms of the standard conditions of tender;
- Preferencing Schedule: Broad-Based Black Economic Empowerment status which enables broad-based black economic contributors to claim preferences;

- Compulsory Declaration which captures essential information required to confirm compliance with legislative requirements and enables tenderers to make certain declarations required in terms of procurement legislation; and
- Municipal Declaration and Returnable Documents which facilitate compliance with the requirements of the Supply Chain Management Regulations issued in terms of the Local Government: Municipal Finance Management Act of 2003.

The SIPDM makes it clear that standard documentation issued by a relevant treasury for non-infrastructure procurement is not to be included in infrastructure procurement documents, unless they are found to be compatible and not in conflict with the provisions of a procurement document which complies with the SIPDM provisions.

PRICING DATA

The pricing data comprises the pricing assumptions and the pricing schedules, which can be in the form of activity schedules or bills of quantities. Such data needs to be aligned with the selected pricing strategy embedded in the standard forms of contract indicated in Table 4 or the provisions for payment developed in the contract data.

Bills of quantities are not to be used as a specification of materials, goods or methods.

SCOPE OF WORK

The scope of work identifies the goods, services or engineering and construction works which are to be provided during the contract, and establishes requirements and constraints relating to the manner in which the contract is to be performed. The scope of work needs to provide sufficient information to enable tenderers to price and plan the requirements for the contract to comply with the employer's requirements and expectations in the performance of the contract. The content of the scope of work differs between categories of contract, i.e. between goods, services and engineering and construction works, and varies significantly from contract to contract. Annex C of SANS 10845-2 provides guidance and comprehensive checklists as to what should be addressed in the scope of work.

The scope of work identifies the information upon which the contractor has

priced the goods, services or engineering and construction works, i.e. the contract drawings, the specifications and instructions. This document accordingly captures the baseline information at the start of the contract. All changes made by the employer or the employer's agent after the start of the contract are evaluated against this baseline information. It is therefore essential that this document accurately reflects what is agreed to be delivered at the start of the contract in exchange for the contract price.

Standard forms of contract have been shifting away from the traditional master-servant relationship between the parties. This change in approach requires that the scope of work be objective in its formulation. For example, clause 15.5 of the 2007 edition of the JBCC Principal Building Agreement (PBA) stated that the "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". This edition of JBCC PBA defined a defect as "any aspect of materials and workmanship forming part of the works that, in the opinion of the principal agent, is due to the failure of the contractor to comply with his obligations in terms of the agreement". The 2014 edition of JBCC PBA, however, requires the contractor to "provide everything necessary for the proper execution of the works in accordance with the contract documents" and defines a defect as "any aspect of materials and workmanship forming part of the works that does not conform to the contract documents".

Another good example of the master-servant approach to drafting documents can be found in the SANS 1200 specifications for civil engineering works which were developed during the 1980s. These specifications assign duties to the engineer using terms such as "in the opinion of the engineer", "as the engineer may direct", "approved by the engineer", "the engineer considers", "obtain specific instructions from the engineer before proceeding", "the engineer allows to be incorporated", "the engineer is satisfied", "ordered by the engineer", and "to the satisfaction of the engineer". These terms introduce sub-

jectivity and uncertainty as to what the actual requirements are. For example, how can a contractor price for something for which he is at the mercy of the engineer? What precisely is a defect in terms of the contract?

The information contained in the scope of work prior to the start of the contract and any information issued thereafter need to be objective in order to minimise risk pricing, minimise waste, and avoid substandard quality or disputes arising during the execution of the contract.

SANS 10845-1 stipulates that the scope of work should:

- be described in terms of performance of functional characteristics rather than the design of descriptive characteristics, and be based on national or international standards, where such exist; and
- not create trade barriers, and any reference to any particular trademark, name,

patent, design, type, specific origin or producer should not be made unless there is no other sufficiently precise or intelligible way of describing the characteristics of the work, and such reference is accompanied by the words “or equivalent”.

SUBCONTRACTING

There are three types of subcontractors provided for in standard forms of contract for engineering and construction works. The first type is a domestic subcontractor who is appointed by the main contractor at his discretion. The second type is a nominated subcontractor who is nominated by the employer, which the contractor is obliged to appoint as a subcontractor. The third type is a selected subcontractor who is selected by the contractor in consultation with the employer in terms of the requirements of the contract.

The main contractor has no control over the appointment of nominated

subcontractors. Accordingly, if there is any delay in the appointment of such a subcontractor for whatever reasons, the employer is liable for any expenses and costs that the main contractor may incur as a result of such delay. The main contractor has control over the appointment of selected subcontractors if he is made responsible for the procurement process. As a result, the employer is not liable for any expenses or costs associated with a delay in the appointment of the selected subcontractor, unless the employer or the employer's representative is responsible for developing the selected subcontractors' procurement documents or controlling the procurement process.

The standard forms of contract approved in the SIPDM (see Table 4) approach subcontracting differently. The FIDIC forms of contract and the JBCC PBA make provision for nominated subcontractors. The JBCC PBA and SAICE's

Table 4: Approved forms of contract for infrastructure projects

Standard forms of contract	Pricing strategies provided for	
Engineering and construction contract		
FIDIC Short Form of Contract	Lump sum, bill of quantities or cost reimbursable	
FIDIC Conditions of Contract for Construction for Building and Engineering Works designed by the Employer (Red book)	Bill of Quantities	
FIDIC Conditions of Contract for plant and design-build for electrical and mechanical plant, and for building and engineering works, designed by the contractor (Yellow book)	Bill of Quantities	
FIDIC Conditions of Contract for EPC Turnkey Projects (Silver book)	Lump sum	
FIDIC Conditions of Contract for Design, Build and Operate Projects (Gold book)	Lump sum	
JBCC Principal Building Agreement (PBA)	Lump sum, schedule of rates or Bill of Quantities	
JBCC Minor Works Agreement (MWA)	Lump sum, schedule of rates or Bill of Quantities	
NEC3 Engineering and Construction Contract (ECC)	Priced-based options A: Priced contract with Activity Schedule B: Priced contract with Bill of Quantities	Cost-based options C: Target contract with Activity Schedule D: Target contract with Bill of Quantities E: Cost reimbursable contract F: Management contract
NEC3 Engineering and Construction Short Contract (ECSC)	Priced contract with Price List	
SAICE General Conditions of Contract for Construction Works (GCC)	Bill of Quantities or lump sum	
Service contract		
CIDB Standard Professional Service Contract	No fixed pricing strategy	
NEC3 Professional Services Contract (PSC)	Priced-based options A: Priced contract with Activity Schedule G: Term contract (time-based and lump sum prices)	Cost-based options C: Target contract E: Time-based contract
NEC3 Professional Services Short Contract (PSSC)	Priced contract with Price List	
CIDB General Conditions of Service	No fixed pricing strategy	
NEC3 Term Service Contract (TSC)	Priced-based options A: Priced contract with Price List	
NEC3 Term Service Short Contract (TSSC)	Priced contract with Price List	
Supply contract		
CIDB General Conditions of Purchase	No fixed pricing strategy	
CIDB Contract for the Supply and Delivery of Goods	No fixed pricing strategy	
NEC3 Supply Contract (SC)	Priced contract with Price Schedule	
NEC3 Supply Short Contract (SSC)	Priced contract with Price Schedule	

Table 5: Activities associated with the evaluation of expressions of interest and tender offer made in terms of a competitive selection procedure

Procedure	Activities		Related SANS 10845 clauses governing actions associated with activities	
	No	Description		
Evaluation for an expression of interest (SANS 10845-4)	1	Open and record submissions received.	5.3 Late submissions 5.4 Opening of submissions	4.7 Making a submission 5.7 Test for responsiveness
	2	Determine whether or not submissions are complete and comprehensible.	5.7 Test for responsiveness	
	3	Determine whether or not tender offers are responsive.	4.1 Eligibility 4.5 Clarification meeting	5.7 Test for responsiveness
	4	Evaluate submission.	5.9 Evaluation of responsive submissions	
	5	Determine if there are any grounds for disqualification.	5.6 Grounds for rejection and disqualification	
	6	Action outcome of the evaluation.		
Evaluation and award of tenders in a competitive selection procedure (SANS 10845-3)	1	Open and record tender offers received.	3.5 Employer's right to accept or reject any tender offer 4.13 Tender submissions 4.14 Information and data to be completed in all respects 4.16.2 Withdrawal of tenders	5.3 Returning late tender offers 5.4 Opening of tender submissions 5.5 Two-envelope system 5.8 Test for responsiveness
	2	Determine whether or not tender offers are complete.	4.6 Acknowledging addenda 4.13 Tender submissions 5.8 Test for responsiveness	4.14 Information and data to be completed in all respects 4.18 Other material
	3	Determine whether or not tender offers are responsive.	4.1 Eligibility 4.7 Clarification meeting 4.10 Pricing the tender offer 4.11 Alterations to documents 4.12 Alternative tender offers 4.13 Tender submissions	4.13.3 Tender securities 4.13.4 Inclusion of certificates 4.19 Inspections, tests and analysis 4.20 Submitting securities, bonds, policies, etc 5.8 Test for responsiveness
	4	Evaluate tender offers.	5.11.1 General 5.11.3 Method 2 5.11.4 Method 3 5.11.5 Method 4	5.11.6 Decimal places 5.11.7 Scoring financial offers 5.11.8 Scoring preferences 5.11.9 Scoring quality
	5	Determine if there are any grounds for disqualification.	5.7 Grounds for rejection and disqualification	
	6	Determine acceptability of preferred tenderer.	5.9 Arithmetical errors, omissions and discrepancies 5.10 Clarification of a tender offer	5.11 Evaluation of tender offers 5.13 Acceptance of a tender offer
	7	Prepare a tender evaluation report.		
	8	Confirm recommendation contained in the tender evaluation report.		

GCC 2015 make provision for selected subcontractors. The NEC3 ECC makes only provision for domestic subcontractors. However, constraints on how subcontractors are to be appointed can be included in the scope of work. This enables subcontractors to be appointed as selected subcontractors.

PROCUREMENT STRATEGY AND TACTICS

A strategic approach to procurement above the project level to balance competing objectives and priorities rather than viewing each project in isolation, is undertaken during Stage 2 (strategic

resourcing) in the control framework provided for the planning, design and execution of infrastructure projects contained in the SIPDM. Procurement strategy as such reflects at a high level the choices made in determining what is to be delivered through a particular contract, the procurement and contracting arrangements and how secondary (or developmental) procurement objectives are to be promoted during the implementation phase of an infrastructure project. Procurement plans and procurement documents need to be framed around and reflect these high-level choices.

Procurement tactics, on the other hand, are required to implement procurement strategies. Such tactics relate to the setting up of procurement documents to solicit tender offers and to enter into contracts, i.e. the formulation of submission data, tender data, contract data, the pricing and the scope of work associated with a contract or order issued in terms of a framework contract. Choices are informed by a number of considerations and are made at the time that procurement documents are drafted.

Table 6 identifies the tactical variables included in the standard conditions for calling for expressions of interest and the

Table 6: Examples of tactical variables provided in SANS 10845-3 and SANS 10845-4

Standard conditions	Example of tactical variables	Commentary
Conditions for the calling for expressions of interest (SANS 10845-4)	Eligibility criteria	Eligibility criteria can be used to introduce minimum qualification or pre-qualification criteria to screen out unsuitable respondents prior to the evaluation of submissions.
	Clarification meetings	Clarification meetings can be used to interact with and to communicate specific requirements, innovations, etc, associated with a procurement to respondents.
	Procedure for the evaluation of submissions	Respondents can be evaluated in terms of their capability and capacity to perform the contract in terms of a compliance/non-compliance basis or in terms of a scoring system, with or without minimum qualifying thresholds. (The scoring system can be used to limit the number of respondents invited to submit tender offers.)
Conditions of tender (SANS 10845-3)	Eligibility criteria	Eligibility criteria can be used to introduce minimum qualification or pre-qualification criteria to screen out unsuitable tenderers prior to the evaluation of submissions.
	Compensation of tenderers for preparing aspects of the tender	Incentives for quality submissions can, for example, be made in design competitions through the awarding of cash prizes.
	Main tender offers are not required to be submitted together with alternative tenders	Can be used to encourage innovation in certain circumstances.
	Tenderers may offer to provide any of the following parts, or combinations thereof, of the works, services or goods	Can be used to make the contract more attractive to smaller or specialist contractors who may not be able to provide the full range of goods, services or works that is required.
	The procedure for the evaluation of responsive tenders	Tender offers can be evaluated in terms of three variables, namely financial offer, preference and quality. A point-scoring system is followed where more than one variable is evaluated.

standard conditions of tender contained in SANS 10845-4 and SANS 10845-3, respectively. Such tactics are aimed in the main on the selection of a contractor who is most likely to deliver best value through the performance of the contract, life cycle costs of what is offered, the availability of spares, operation and maintenance requirements, etc. Tender assessment schedules may be required to reduce tender offers to a comparative basis, particularly where pricing parameters are tendered which allow the price to be developed once the work is identified, or to determine the cost of changes in requirements or events for which the contractor is not at risk. Such schedules need to be included whenever the NEC3 standard forms of contract are used.

Most current procurement processes can be described as either being “traditional” or “collaborative”. Traditional approaches involve detailed designs and specifications being prepared to allow procurement to proceed on the basis of the lowest price adjusted for a preference. This method works well for simple, well-defined projects where the offer and acceptance can be clearly defined. In traditional approaches, the range of tactics which may be employed is low.

Traditional procurement often seeks to place all the risk within the supply chain

through standard prescriptive terms. This transfer is priced by suppliers and incorporated into their tender sums. A collaborative approach allows the parties to negotiate both value-efficient and cost-efficient solutions in relation to these risks. Risks can be identified more readily within an integrated team working together on a construction project, and risk can be discussed more openly with a greater emphasis on mitigation. Clients may wish to retain all risks to benefit from cheaper tender sums. Collaborative contracts require a number of tactical decisions to be made to enable the contract to not only allocate specific risks, but also to incentivise performance to achieve best results.

Tactics which may be employed in the setting of the terms and conditions of contracts include price adjustment for inflation, payment in multiple currencies, parent company guarantees, bonus for early completion, delay damages, transfer of rights, performance bonds, partnering arrangements, retention, advance payment to the contractor, low-performance damages, limitation of liability, financial incentives for attaining or exceeding a key performance indicator, etc.

Procurement documents need to capture the selected procurement strategy and tactics to enable their implementation.

NOTE

- Further insights and information can be obtained from:
- BS 8534:2011. Construction procurement policies, strategies and procedures – Code of practice. British Standards Institute.
- SANS 10845-1:2015 ISO 10845-1:2010. Construction procurement – Part 1: Processes, methods and procedures. South African Bureau of Standards.
- SANS 10845-2:2015 ISO 10845-2:2011. Construction procurement – Part 2: Formatting and compilation of procurement documents. South African Bureau of Standards.
- SANS 10845-3:2015 ISO 10845-3:2011. Construction procurement – Part 3: Standard conditions of tender. South African Bureau of Standards.
- SANS 10845-4:2015 ISO 10845-4:2011. Construction procurement – Part 4: Standard conditions for the calling for expressions of interest. South African Bureau of Standards.
- Watermeyer, R B 2015. Design and Adoption of Innovative Procurement Systems in Infrastructure Delivery. West Africa Built Environment Research Conference, Accra, Ghana, August. ●

Approaches to dealing with “functionality” and “quality” in the evaluation of tender offers

The Standard for Infrastructure

Procurement and Delivery

Management makes no reference to “functionality”. It does make reference to “quality” which may be used in the evaluation of tenders as other objective criteria and provides detailed procedures for doing so. This enables contracts to be awarded not only on the basis of lowest price adjusted for a preference, but also on the most economically advantageous or cost-effective offer that is submitted.

INTRODUCTION

Section 217(1) of the Constitution of the Republic of South Africa (Act 108 of 1996) requires that the public procurement system be fair, equitable, transparent, competitive and cost-effective. Section 217(2) permits organs of state to implement a procurement policy which provides for categories of preference in the allocation of contracts and the protection or advancement of persons, or categories of persons, disadvantaged by unfair discrimination. Section 217(3), however, requires such policy to be implemented through a framework provided in national legislation.

The Preferential Procurement Policy Framework Act (PPPFA) was promulgated to give effect to Section 217(3) of the Constitution by providing a framework for the implementation of

the procurement policy contemplated in Section 217(2) of the Constitution. The Preferential Procurement Regulations 2001 were issued to enable the Act to be implemented. These regulations dealt not only with a price preference mechanism which was contemplated in Section 217(2) of the Constitution, but also with the evaluation of other factors (functionality) and other objective criteria in addition to price and preference in the awarding of contracts.

International best practice suggests that tenders be awarded to tenderers who are considered to be fully capable of undertaking the contract and whose tender offer is the most competitive in terms of one of the following two criteria:

- a) the **lowest price**; or
- b) the **most economically advanta-**

geous from the point of view of the purchaser, which is usually identified through the application of a points-scoring system which requires that specific evaluation criteria linked to the subject matter of the contract in question, associated relative weightings, if any, and prompts for judgement or qualitative indicators are all set out in the tender documents, and the tender is awarded to the tenderer scoring the highest number of points.

The Preferential Procurement Regulations of 2001, issued in terms of the PPPFA, in line with international best practice, enabled tenderers who are considered capable of executing the contract to be evaluated on a points-scoring system. A maximum of 10 or 20 points are awarded for specific goals relating to a preferential procurement policy, depending upon the value of the transaction, while 80 or 90 points respectively are awarded for price only

or for price and other factors (functionality). These regulations split price into price and functionality, and then added points for preference.

During 2009 some of the Regulations relating to functionality were successfully challenged in the KwaZulu-Natal High Court in Pietermaritzburg. The court found that **“the word price does not include functionality ... they are entirely distinctive concepts”**. The court consequently ruled that some of the regulations relating to functionality were inconsistent with the Act and therefore declared them to be invalid. The court did not, however, rule out the evaluation of functionality in the evaluation of tenders.

APPROACHES TO DEALING WITH THE EVALUATION QUALITY IN TENDERS

Two schools of thought have emerged in the wake of this judgement regarding the manner in which functionality may be evaluated in tenders.

The first is that no points other than those provided for in the PPPFA for price and preference may be included in the evaluation of tenders. If this is the case, functionality/quality criteria may only be applied as pre-qualification criteria, meaning that such criteria are scored to establish whether or not the functionality/quality offered satisfies a minimum threshold, and only those tenderers who score above the threshold are evaluated on the basis of price and preference in order to establish which is the most advantageous tender. Thus functionality/quality is scored and all tenderers who fail to achieve a minimum score are eliminated from further consideration, and the remaining tenders are evaluated as follows:

Tender evaluation points = (points for price) + (points for preference)

This method evaluates functionality/quality on a balanced scorecard basis in terms of which tenderers have to achieve a minimum score in order for their tender to be evaluated in terms of price and preference. This approach cannot be used to establish the most economically advantageous offer, as it does not allow comparisons to be made between offers that satisfy an absolute minimum level of functionality. It also cannot be used to evaluate a single aspect as a score above a threshold is the same as simply specifying an absolute minimum value.

The second school of thought is that the PPPFA is a framework (a skeleton or set of principles) which is intended to give effect to a procurement policy embedded in the Constitution and therefore has narrow application. The PPPFA accordingly recognises that there are objective criteria in addition to price and preference which can be taken into account when a tender is awarded. Furthermore, the Act does not limit the points awarded to 100. Neither does it say that additional points cannot be added to the points for price and preference. If this is the case, the points system for evaluating tenders can be extended beyond the combining of points for price and preference in the quantum provided for in the PPPFA (i.e. 100) to the points for functionality in order to establish the most advantageous tender, i.e.

Tender evaluation points = (points for price) + (points for preference) + (points for functionality/quality)

This method recognises that there is a relationship between the outcome of the procurement and the tendered price, and the quality offered by the tenderer. It quantifies this to enable comparisons to be made between tenderers. It identifies the highest scoring tenderer as offering best value for money in a given context, whilst including equity considerations.

The Preferential Procurement Regulations were revised during 2011 to take account of this court judgement, as well as of recent developments regarding Broad-Based Black Economic Empowerment. These regulations came into effect on 7 December 2011.

QUALITY VERSUS FUNCTIONALITY

It is important to understand what is meant by “functionality” in the Preferential Procurement Regulations 2011, and “quality”.

The Preferential Procurement Regulations define functionality as the “measurement according to predetermined norms, as set out in the tender documents, of a service or commodity that is designed to be practical and useful, working or operating, taking into account, amongst other factors, the quality, reliability, viability and durability of a service and the technical capacity and ability of a tenderer”. This definition assesses what a tenderer has to offer measured against predetermined norms which may include a number of factors which can relate to the characteristics of what is offered and the technical capacity and ability of a tenderer. Such norms can include quality, a term which is not defined. The Oxford dictionary definition of quality is “the standard of something as measured against other things of a similar kind or the degree of excellence of something”. This definition of quality is in line with the thinking expressed in the definition for functionality.

Regulation 4 of the Preferential Procurement Regulations permits the evaluation of functionality in the evaluation of tender offers, provided that the functionality criteria are objective and such criteria are stated in the tender documents along with the values and weighting applicable to such criteria and a minimum qualifying score for quality. Tenderers who fail to achieve the minimum score are eliminated from further consideration. This regulation appears merely to give direction regarding the requirement in the PPPFA for only scoring acceptable tenders, which the Act defines as “any tender which, in all respects, complies with the specifications and conditions of tender as set out in the tender document”.

The approach to functionality provided in Regulation 4 of the Preferential Procurement Regulations 2011 is a form of prequalification and does not change the outcome of the preference points system. It influences it as it excludes tenderers who fail to satisfy stated requirements from consideration. It also does not measure best economic value or the potential cost-effectiveness of the transaction.

The commonly used ISO definition for quality is “the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs”. Quality criteria used in the evaluation of tender offers (see 6.2.11.2 of SANS 10845-1) should form an integral part of the tender offer and hence the outcome of the procurement. Such criteria should:

- relate directly to the goods, services or engineering and construction works that are being procured, and to matters that cannot directly be expressed in monetary terms;
- be justifiable in terms of projected procurement outcomes;
- enable the most economically advantageous offer to be established; and
- be practicable, objective and quantifiable to enable tenders to be compared and assessed objectively.

The evaluation of quality in the evaluation of tender offers alongside price adjusted for a preference, expands the preference points scoring system included in the Preferential Procurement Policy Framework Act to include points for quality as objective criteria, which are added after points for price and preference have been scored. This enables best economic value to be determined or the cost-effectiveness of the transaction to be considered in the awarding of contracts.

VIEWS OF VARIOUS COURTS ON THE EVALUATION OF QUALITY ALONGSIDE PRICE AND PREFERENCE

The courts have, in terms of a number of cases, had reason to look at aspects of the evaluation of quality in tender offers in addition to price adjusted for a preference. Their comments which shed some interesting insights into this approach are as follows:

- Eastern Cape High Court, Grahamstown, in Case No 230/09: “... there is in my judgement nothing offensive either in using quality or functional assessments as an initial threshold requirement, as well as then using them again as part of the second assessment amongst those who passed the threshold. The repetition is not unfair (the same scores are used); it does not affect equity requirements (those are met in the B-BBEE points allocation); the process remains competitive (not only in relation to price); and effectiveness is enhanced (price and functionality count).”

● Western Cape High Court, Cape Town, in reportable case No 21158/2012: “Functionality as it is defined in the Tender Documents concerns the ability of the tenderer to deliver what is required, to meet the needs of the tender, to deliver a service or commodity which is fit for purpose. It is based on the objectively measureable criteria of experience and standing, capability and resources. As such it has a bearing on the question of whether the tender is cost-effective, i.e. whether it yields best possible value for money. To my mind it is self-evident that it is not cost-effective to award a tender to a party who ticks the right boxes as regards price and preference, but is unable to get the job done properly – whether through lack of experience, adequate personnel or financial resources.

“I consider that the constitutional imperative that the procurement system be cost-effective, means that functionality must necessarily be taken into account in the adjudication of competing tenders and should not be relegated to a mere qualifying criterion ... The point is simply that functionality should not be ignored in the final adjudication between competing tenders, and should be taken into account within the parameters of the Procurement Act.

“As De Villiers J pointed out in the Grinaker case, Section 2(1)(f) of the Procurement Act, which is cast in peremptory terms, posits a two-stage enquiry: the first step being to determine who scored the highest points in terms of the 90/10 points system; the next stage is to determine whether objective criteria exist in addition to or over and above those referred to in Sections 2(d) and (e), which justify the award of the tender to the lowest scoring tenderer.”

THE EVALUATION OF QUALITY IN THE EVALUATION OF TENDER OFFERS

The PPPFA establishes a framework (a set of principles or rules) which is intended to give effect to a procurement policy embedded in the Constitution. It establishes a broad framework which requires that a preference points system be followed which, depending on the value of the procurement, allocates a

maximum of 80 or 90 points to price and 20 or 10 points to specific goals which are clearly specified in the invitation to submit a tender and which are measureable, quantifiable and monitored for compliance.

The PPPFA was not intended to deal with procurement procedures relating to the evaluation of tender offers outside of the preference points scoring system, which merely adjusts price for preference. The Act was also not designed to provide a points scoring system aimed at determining best value for money within the South African context. The Act nevertheless recognises in Section 2(1)(f) that the tenderer who scores the highest number of points for price and preference can be overlooked for the award should there be other objective criteria apart from the preference points system that justify the award to another tenderer. The Act also does not cap any points-scoring system at 100 points, it merely establishes the quantum of the adjustment to price to take account of a preference.

Matters that are not addressed in the PPPFA and that merely fall under the provision of “acceptable tender” and “other objective criteria”, include the following:

- the criteria that have to be satisfied in order for a tender to be evaluated (i.e. eligibility criteria);
- reasons for overlooking a tenderer on the basis of unacceptable commercial risk, restriction precluding participation in contracts, the required capacity and capabilities, legal capacity to enter into a contract, financial capacity, compliance with legal requirements, conflicts of interest, etc; and
- the determination of which tender yields best value for money.

The SIPDM defines quality as “the totality of features and characteristics of a product or a service that bears on the ability of the product or service to satisfy stated or implied needs”. This standard permits quality to be evaluated in tender submissions as other objective criteria, as provided for in the PPPFA in accordance with the provisions of SANS 10845-1.

Such evaluation needs to be undertaken by at least three persons who are professionally registered in certain categories of registration with a built environment council falling under the umbrella of the Council for the Built Environment. ●





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