



# **Public infrastructure delivery and construction sector dynamism in the South African economy**

**Dr Ron Watermeyer**

DEng(Wits), BScEng(Wits), CEng, PrEng, PrCM,  
PrCPM, Hon.FSAICE, FIStructE, FICE, FSAAE

**and**

**Dr Sean Phillips**

PhD(Wits), MM(Wits), MSc(Wits), BEng  
Hons(Warwick).

**25 April 2020**

This Background Paper is part of the NPC's Economy Series. It contributes to an understanding of progress towards the National Development Plan Vision 2030.

Comments were invited on 6 March 2020. This paper has been finalised following the receipt of comments.

# Public infrastructure delivery and construction sector dynamism in the South African economy

## Executive summary

### 1 Objective of the policy paper

The objective of this policy paper is to inform the NPC's review of progress towards the NDP's Vision 2030 with regard to public infrastructure delivery and construction sector dynamism.

The concepts associated with infrastructure delivery have evolved since the promulgation of the Construction Industry Development Board Act of 2000. The preamble to this Act points out that *"the construction industry plays an indispensable role in the South African economy in providing the physical infrastructure which is fundamental to the country's Development..... the construction industry operates in a uniquely project-specific and complex environment, combining different investors, clients, contractual arrangements and consulting professions; combining different site conditions, design, materials and technologies; combining different contractors, specialist subcontractors and the workforce assembled for each project."* It also recognises that *"the specialised and risk-associated nature of construction places an onus on the public sector client to continuously improve its procurement and delivery management skill in a manner that promotes efficiency, value for money, transformation and the sustainable development of the construction industry."* Historically, public sector investment in infrastructure has exceeded private sector expenditure. Accordingly, any study into public infrastructure delivery and construction sector dynamism needs to look closely into client procurement and delivery management practices.

This paper is based on desk top studies and interactions with subject matter experts. It provides a succinct analysis of the NDP Vision 2030, what it proposed, its achievements, what it tried, possible gaps and recommendations for enhancing its impact. While the paper covers all the infrastructure elements of the NDP, it focusses on that which is in the control of government. As such it identifies the primary causes of underspending and other problems relating to public infrastructure procurement and delivery management and what should be done to address them.

### 2 National Development Plan for infrastructure

The National Development Plan 2030: Our future make it work (NDP, 2012) (NDP) is *"a plan for the country to eliminate poverty and reduce inequality by 2030 through uniting South Africans, unleashing the energies of its citizens, growing an inclusive economy, building capabilities, enhancing the capability of the state and leaders working together to solve complex problems."* To eliminate poverty, reduce unemployment and reduce inequality, the economy must grow faster and in ways that benefit all South Africans. It must also grow in such a manner as to address racial inequalities.

The NDP recognises that public infrastructure, particularly that relating to energy, water and transport, enables the economy to grow faster and become more productive through contributing to raising competitiveness and exports and lowering the cost of doing business. Furthermore, infrastructure creates jobs for low-skilled people and promotes spatial inclusivity. Investment in infrastructure also provides opportunities for broad based black economic empowerment (B-BBEE).

However, in order for investment in infrastructure to achieve the objectives of eliminating poverty, reducing unemployment and inequality, and promoting B-BBEE, South Africa needs to have the capability and capacity to plan and deliver infrastructure efficiently and effectively. If infrastructure is not planned and delivered efficiently and effectively, it can retard rather than accelerate the achievement of these NDP objectives. For example, if large infrastructure projects have design or construction faults and incur huge cost and time overruns (as is the case currently with the Medupi and Kusile power stations), they can become an impediment to, rather than an enabler of, economic growth. Similarly, an inability of public sector clients to deliver projects and pay their suppliers promptly undermines B-BBEE. Emerging contractors are more adversely affected by slow-downs in the delivery of projects or poor client management practices such as late payment or mid-project changes in scope than more established contractors, because they have less financial capacity to absorb such challenges. Furthermore, poorly designed, operated and maintained infrastructure such as municipal water treatment plants and waste-water treatment plants can result in water shortages and/or an increase in water-borne diseases in communities, and hence an increase in poverty and inequality.

Infrastructure is essential to development. Accordingly, the NDP suggests that gross fixed capital formation needs to reach about 30 percent of GDP by 2030 to realise a sustained impact on growth and household services. The NDP set a target for public infrastructure investment at 10 percent of gross domestic product (GDP), financed through tariffs, public-private partnerships, taxes and loans, focussing on transport, energy and water.

The NDP also seeks to respond to entrenched spatial patterns that exacerbate social inequality and economic inefficiency in the planning of infrastructure. Accordingly, it suggests that by 2030 South Africa should observe meaningful and measurable progress in reviving rural areas and in creating more functionally integrated, balanced and vibrant urban settlements.

The NDP recognises that South Africa needs to maintain and expand its electricity, water, transport and telecommunications infrastructure in order to support economic growth and social development goals in the medium and long term. Given the government's limited finances, the NDP recognises that private funding will need to be sourced for some of these investments, makes reference to investment strategies in the public environment and expresses the need to create the necessary conditions to attract and secure private investment in public infrastructure.

The NDP makes proposals to grow the construction sector, including the addressing of government's ability to spend its infrastructure budget, the provision of support to the civil construction and the supplier industries in their export efforts, the intensification of support to supplier industries and the creation of conditions for a less cyclically volatile industry. The proposals also include the expansion of public funding for alternative types of low-income housing that generates demand directly and the promotion of a simultaneous focus on more energy-efficient buildings and the use of techniques to reduce demand on electricity supply in the long term.

The NDP recognises 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. Accordingly, the plan calls for greater efficiency in all areas of government expenditure and the use of public-sector procurement to drive national priorities such as economic transformation and the stimulation of local production. It pinpoints the need to move away from an overly bureaucratised procurement system with the emphasis on compliance by box-ticking, which makes the system, costly, burdensome, ineffective and prone to fraud. It expresses a need for procurement systems to be robust, transparent and sufficiently intelligent to allow for the different approaches that are most suited to different forms of procurement. Accordingly, the

NDP proposes what should be focused on in designing a procurement system that is better able to deliver value for money, while minimising the scope for corruption. These areas of focus include differentiation between different types of procurement (e.g. procurement of infrastructure versus procurement of other goods and services), the adoption of a strategic approach to procurement, the building of trust and understanding with suppliers in supply chain management activities, the building of enabling support structures to develop professional procurement capacity and the incorporation of effective and transparent procurement oversight functions.

The NDP emphasises the need to professionalise the public service as an essential enabler of a capable and developmental state. It recognises that infrastructure procurement involves conceptual designs, structuring of contracts and decisions relating to long-term lock-ins which requires quality client decision making. It stresses that professional input is essential for infrastructure procurement to mitigate risks. As such it calls for procurement management positions to require professional expertise, such that appointees have sufficient technical knowledge, along with relevant management experience, to understand the challenges facing technical specialists and to secure their respect. It also calls for technical expertise to commission and oversee contractors and for procurement processes to incorporate professional judgment. It envisages that procurement divisions within organs of state should play a supporting and enabling role to operational line management. It expresses the need for supply-chain management staff to support technical and other specialists, rather than displace the involvement of technical and other specialists in the procurement process.

The plan acknowledges that economic rent is paid through the procurement system to reduce racial patterns of ownership of wealth and income. The plan does, however, caution that efforts to stimulate local procurement should not reinforce higher costs for the public sector and business as this will undermine growth and job creation.

### **3 Performance of the sector**

As mentioned above, investment in infrastructure can only achieve the aforementioned NDP objectives of growing the economy, eliminating poverty, reducing unemployment and inequality, as well as accelerating B-BBEE, if South Africa has the capability and capacity to deliver infrastructure efficiently and effectively. In order to assess as to whether or not South Africa has this capability and capacity, it is necessary to review the country's recent performance in delivering infrastructure.

Between 1998/99 and 2017/18, the public sector spent R3 trillion on the provision and maintenance of infrastructure. Such expenditure increased from R48.8 billion in 1998/99 to R236.2 billion in 2017/18. In real terms, infrastructure spending grew by an annual average of 4.3 per cent. Public-sector infrastructure expenditure as a share of gross domestic product (GDP) from 1998/99 to 2017/18 averaged 5.9 per cent. However, the five-year spending trajectory for public-sector infrastructure expenditure has been adjusted downwards every year since 2017. This has a follow-on effect in future years. The total reduction in infrastructure spending over the 5 year period is R 303 bn. To achieve the original trajectory, it will be required to increase infrastructure investment by 28% year-on-year until 2022.

Underspending has also occurred during this period. On average, over the 2015/16, 2016/17 and 2017/18 financial years state-owned enterprises and public entities have spent not more than 75% and 65% of their respective budgeted amounts while the state as a whole spent not more than 85% of the available budget. The underspend over this period increased during a time when National Treasury SCM instructions became applicable to major public entities and national and provincial business enterprises.

In the 2017/18 financial year, metropolitan councils had difficulties spending their capital budgets. None of the metropolitan councils spent more than 80% of their capital budgets. The spend ranged between 55 to 78%. This was a decline from the performance of the 2016/17 financial year. In the 2017 /18 financial year 30 of the municipalities spent less than 40% of their capital budgets, 51 spent between 40% and 60%, 94 spent between 60% and 80%, 53 spent between 80% and 100% of their capital budgets. 24 municipalities overspent their capital budgets between 100% and 150% while 5 overspent by more than 200%.

The data relating to underspending can be misleading as cost overruns distort the picture. If cost overruns on projects are removed, underspending is much higher. At the same time, the high reported expenditure of municipal and provincial infrastructure budgets is distorted by the transferring of budgets from underperforming entities to high performing entities.

The latest industry data suggest that the private sector, due to the faltering growth in the public sector, has now become the biggest investor in the civil construction industry surpassing general government and public entity investments for the first time ever. Consulting Engineers South Africa reported that fee earnings for the consulting engineering profession in the last six months of 2018 decreased by 21% (in current prices) compared to the first six months of 2018. This followed a 10% decrease in the first six months of 2018. The South African Forum of Civil Engineering Contractors (SAFCEC) in their Economic Report for the second quarter of 2019 reported a 7.6% decline in revenue for the civil engineering industry in the 2nd quarter compared to the previous year and a shrinking 2 year order book. SAFCEC also reported that the civil engineering industry has shed 45% of its total workforce since 2014.

In 2006, 2011 and 2017, the South African Institution of Civil Engineering (SAICE) produced an Infrastructure Report Card (IRC) which reflects the expert view of the Institution and its members on the current condition of a broad range of public infrastructure. These report cards categorise sectors and subsectors of infrastructure into one of 5 grades (A – world class, B – fit for the future, C – satisfactory for now, D – at risk of failure and E unfit for purpose). The overall grade for 2006, 2011 and 2017 was D+, C- and D+, respectively, with sanitation including wastewater outside of major urban areas and gravel roads graded with an E. This report card suggests that there has been no significant improvement or deterioration in the state of South Africa's infrastructure. It remains on average at risk of failure. The lack of attention to infrastructure poses a serious problem to the economy. Not only is it much more costly to build new infrastructure, but dilapidated infrastructure hampers South Africa's economic growth potential. What is of concern is that the infrastructure which is most at risk of failure falls within the priority infrastructure focus areas on the NDP, namely energy, water and transportation which are required to support economic growth and to reduce poverty and inequality.

The trends in high profile public sector mega projects such as the Gauteng Improvement Project, the Gautrain Rapid Rail Link System, the Ingula Pumped Storage Scheme, the King Shaka International Airport, the New Multi-Product Pipeline and the Kusile and Medupi coal power plants revealed an order of magnitude increase from the initial estimated projects cost to the final costs with a concomitant increase in schedule for completion.

The time and cost-over-runs on the Kusile and Medupi coal power plants provide an indication of the degree to which mismanaged mega projects can damage the economy. The two projects have:

- ) failed to resolve the energy shortfall that they were planned to address;
- ) caused severe damage to the South African economy and to economic growth due to the resultant rolling blackouts;

- ) left ESKOM reliant on a three-year, R128-billion government bailout to remain solvent; and
- ) put the sovereign balance sheet at risk, and been a major contributor to the downgrades of South Africa's investment gradings by international grading agencies.

However, not all mega projects in the public sector have failed in terms of time, cost, performance. A notable exception is the delivery of the first phase of the SIPS 14 new universities project by the Department of Higher Education and Training (DHET) (2011 to 2016), using the University of the Witwatersrand as an implementing agent. This project, which piloted the principles embedded in the National Treasury Standard for Infrastructure Procurement and Delivery Management (SIPDM), delivered facilities for the first intake of students within 28 months of a political decision being taken to provide two universities – one in the Northern Cape province and the other in the Mpumalanga province. Facilities for the third intake were delivered within budget, slightly below cost norms with less than 2% difference between the cost at the start of construction despite there being up to 70% of the works not being capable of being priced when construction commenced.

As indicated in Chapter 5, this was achieved within the Constitutional imperatives for a procurement system and the principles established in National Treasury's Standard for Infrastructure Procurement and Delivery Management, a document closely aligned to the NDP's recommendations for the design of a procurement system. The key differentiators of the new universities project from other projects was client governance and organisational ownership practices which provided effective direction and oversight of the organisation's infrastructure delivery programme, CEO-level client leadership at both a programme and project level and a strategic and tactical approach to procurement which supported effective implementation. The main differentiator between successful public infrastructure projects and unsuccessful ones is therefore the way in which their delivery is managed and the way in which they are procured.

The Renewable Energy Independent Power Producers Procurement Programme (REIPP) is another example of a successful recent infrastructure programme. The programme has procured 6 422MW of electricity from 112 Independent Power Producers (IPPs) in seven bid rounds, connected 3 976 MW of electricity generation capacity from 64 IPP projects to the national grid and has attracted private sector investment (equity and debt) to the value of R209.7 billion of which R41.8 billion (20%) is foreign investment. The REIPP programme required an exemption from the PPP regulatory framework and was characterised by very strong client governance and CEO-level client leadership by the Independent Power Producers (IPP) Office under the Department of Energy. The quality of the procurement process, both in terms of strategy and tactics, run by the IPP Office resulted in the development of trust in the procurement process amongst companies in the renewable energy and financial sectors, which in turn contributed to a marked reduction in the cost of renewable energy through successive bid rounds.

## **4 Government actions to achieve the NDP**

There have over the years been several initiatives aimed in one way or another at addressing government's inability to spend its infrastructure budgets well. The Infrastructure Delivery Improvement Programme (IDIP), designed by National Treasury in collaboration with the Departments of Basic Education, Health and Public Works, the Development Bank of Southern Africa (DBSA) and the Construction Industry Development Board (CIDB), was put in place in 2003 to address the communication and co-ordination between user departments and implementing agents with different roles and responsibilities and closed out in 2017

Infrastructure Delivery Management Toolkits (2004, 2006 and 2010) were developed through IDIP to provide a documented body of knowledge and a set of processes that was at the time considered to represent generally recognised best practices in the delivery management of infrastructure. The Cities IDMS (CIDMS) (2016) was developed by National Treasury through the Cities Support Programme to establish principles, methodologies, processes, techniques and case studies to assist infrastructure planners and decision makers within cities to plan comprehensively for urban infrastructure, make infrastructure investment choices designed to future-proof cities, accelerate the delivery of infrastructure and establish systems and mechanisms that will ensure that infrastructure is optimally managed.

During 2017 six National Immoveable Asset Maintenance Management Publications were published to support the implementation of the National Infrastructure Maintenance Strategy which was developed jointly by the CIDB, the DPW and CSIR in 2007.

The Siyenza Manje (we are doing it now) initiative was launched in June 2006 and was managed by the DBSA's Development Fund. It aimed at leveraging external expertise from amongst semi-retired personnel and their deployment to almost 200 vulnerable and under-performing municipalities. The Municipal Infrastructure Support Agency (MISA), established in 2012, became the direct successor in responsibility for the support offered through the Siyenza Manje project. MISA provided support to a total of 107 municipalities through 68 technical professionals and 25 professional service providers.

The Government Technical Advisory Centre (GTAC), an agency of the National Treasury, was established to provide technical assistance to departments and municipalities on infrastructure project management and organisational development, based on requests for support and diagnostic reviews. The entering into of a bilateral agreement with Cuba in 2015 resulted in the deployment in various parts of South Africa of 35 Cuban engineers, including technicians and water scientists.

Cabinet established the Presidential Infrastructure Coordinating Committee (PICC) in 2012 to address the perceived limitations on the development impact of infrastructure, believed to be caused by weak capacity, poor co-ordination and weak integration. A National Infrastructure Plan with 18 identified Strategic Integrated Projects (SIPs) was developed and adopted by Cabinet and the PICC. The SIPs cover social and economic infrastructure across all 9 provinces (with an emphasis on lagging regions). SIPs cover catalytic projects that can fast track development and growth.

The Office of the Chief Procurement Officer (OCPO) was established in 2013 to commence with modernising and overseeing the South African public procurement system and to ensure that the procurement of goods, services and construction works is conducted in line with the Constitution and all relevant legislation.

In 2018, Government announced the establishment of a project preparation facility, with representation from National Treasury, GTAC, the PICC, the DBSA and the Association for Savings and Investment South Africa, the Banking Association of South Africa, the South Africa Venture Capital and Private Equity Association, and the New Development Bank. This announcement responded to an acknowledgement that weak project preparation, planning and execution had resulted in lengthy delays, over and underspending and problems with quality.

Major public entities and national and provincial businesses are subject to the Public Finance Management Act (PFMA). Section 76 of the PFMA permits National Treasury to issue Supply Chain Management (SCM) regulations and instructions which may or may not apply to all organs of state subject to the PFMA. The 2005 SCM Regulations do not apply to major public entities and national and provincial businesses. However, following the establishment of the



OCPO, National Treasury issued several SCM instructions which were applicable to all organs of state subject to the PFMA. These instructions impacted negatively on the ability of the aforementioned public entities to deliver infrastructure as indicated in Chapters 3 and 5.

National Treasury issued a Standard for Infrastructure Procurement and Delivery Management (SIPDM) in 2015 which aligned with the delivery management and procurement principles set out in the NDP and was made applicable for all organs of state subject to the PFMA or the MFMA. The SIPDM regulated the decision-making process, aspects of delivery management and procurement processes, methods and procedures and procurement documents.

Soon after the issuing of the SIPDM, National Treasury issued an SCM instruction aimed at measures to prevent and combat abuse in the SCM system. This instruction stipulated that infrastructure contracts may not be varied by more than 20% or R 20 m including VAT without taking into account the manner in which the SIPDM and standard forms of contract managed compensation for risk events for which an organ of state is contractually responsible. This instruction also prohibited the negotiation of contracts which the SIPDM permitted to secure much needed strategic professional inputs to advance projects and to improve the quality of procurement outcomes. Accordingly, this instruction note undermined the effective implementation of the SIPDM and slowed down infrastructure delivery.

In 2019, the instruction relating to the SIPDM issued in terms of the PFMA was withdrawn and replaced with a Framework for Infrastructure Delivery and Procurement Management in order to prescribe minimum requirements for the implementation of the Infrastructure Delivery Management System embedded in the IDMS toolkits. At the same time, the CIDB Standard for Uniformity in Construction Procurement (renamed CIDB Standard for Uniformity in Engineering and Construction Works Contract) removed certain key tactics applied in the evaluation of tenders to align with practices commonly associated with general goods and services advocated by National Treasury and narrowed the scope of this standard to construction contracts only.

The Preferential Procurement Regulations of 2017 introduced two new mechanisms to achieve preferential procurement in addition to the award criteria already in use, namely, qualification criteria including set asides and mandatory contracting conditions. An organ of state may in terms of these Regulations prequalify enterprises for preferential treatment based on an enterprise's size and / or B-BBEE status. The Regulations also required, if feasible, that the successful tenderer subcontract a minimum of 30% of the contract value to small, medium or micro enterprises with or without restrictions on enterprise ownership.

The Spatial Planning and Land Use Management Act of 2013 was assented to in 2013. The Department of Cooperative Governance and Traditional Affairs published an Integrated Urban Development Framework in 2016 as government's policy position to guide the future growth and management of urban areas.

## **5 Assessment of the reasons for disappointing outcomes**

There are several reasons for disappointing public sector infrastructure outcomes post the publication of the NDP. These include the deterioration of government finances, deteriorating state owned enterprise balance sheets and decreasing public sector investment in infrastructure, compounded by a lack of private sector investment in infrastructure. An analysis of these reasons is, however, outside of the scope of this paper as this paper focuses on that which is in the control of the government.

Corruption and state capture have also had an impact on public infrastructure delivery and on the construction industry. An analysis of such impacts is also beyond the scope of this paper.

International and local researchers have found a direct linkage between the role played by the client (the organisation initiating and financing a project and approving the brief) and infrastructure project outcomes regardless of size, complexity and location. The root cause of project failure or poor project outcomes can most often be attributed to a lack of governance and poor procurement and delivery management practices, all of which are under the control of the client. The major contributor to disappointing infrastructure project outcomes lies in inappropriate procurement practices (the processes which initiate, create and fulfil contracts) and absences of delivery management (the critical leadership role played by a knowledgeable client to plan, specify, procure and deliver infrastructure projects efficiently and effectively, resulting in value for money).

Other contributors include:

- ) defects in the identification, assessment and preparation of the project;
- ) poor structuring, management of the tender process, contract management and drafting of contracts;
- ) lack of management capacity and proper skills, continuity/frequent changes in the project team and proper quality control mechanisms;
- ) failures in taking and managing decisions, in stakeholder identification, in internal and external communications and in ensuring that the project matches government's strategic objectives or changes in government objectives;
- ) political interference; and
- ) political rush and unrealistic time scales.

As indicated in Chapter 5, client delivery management responsibilities include programme or project-level planning, estimating costs, and managing risks and change management. This requires strong governance and a client delivery manager who is capable of exercising CEO-level leadership. Many client bodies in South Africa are currently not carrying out many of these delivery management responsibilities effectively, and this is one of the main causes of the poor infrastructure outcomes.

A review of the performance of the sector and recent research findings suggests that in addition to the aforementioned shortcomings the reasons for poor public sector infrastructure outcomes relate to a combination of:

- ) ineffective interventions which have focussed on introducing basic portfolio, programme and project management practices and the boosting of in-house technical and management skills through technical assistance, but which have not paid sufficient attention to improving infrastructure procurement and delivery management;
- ) the failure to learn lessons from successful and unsuccessful mega projects and international experience;
- ) the lack of built environment capabilities of the OCPO in National Treasury which has oversight over infrastructure procurement which accounts for more than 20% of public procurement spend;

- ) the general lack of appropriate skills and experience of officials within SCM units across the public sector, including the lack of built environment professionals whose scope of professional practice includes procurement;
- ) gaps in the work of the CIDB and the Office of the Chief Procurement Officer relating to the critical role played by clients in the delivery of infrastructure projects;
- ) public sector SCM regulations which have misplaced infrastructure procurement within financial processes and the issuing of certain instructions in terms of the PFMA post-2016 to regulate the SCM practices of all organs of state including major state owned enterprises and national government business enterprises;
- ) differences in understanding and interpretation of infrastructure procurement and delivery management regulation, policy and practice arising from a legislative regime which is fragmented and complex with excessive rigidity in the framing and the interpretation of its rules;
- ) the pursuing of an administrative paradigm in the way in which SCM units focus on “ticking of boxes” where compliance with rules or the application of mechanistic approaches are more important than project outcomes;
- ) the failure to accommodate the manner in which risks inherent to the procurement and delivery of infrastructure are commonly mitigated and to take account of the specificities and workings of the construction industry in the formulation and application of legislative instruments;
- ) poor procurement practices and poor management of outsourced infrastructure-related functions;
- ) the lack of appropriate capability or capacity, appropriate skills and experience amongst those responsible for planning, specifying, procuring and overseeing the delivery of infrastructure as well as those involved in the formulation of legislative instruments and the enforcement thereof;
- ) the exclusion or marginalisation or inappropriate use of built environment professionals in client infrastructure procurement and management processes; and
- ) the hampering of the effective, efficient and economic use of resources in the delivery of infrastructure due to inappropriate and over-regulation, a one-size fits all approach to procurement, an excessively rigid framing and interpretation of procurement rules and a failure to treat the procurement of general goods and services and the procurement of infrastructure differently.

There have been unintended consequences of regulations and SCM instructions issued by National Treasury, which have not taken into account the specificities, structure and workings of the construction industry. Such instructions, which have been issued post the establishment of the OCPO, have had not only a negative impact on the ability of the industry to work efficiently, effectively and economically but have also resulted in substandard project and developmental outcomes as well as the slowing-down of projects.

Shrinking markets, late payment by public sector clients and the consequences of over-regulation whereby excessive contractual risk has been passed onto the contractor,

government's inability to reign in the "construction mafia" and unpredictable and harmful public procurement practices have led to the demise of large contractors.

PPPs have attracted low levels of private sector investment in public infrastructure.

## **6 Gaps, shortcomings and course correction**

There are a number of reasons why the target for public infrastructure investment (at 10 percent of gross domestic product) is unlikely to be achieved. Currently public infrastructure investment is just under half of this value.

The demand for infrastructure relating to energy, water and transport remains. Load shedding due to capacity constraints and poor maintenance of plant has harmed economic growth. South Africa is a water scarce country and the drier cycles associated with climate change have put pressure on water resources. Sanitation facilities are in a very poor condition. Provincial, metropolitan and municipal gravel roads are unfit for purpose while paved provincial and municipal roads are at risk of failure. All of this delays rather than accelerates the realisation of the aim of the NDP to eliminate poverty and reduce inequality by 2030.

The identified crisis within the public sector relating to the lack of generational reproduction of professional built environment expertise to engage in long-term planning, specifying, procuring and overseeing of the delivery and maintenance of infrastructure remains unaddressed. The situation has worsened due to inappropriate SCM practices which marginalise built environment expertise and make a career in the public sector very unattractive to such professionals. The lack of in-house technical expertise results in an inability to take appropriate decisions and to ensure that the work is done to an adequate standard or to maintain the infrastructure once the work has been completed.

A framework for meaningful and measurable progress in reviving rural areas and in creating more functionally integrated, balanced and vibrant urban settlements is in place. However, the success or otherwise of progress towards the target associated with this work being achieved by 2030 is dependent on there being in place technical capacity to make the necessary decisions.

Initiatives aimed at improving government's ability to spend its infrastructure budgets effectively have failed. The nature of the problem as described in a CIDB strategy document in 2003 is fundamentally unchanged. The overly bureaucratised procurement process with the emphasis on compliance by box-ticking, which makes the system costly, burdensome, ineffective and prone to fraud, has become entrenched as opposed to being dismantled. The main mechanisms for attracting and securing private sector investments have proven ineffective in mobilising the required levels of private investment.

What has changed are the fiscal constraints. What has not changed is the demand for an increase in the quality and quantity of public infrastructure to enable the economy to grow faster and become more productive and in so doing promote inclusive growth and job creation and spatial inclusivity. Accordingly, the focus in moving forward needs to be on improving capabilities and efficiencies to increase the quality and quantum of infrastructure for the money that is available.

Course correction is needed. Such correction should be framed around the building of appropriate public sector capabilities to perform client functions (strategic planning resulting in the business case for a project and delivery management which results in the conversion of a business case into project outcomes) and to create the necessary conditions to attract and secure private sector participation and investment in public infrastructure at scale.

Accordingly, course correction should focus on the following shifts:

Shift from	Shift to
<b>Institutional arrangements</b>	
The Chief Procurement Officer as a procurer and a regulator of the SCM system	A National Treasury with a separation of duties within its structure so that the OCPO deals with modernising and overseeing the public SCM system while another section deals with the regulatory aspects of the SCM system
The CIDB is relied upon to adapt through Board notices a SCM system designed for the purchasing of general goods and services for the procurement of infrastructure	The PICC actively engages in and decisively deals with legislation and regulatory measures which impede infrastructure delivery and assists in the shaping of a fit for purpose infrastructure procurement regime
In every relevant organ of state, a single SCM system located and implemented by a SCM unit established within the office of the chief financial officer	The delinking of the procurement and delivery management of infrastructure projects (i.e. the SCM function) from the “buying” function included in a SCM unit located within the office of the chief financial officer
Infrastructure procurement is handled by a central purchasing department within an institution dealing with all the procurement needs of the institution	Procurement is a central competency of those responsible for delivering infrastructure programmes and complex infrastructure projects
<b>Governance and accountabilities</b>	
Transactional and compartmentalised approach to the procurement and delivery of infrastructure projects with the chief financial officer being accountable for SCM activities	Governance processes ensure that the organisation takes ownership of infrastructure delivery and such delivery is managed as an enterprise rather than an ad-hoc collection of projects
Generic delegations are in place which do not cover the specific complexities of infrastructure and do not enable swift decisions to be taken	Clear delegations of authority are in place which enable timeous decision making and organisational accountability
Split responsibilities for different SCM functions between a SMU unit and line function departments for the delivery of infrastructure	A client delivery manager within a line department has single point accountability to provide CEO level leadership at both a project and programme level in the planning, specifying, procurement and overseeing of delivery including contract management
SCM policies in place which are structured primarily around the acquisition of general goods and services and a very narrow interpretation of legislation	Infrastructure procurement and delivery management policies are in place which include control frameworks and the allocation of responsibilities for decision making  Infrastructure management policies are in place to provide norms and standards for the management of the organisation's infrastructure
The OCPO interprets legislation and briefs Auditor General on what to audit	The Auditor General's staff are presented with an organ of state's policies and data on planned procurements, contractual commitments, contracts, payments and purchase orders for audit purposes. Audits determine if organisational policies were followed and resources were procured economically and utilised efficiently and effectively
<b>Design of the infrastructure procurement system</b>	
System is administrative in nature, regulated in detail and rule driven with highly centralised decision making	System provides a wide range of options to managers enabling the taking of strategic decisions to achieve better value for money, underpinned by governance which enables alignment of choices with organisational strategic objectives and values
Focus on procedural compliance in infrastructure procurement	Focus on value for money in an accountable manner i.e. the optimal use of resources or the effective, efficient, and economic use of resources to achieve intended project outcomes

Shift from	Shift to
A plethora of rigid and constraining subordinate procurement legislation guidelines and briefings by the OCPO which is confusing and slowing down infrastructure delivery	A principles-based, flexible and enabling approach to the regulation of infrastructure procurement which does not preclude the application of sound infrastructure procurement practices in order to achieve desired outcomes and value
Approaches to curbing corruption within the procurement system are based on stricter rules which result in rigidity that simply constrains practitioners with integrity and introduce inefficiencies within the system	Approach to curbing corruption within the procurement system is based on a system that is capable of being audited, rigorous and documented processes, comprehensive and complete procurement documents and evaluation reports, disclosure of information and infrastructure specific codes of ethics
Skills	
Infrastructure is planned and procured at an arm's length from built environment professionals with minimal technical inputs in decision-making processes	Infrastructure is planned and procured using the advice of built environment professionals in the decision-making processes
Delivery management is overseen by a person with limited built environment experience in delivering infrastructure programmes and projects	Delivery management is led by an appropriately qualified and experienced built environment practitioner who is able to lead infrastructure projects and programmes

The NDP needs to contain a clear plan for funding and financing South Africa's infrastructure. Such a plan will need to be robust in its approach in setting out how the nation is to pay for its infrastructure, now, and in the years to come. The current regulatory process for PPPs is generally sound but lengthy and costly. It has been disappointing in terms of its impact – less than 2% of public infrastructure in South Africa is financed by the private sector (compared to 50% in the UK for example). It is also demand-driven, i.e. it relies on government bodies to propose PPP projects. There is a need for a review of this regulatory framework and the adoption of a more supply-driven approach, which would involve the identification of infrastructure sectors in which there is potential for private sector investment and the active facilitation of private sector involvement in these sectors. There is no shortage of money in the private sector to invest in public infrastructure in South Africa. The problem is a dearth of properly prepared and bankable projects, as well as a lack of transparent, efficient and effective processes for bringing projects to the market (with the exception of the IPP Office) within reasonable time horizons.

Given that there is limited built environment expertise capable of providing inputs and advice within many organs of state, the public sector should be able to access specialist know-how from the private sector, typically on a part-time basis. Alternatively, organs of state should be able to secure the services of such professionals in the employ of other organs of state on an as and when required basis.

The capability of underperforming organs of state needs to be assessed. Underperforming organs of state need to be assisted to develop governance and procurement capabilities.

Private sector confidence in the public sector procurement system can be restored if the public sector can perform its client functions more effectively and address the unintended consequences of procurement regulatory instruments, professionalise client functions, establish and publish a pipeline of projects and deliver such projects within known time frames. A top down approach to capacitating the public sector to provide the client function in the delivery of infrastructure needs to be pursued. Interventions in specific organs of state need to be prioritised, based on their performance, level of maturity and infrastructure budgets.

Client capacity to deliver infrastructure projects efficiently, effectively and economically can also be developed through the sharing of lessons learned from successful and unsuccessful projects. Given the extent of the negative impact that time and cost over-runs on some of the

mega projects such as Medupi and Kusile have had on the economy and the fiscus, there is a need for thorough research to be commissioned to determine the root causes of failure, and to determine how future projects should be better planned, managed and procured.

## 7 Action plan for course correction

The following action plan is proposed (see Chapter 7).

Time horizon	Action	
	No	Description
Short term	1.1	The presidency clarifies roles and responsibilities for the national function of providing policy and regulatory direction related to infrastructure delivery and procurement
	1.2	Appoint suitable infrastructure procurement and client delivery management capability and capacity in senior management positions to enable those institutions with infrastructure responsibilities to function efficiently and effectively
	1.3	Differentiate infrastructure procurement and delivery management from the SCM system for general goods and services and standardise the requirements for infrastructure procurement and delivery management in a generic and flexible manner
	1.4	Develop guidance on client infrastructure delivery management
Medium term	2.1	Address fragmentation in legislation in a manner which accommodates the specificity of infrastructure procurement and delivery
	2.2	Review Public Private Partnership regulations
	2.3	Establish supply driven programmes for private sector participation in the delivery of infrastructure
	2.4	Capacitate client infrastructure delivery managers
	2.5	Develop public sector capabilities of built environment professionals engaged in public sector infrastructure projects
	2.6	Develop standard post descriptions and roles and responsibilities for client delivery manager and project administrators (see A.4 of Annexure A)
Long term	3.1	Certify client delivery manager capabilities

# Contents

1	Introduction .....	1
1.1	Objective of this policy paper .....	1
1.2	Background .....	1
1.3	Investment in infrastructure .....	2
1.4	South African construction industry .....	3
1.5	Overview of the construction industry and the supply chain involved in delivering infrastructure projects .....	4
2	National Development Plan for infrastructure .....	6
2.1	Introduction .....	6
2.2	The vision for infrastructure .....	6
2.3	The diagnosis for infrastructure .....	7
2.4	The strategy for achieving the vision .....	8
2.5	Enablers for public sector infrastructure delivery .....	9
3	Performance of the sector .....	11
3.1	Introduction .....	11
3.2	Public expenditure .....	11
3.3	Performance of the construction industry .....	15
3.4	State of maintenance .....	18
3.5	Mega projects .....	19
3.6	Independent Power Producers Procurement Programme .....	22
4	Government actions to achieve the NDP .....	23
4.1	Initiatives aimed at improving government's inability to spend its infrastructure budgets effectively .....	23
4.1.1	Capacity building initiatives .....	23
4.1.2	IDM Toolkits and guidelines produced by National Treasury and the CIDB .....	24
4.1.3	The Presidential Infrastructure Coordinating Committee and the National Infrastructure Plan .....	25
4.1.4	The Office of the Chief Procurement Officer .....	27
4.1.5	Project preparation facility .....	27
4.1.6	Budget transparency and public participation .....	28
4.2	Legislative instruments .....	28
4.2.1	Overview of applicable legislation .....	28
4.2.2	CIDB Standard for Uniformity in Construction Procurement .....	29
4.2.3	Standard for Infrastructure Procurement and Delivery Management .....	30
4.2.4	National Treasury SCM instructions .....	32
4.2.5	Framework for Infrastructure Delivery and Procurement Management .....	33
4.2.6	Preferential Procurement .....	34
4.2.7	CIDB register of contractors and register of projects .....	34



4.3	Support to supplier industries (local content) .....	35
4.4	Innovative Building Technologies .....	35
4.5	Promotion of more energy-efficient buildings and the use of techniques to reduce demand on electricity .....	36
4.6	Addressing spatial divides in the planning of infrastructure.....	36
5	Assessment of the reasons for disappointing outcomes .....	38
5.1	Introduction .....	38
5.1.1	Overview .....	38
5.1.2	Programme and project-level planning.....	39
5.1.3	Life-cycle costing .....	40
5.1.4	Estimating project costs .....	41
5.1.5	Managing project risks and change.....	41
5.1.6	Delivery management practices .....	43
5.2	Ineffective interventions.....	45
5.3	Failure to learn lessons from successful and unsuccessful mega projects and international experience .....	46
5.3.1	International perspective .....	46
5.3.2	Reasons for poor performance.....	47
5.3.3	Reasons for good performance.....	50
5.4	Gaps in the work of the OCPO and CIDB.....	52
5.5	Public sector SCM practices.....	56
5.5.1	Introduction .....	56
5.5.2	Recent research findings .....	56
5.5.3	The public sector SCM paradigm .....	57
5.5.4	Public sector supply chain management practices .....	59
5.5.5	Public sector SCM skills set .....	61
5.5.6	The impact of uncertainty in the regulation of public sector procurement ...	63
5.5.7	The hampering of the effective, efficient and economic use of resources in the delivery of infrastructure .....	64
5.6	Local participation empowerment challenges .....	72
5.7	Payment practices.....	73
5.8	Political interference .....	74
5.9	Demise of the large contractors.....	74
5.10	Attracting private investments .....	75
6	Gaps, shortcomings and course corrections.....	77
6.1	Observations .....	77
6.2	Course correction .....	79
6.2.1	Introduction .....	79
6.2.2	Procurement and delivery management.....	79

6.3	Addressing the built environment skills deficit and capacity constraints within the public sector .....	85
6.4	Funding .....	86
6.5	An enabling environment for the private sector to engage with the public sector ...	86
6.6	Public sector capacity building initiatives .....	87
6.7	Construction industry skills and productivity .....	88
6.8	Sharing lessons learned .....	89
7	Action plan to address the identified shortcomings.....	90
	Annexure A: Organisational landscape of the construction industry .....	93
	A.1 Built environment professionals.....	93
	A.2 Professional bodies and associations.....	95
	A.3 Evolution of the delivery of public sector infrastructure .....	96
	A.4 Role players in the delivery of infrastructure projects.....	97
	Annexure B: Planning and financing of infrastructure projects.....	100
	Annexure C: Delivering infrastructure projects .....	101
	Annexure D: Differences in supply chains .....	104
	D.1 Introduction .....	104
	D.2 The supply chain for general goods and services for consumption.....	106
	D.3 The supply chain for infrastructure .....	107
	D.4 Core systems for the delivery of infrastructure projects .....	110
	Annexure E: Legislative frameworks applicable to infrastructure procurement and delivery management.....	114
	E.1 Constitutional imperatives .....	114
	E.2 Public Finance Management Act.....	114
	E.2.1 General .....	114
	E.2.2 Supply Chain Management Regulations.....	114
	E.2.3 Treasury Instructions issued in terms of the PFMA.....	115
	E.2.4 Public private partnerships .....	116
	E.3 Municipal Finance Management Act.....	117
	E.4 Preferential Procurement Policy Framework Act.....	118
	E.5 Broad-based Black Economic Empowerment Act.....	118
	E.6 Promotion of Administrative Justice Act.....	118
	E.7 Construction Industry Development Board Act .....	118
	References .....	121

# 1 Introduction

## 1.1 Objective of this policy paper

The objective of this policy paper is to inform the NPC's review of progress towards the NDP's Vision 2030 with regard to infrastructure delivery and construction sector dynamism. This paper is based on desk top studies and interactions with subject matter experts. It provides a succinct analysis of the NDP vision 2030, what it proposed, its achievements, what it tried, possible gaps and recommendations for enhancing its impact.

The concepts associated with infrastructure delivery have evolved since the promulgation of the Construction Industry development Board Act of 2000. The preamble to this Act points out that *"the construction industry plays an indispensable role in the South African economy in providing the physical infrastructure which is fundamental to the country's*

*Development..... the construction industry operates in a uniquely project-specific and complex environment, combining different investors, clients, contractual arrangements and consulting professions; combining different site conditions, design, materials and technologies; combining different contractors. specialist subcontractors and the workforce assembled for each project."* It also recognises that *"the specialised and risk-associated nature of construction places an onus on the public sector client to continuously improve its procurement and delivery management skill in a manner that promotes efficiency, value for money, transformation and the sustainable development of the construction industry."* Historically, public sector investment in infrastructure has exceeded private sector expenditure. Accordingly, any study into public infrastructure delivery and construction sector dynamism needs to look closely into client procurement and delivery management practices.

While the paper covers all the infrastructure elements of the NDP, it focusses on that which is in the control of government. As such it identifies the primary causes of underspending and other problems related to infrastructure procurement and delivery management and what should be done to address them.

## 1.2 Background

The National Development Plan is *"a plan for the country to eliminate poverty and reduce inequality by 2030 through uniting South Africans, unleashing the energies of its citizens, growing an inclusive economy, building capabilities, enhancing the capability of the state and leaders working together to solve complex problems."* To eliminate poverty and reduce inequality, the economy must grow faster and in ways that benefit all South Africans.

People are surrounded by infrastructure (the basic physical and organisational structures and facilities needed for the operation of a society or an enterprise). They are also surrounded by economic infrastructure which supports the economy in its totality as it underpins the growth, productivity and competitiveness of the economy.

The number of people directly employed per annum per million spent in the construction sector is high relative to other sectors and has historically only been surpassed by the agriculture and mining sectors. The construction industry is therefore an industry that is regarded as being amongst the most efficient in generating employment for a given capital inflow. At the same time, infrastructure projects are delivered through a supply chain which provides opportunities to a wide range of businesses involved in the manufacturing of materials, plant and equipment as well as the provision of all of the resources necessary to deliver infrastructure projects. There are accordingly relationships between employment opportunities, available skills, entrepreneurship, and the use of small, medium and micro enterprises in the creation and maintenance of infrastructure. The approach to delivering infrastructure can address social

and economic needs and concerns and, depending upon how projects are structured, facilitate the economic empowerment of marginalised sectors in a focused manner. Accordingly, the process of constructing infrastructure is also very important.

The National Development Plan 2030: Our future make it work (NDP, 2012) recognises that public sector infrastructure is essential to development and set a target for public infrastructure investment at 10 percent of gross domestic product (GDP), financed through tariffs, public-private partnerships, taxes and loans, focussing on transport, energy and water. The NDP calls for greater efficiency in all areas of government expenditure and the use of public-sector procurement expenditure to drive national priorities such as economic transformation and the stimulation of local production. It emphasises the need to professionalise the public service as an essential enabler of a capable and developmental state and calls for procurement management positions to require professional expertise, such that appointees have sufficient technical knowledge, along with relevant management experience, to understand the challenges facing technical specialists and to secure their respect. It also calls for technical expertise to commission and oversee contractors and for procurement processes to incorporate professional judgment.

### **1.3 Investment in infrastructure**

The failure of economic infrastructure, e.g. rolling blackouts due to insufficient power supply to meet demand, the interruption of water supply to consumers due to burst pipes or subsidence in a roadway, not only disrupts the lives of affected people but also has economic consequences. The lack of economic infrastructure to meet the demands of an ever growing population, e.g. that relating to water and sanitation or clinics and hospitals, has a negative impact on the health and wellbeing of communities and leads to frustration. Accordingly, the failure of or the lack of sufficient infrastructure puts the spotlight on government whose goal is to deliver a better life for all and can lead to unintended consequences such as community instability and unrest.

Expenditure on infrastructure will not necessarily lead to economic growth. Infrastructure which provides improvements or efficiencies in services, production or export capabilities and which is delivered and maintained in a manner which minimises waste of materials, time, and effort to generate the maximum possible amount of value, is most likely to contribute to economic growth. Infrastructure is generally expensive, and therefore due diligence needs to be done on the planning and prioritisation of infrastructure projects to optimise their contribution to economic and social objectives. Poorly planned, poorly delivered and under-utilised infrastructure can be a drain on the economy rather than contributing to economic growth.

The botched implementation of the expansion plan to increase the electricity supply has, for example, haunted and continues to haunt South Africa. In 2007 Eskom approved 13 projects worth more than R200 billion that it said would boost electricity output by 56% by 2017. The flagships were two mammoth coal-fired power stations, Medupi and Kusile, that were both expected to be finished by 2015 at a total cost of R163.2 billion. Instead of resolving the energy shortfall in Africa's most industrialised nation, the plants have been textbook studies on how not to execute large infrastructure projects. Medupi's completion date has been pushed out until 2021 and Kusile is scheduled for completion during 2023. The delays have given South Africa months of rolling blackouts, an economy in deep trouble and a huge headache for its political leadership. The anticipated final price tag has ballooned to R451 billion, including the costs of interest during construction and fitting the plants with equipment needed to meet environmental standards. All of this equates to Eskom's entire current debt, a burden that has left it unsustainable and reliant on a three-year, R128-billion government bailout to remain solvent.<sup>1</sup> It has also put the sovereign balance sheet at risk, and been a major contributor to

the recent downgrades of South Africa's investment gradings by international grading agencies.

All too often disappointing project outcomes are experienced. The gap between what was planned and what was achieved can be significant. Local and international research has found that the root causes of failure commonly relate to a lack of governance and poor procurement<sup>a</sup> and delivery management practices<sup>b</sup>, all of which are under the control of the client i.e. the person or organisation initiating and financing a project, approving the brief, and performing the "buying" function.<sup>2</sup> Recent international publications suggest that clients can improve infrastructure project outcomes should they embrace the following in the design of their delivery management systems:<sup>3,4,5,6</sup>

- ) put in place governance systems which incorporate oversight functions to assess aspects of value for money<sup>c</sup> throughout the project cycle (see D.3 in Annexure D) in a systematic manner and align all objectives and rewards across the supply chain to underpin the client's value proposition for a project<sup>d</sup>;
- ) establish trust-based engagements of stakeholders throughout the process to avoid suboptimal solutions and unnecessary delays, build relationships of trust and understanding with suppliers, service providers and contractors, engage in a more honest dialogue around risk and the allocation thereof with the supply chain and enable knowledge transfer from one project to another;
- ) embrace the "soft" issues of project delivery such as leadership, organisational culture, mindsets, attitudes and behaviours of those functioning within the client delivery management team;
- ) adopt a strategic and tactical approach to procurement, differentiate between the different types of procurement which pose different challenges and require different skills sets and standardise delivery in a manner which enables risks to be proactively managed and responsibilities to be clearly established;
- ) put in place reliable data gathering systems on which to base day-to-day oversight and long term planning; and
- ) develop strong capabilities across the project cycle of planning, delivery and operations.

## 1.4 South African construction industry

Infrastructure delivery within South Africa is required to:

- ) support the structural transformation of the economy; and

---

<sup>a</sup> **Procurement** is the process which creates manages and fulfils contracts.

<sup>b</sup> **Delivery management** is the critical leadership role played by a knowledgeable client to plan, specify, procure and deliver infrastructure projects efficiently and effectively, resulting in value for money. Delivery management as such includes knowledgeable leadership, consistent governance and systematic administration of procurement, contracts and project finances. Delivery management activities include planning at a programme and project level and the procurement and management of a network of suppliers including, as necessary, professional services, contractors and subcontractors to design, scope, detail and deliver infrastructure projects on a site

<sup>c</sup> **Value for money** in an infrastructure delivery context is:

- ) optimal use of resources to achieve intended project outcomes; or
- ) the effective, efficient and economic use of resources.

<sup>d</sup> **Value proposition** is the promise of measurable benefits resulting from the project. Project value is the outcome of client decision making to achieve an optimal balance of the project benefits, risks and costs.

- ) stimulate the economy directly and indirectly through input industries serving the domestic, regional market and global market.

This requires a strong and vibrant domestic construction industry capable of not only servicing the domestic demand but also capable of exporting its expertise and products. The construction sector has enjoyed a significant global and regional presence. However, this presence has in recent years been eroded for a number of reasons to the extent that there may not be domestic capacity to execute future large infrastructure projects.

## **1.5 Overview of the construction industry and the supply chain involved in delivering infrastructure projects**

This paper is located within a specific context. Infrastructure projects are delivered differently to goods and services for consumption. This is because infrastructure is constructed, refurbished, altered, rehabilitated or maintained on a site and has a very different supply chain.

Infrastructure projects are delivered differently to goods and services for consumption. This is because infrastructure is delivered by a disjointed supply chain, often broadly referred to as the construction industry. The construction industry delivers its products in a uniquely project-specific environment, which on every project involves different combinations of funders, clients and built environment professionals, site conditions, materials and technologies, general contractors, specialist contractors, skills, workforces, client requirements and stakeholders. Client procurement and delivery management practices are central to the performance of the infrastructure supply chain and have a direct impact on project outcomes.

Infrastructure procurement needs to be approached differently to the procurement of general goods and services. This is because the procurement of general goods and services usually involves the direct acquisition of products which are standard, well-defined and readily scoped and specified. The process normally involves the production of a specification which then forms the requisition. An immediate choice can be made in terms of the cost of goods and services that satisfy the specified requirements, which can be paid for upon delivery. In contrast, it is usually not possible to directly acquire infrastructure in the way that general goods and services are acquired, as the delivery of infrastructure involves the procurement, programming and coordination of a network of suppliers of goods and services which are required to collectively deliver or alter an asset on a site in accordance with specific client requirements and objectives. This network can include different companies specialising in design, manufacture, supply, assembly or construction. There are accordingly many more risks to manage in infrastructure procurement, due to events which may be foreseen, but not quantifiable during the early stages of a project, or unforeseen. The delivery of infrastructure accordingly needs to be managed by the client at both a strategic and project level.

Annexures A to D provide an overview of the organisational landscape of the construction industry and some insights into the planning, financing and delivery of and the supply chain involved in delivering infrastructure projects. Key points from these Annexures are summarised as follows:

- ) The construction industry involves a number of professions, such as engineers and architects, amongst others. This professionalisation is necessary to address certain public health, safety and financial risks associated with the work undertaken within the construction sector. The built environment needs to be planned, designed and constructed in such a way that people's lives as well as the huge amounts of money invested in infrastructure are not put at risk.

- ) The way in which infrastructure projects are delivered by the public sector has changed fundamentally over the last 50 years or so. Both professional and construction services were historically provided in house by public sector bodies with very little work being undertaken by the private sector. However, following international trends, almost all professional design, construction project management, construction management and construction functions have been outsourced to the private sector.
- ) This has resulted in the quality of supply chain management practices becoming the determining factor in the success of public sector infrastructure investment. Poor project outcomes are the result of clients failing to perform their roles as clients and “buyers” adequately. Successful delivery of infrastructure projects requires client leadership, client governance which supports delivery and accountability, and infrastructure procurement practices which support rather than frustrate delivery and enable effective delivery outcomes to be achieved.
- ) The principal role players in the delivery of infrastructure are the client delivery management team, the delivery team and stakeholders. Clients should ensure that their infrastructure projects are based on infrastructure plans and are adequately financed. The financing of a project can be based on a “buy” or “make” decision. The project delivery approach associated with a “buy” decision is commonly referred to as Public Private Partnership, Public Finance Initiative, concession or lease-to-own. The financing of the project on a “make” basis, on the other hand, requires the client to secure finance and pay service providers and contractors for the goods and services associated with the delivery of the project incrementally as the works proceeds. It also requires the client to play an active role in the delivery of the project and to make decisions regarding the allocation of design and interface management responsibilities between the parties to a contract.
- ) The client delivery management team needs to own the business case for each project, procure and pay the resources required to deliver the project, lead the project, manage relationships with stakeholders, oversee aspects of delivery and provide client direction. It provides a “buying” function. The delivery team, on the other hand performs a “supply” function and as such performs project construction management and design functions and professional support services and manufactures, constructs, maintains, installs, provides, rehabilitates, refurbishes or alters construction works (see A.4 in Annexure A).
- ) Infrastructure projects invariably have many inherent risks, including commercial and legal relationships, economic circumstances, human behaviour, natural events, weather, inherent and unforeseeable site conditions, political events, and community unrest. The parties to a contract face choices on how to deal with the inherent project risks. Risks can be transferred or accepted. A central issue in infrastructure projects is the financial liability related to the uncertainty of information when decisions are made, particularly in the early stages of a project, and future events. Because of the incremental nature of infrastructure projects and the need to manage these risks, the procurement of infrastructure projects cannot be approached in the same way as that for general goods and services for consumption, which are standard, well-defined, readily scoped and specified and transactional in nature.

## **2 National Development Plan for infrastructure**

### **2.1 Introduction**

The National Development Plan 2030: Our future make it work (NDP, 2012) recognises that public infrastructure enables the economy to grow faster and become more productive through contributions to the raising of competitiveness and exports and the lowering of the cost of doing business. Furthermore, infrastructure creates jobs for low-skilled people and promotes spatial inclusivity. Investment in infrastructure also provides opportunities for B-BBEE.

However, in order for investment in infrastructure to achieve the objectives of eliminating poverty, reducing unemployment and reducing inequality, and promoting B-BBEE, South Africa needs to have the capability and capacity to plan and delivery infrastructure efficiently and effectively. If infrastructure is not planned and delivered efficiently and effectively, it can retard rather than accelerate the achievement of these NDP objectives. For example, if large infrastructure projects have design or construction faults and incur huge cost and time overruns (as is the case currently with the Medupi and Kusile power stations), they can become an impediment to, rather than an enabler of, economic growth. , poverty elimination and the reduction of inequalities. Similarly, an inability of public sector clients to deliver projects and pay their suppliers promptly undermines B-BBEE. Emerging contractors are more adversely affected by slow-downs in the delivery of projects or poor client management practices such as late payment or mid-project changes in scope than more established contractors, because they have less financial capacity to absorb such challenges. Furthermore, poorly designed, operated and maintained infrastructure such as municipal water treatment plants and waste-water treatment plants can result in water shortages and/or an increase in water-borne diseases in communities, and hence an increase in poverty and inequality.

Accordingly, the National Development Plan identifies the need for South Africa to maintain and expand its electricity, water, transport and telecommunications infrastructure in order to support economic growth and social development goals. Given government's limited finances, private funding will need to be sourced for some of these investments.

### **2.2 The vision for infrastructure**

The National Development Plan 2030: Our future make it work (NDP, 2012) recognises that:

- ) higher investment, supported by better public infrastructure and skills, enables the economy to grow faster and become more productive;
- ) building the necessary infrastructure contributes to the raising of competitiveness and exports which are conducive to inclusive growth and job creation;
- ) infrastructure creates jobs for low-skilled people, encourages private investment, lowers the cost of doing business, promotes spatial inclusivity and has strong backward linkages to supplier industries; and
- ) infrastructure is essential to development.

The NDP points out that that investment spending fell from an average of almost 30 percent of GDP in the early 1980s to about 16 percent by the early 2000s and thereafter to a historically low level resulting in a missed generation of capital investment in roads, rail, ports, electricity, water, sanitation, public transport and housing. The NDP suggests that gross fixed capital



formation needs to reach about 30 percent of GDP by 2030 to realise a sustained impact on growth and household services. The NDP accordingly set a target for public infrastructure investment at 10 percent of gross domestic product (GDP), financed through tariffs, public-private partnerships, taxes and loans, focussing on transport, energy and water.

The NDP also seeks to respond systematically to entrenched spatial patterns across all geographic scales that exacerbate social inequality and economic inefficiency in the planning of infrastructure. Accordingly, the NDP suggests that by 2030 South Africa should observe meaningful and measurable progress in reviving rural areas and in creating more functionally integrated, balanced and vibrant urban settlements. For this to happen the country must clarify and relentlessly pursue a national vision for spatial development, sharpen the instruments for achieving this vision and build the required capabilities in the state and among citizens.

## **2.3 The diagnosis for infrastructure**

The National Planning Commission's Diagnostic Overview (2011) sought to identify the main challenges confronting the country and to examine their underlying causes to provide the basis for a plan. The Diagnostic Overview outlined the following nine challenges that affect the development of South Africa:

- 1) too few people work;
- 2) the quality of school education for black people is poor;
- 3) infrastructure is poorly located, inadequate and under-maintained;
- 4) spatial divides hobble inclusive development;
- 5) the economy is unsustainably resource intensive;
- 6) the public health system cannot meet demand or sustain quality;
- 7) public services are uneven and often of poor quality;
- 8) corruption levels are high; and
- 9) South Africa remains a divided society.

Given the linkage between infrastructure investment and economic growth, it is not surprising that infrastructure has an important role to play in five of the aforementioned nine challenges.

The Diagnostic Overview recognises that an efficient state protects citizens, provides quality services and infrastructure, and gives leadership to national development while service delivery programmes can have an important impact on living standards in a context of deep income poverty. It also points out that indicators most often associated with decline include rising corruption, weakening of state and civil society institutions, poor economic management, skills and capital flight, politics dominated by short-termism, ethnicity or factionalism, lack of maintenance of infrastructure and standards of service.

The NPC in this overview recognises that transformation in the post-apartheid state requires that the racial monopoly over skill be challenged and dismantled. The NPC's analysis of the state of play within government on the outcome of this imperative was that a reduction in the number of professionals available to the state had occurred and a crisis was looming in the generational reproduction of professional expertise as the ageing cohorts continue to leave

the system. The NPC also recognised that this skills deficit has an adverse impact not only on frontline service delivery but also on the ability of government to engage in long-term planning, coordination across institutions, run efficient operations, ensure adequate maintenance of infrastructure, establish organisational systems and routines, and manage personnel and industrial relations.

Specific mention was made in the Diagnostic Overview of the shortage of skilled professionals, especially in infrastructure planning, engineering and finance. It was also pointed out that many short-term responses to skills shortages do little to address long-term capacity constraints. Consultants can be brought in to design and build infrastructure, but without in-house technical expertise provincial and local governments lack the capacity to ensure the work is done to an adequate standard or to maintain the infrastructure once the work has been completed.<sup>e</sup>

## **2.4 The strategy for achieving the vision**

The NDP recognises that South Africa needs to maintain and expand its electricity, water, transport and telecommunications infrastructure in order to support economic growth and social development goals in the medium and long term. Given the government's limited finances, the NDP recognises that private funding will need to be sourced for some of these investments.

The NDP made the following key proposals to grow the construction sector:

- 1) Address government's ability to spend its infrastructure budget, particularly with regard to project-management capacity, long term planning and monitoring and evaluation of both expenditure patterns and construction works.
- 2) Support the civil construction and the supplier industries in their export efforts with the establishment of a Financial Centre for Africa, and more support in commercial diplomatic relations.
- 3) Intensify support to supplier industries such as building supplies, steel, glass and cement.
- 4) Create conditions for a less cyclically volatile industry by emphasising numerous, smaller-scale, regionally dispersed projects to address backlogs, which are more accessible to smaller firms and new entrants.
- 5) Expand public funding for alternative types of low-income housing that generates demand directly and in supplier industries.
- 6) Promote a simultaneous focus on more energy-efficient buildings and the use of techniques to reduce demand on electricity supply in the long term such as home insulation and the installation of solar heaters which are labour-intensive activities that have strong backward linkages to supplier industries.

The NDP also makes reference to investment strategies in the public environment and the need to create the necessary conditions to attract and secure investment.

---

<sup>e</sup> The in-house technical expertise referred to is the in-house expertise required for infrastructure delivery management, not for design, project management and construction.

The NDP in addition deals with aspects relating to the planning of infrastructure. It calls for interventions to ensure environmental sustainability and resilience to future shocks and new spatial norms and standards which densify cities, improve transport, locate jobs where people live, upgrade informal settlements and fix housing market gaps.

## 2.5 Enablers for public sector infrastructure delivery

The NDP recognises 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;
- ) greater efficiency in all areas of government expenditure is necessary as the overall envelope of expenditure is likely to grow relatively slowly over the medium term; and
- ) public-sector procurement expenditure needs to be used to drive national priorities such as localisation and economic transformation and the stimulation of local production.

The NDP emphasises the need to professionalise the public service as an essential enabler of a capable and developmental state. Specifically, it states that:

- ) *"There is a shortage of professional skills in government, particularly at the local level. Municipalities require engineers to build, maintain and operate infrastructure. Even when these functions are contracted out, municipalities need to have the technical expertise to commission and oversee contractors."*
- ) *"Those appointed to management positions that require professional expertise should have sufficient technical knowledge, along with relevant management experience, to understand the challenges faced by technical specialists and to secure their respect. Divisions such as human resources, supply chain, stores and systems should play a supporting and enabling role to operational line management driven by professionals".*
- ) *"Professional supply-chain management capacity needs to be developed through training and accreditation".*

The plan notes that the public procurement system tends to focus on procedural compliance rather than value for money and places an excessive burden on weak support functions. The plan pinpoints the need to move away from an overly bureaucratised process with the emphasis on compliance by box-ticking, which makes the system, costly, burdensome, ineffective and prone to fraud. It also expressed the need for supply-chain management staff to support technical and other specialists in a manner which does not displace their involvement in procurement processes. This was seen to improve the quality of spending through better planning, sound procurement systems and greater competition in the economy and result in robust contracts.

The plan acknowledges that economic rent is paid through the procurement system to reduce racial patterns of ownership of wealth and income. The plan does, however, caution that efforts to stimulate local procurement should not reinforce higher costs for the public sector and business as this will undermine growth and job creation. The plan nevertheless recommends that mandatory targets for socio economic development and job creation as well as local procurement should be introduced for all tenders above R10 million.

The plan recognises that infrastructure procurement involves conceptual designs, structuring of contracts and decisions relating to long-term lock-ins which requires quality decision

making. The plan furthermore stressed that professional input is essential for infrastructure procurement to mitigate risks. This requires a movement away from overly bureaucratised procurement processes based on box-ticking, to processes which incorporate professional judgment.

The NDP accordingly identifies the need for procurement systems to be robust, transparent and sufficiently intelligent to allow for the different approaches that are most suited to different forms of procurement. The plan as a guideline proposes 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 in different procurement contexts;
- ) 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 private contractors in supply chain management activities throughout the life of contracts;
- ) build enabling support structures to develop professional supply chain management capacity through training and accreditation including a data base of registered supply chain managers and a central list of those barred from performing such roles in the public sector; and
- ) incorporate effective and transparent oversight functions to assess value for money through the compiling of data, the scrutinising and placing in the public domain of such data and the setting of clear benchmarks.

The plan acknowledged the work being done between National Treasury and the Construction Industry Development Board to establish an infrastructure delivery management system to develop systems that better accommodate the particular challenges of infrastructure procurement.

## 3 Performance of the sector

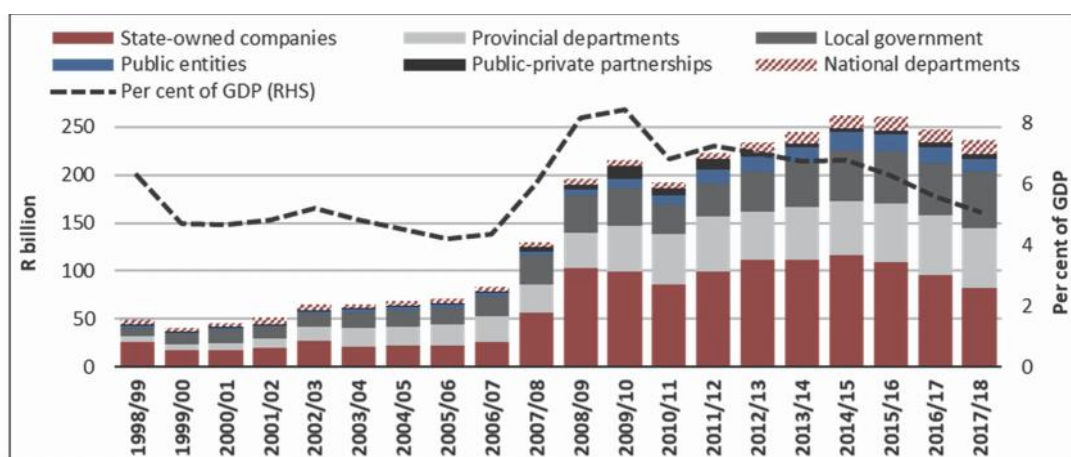
### 3.1 Introduction

The NDP objectives (see 2) of growing the economy, eliminating poverty, reducing unemployment and reducing inequality, as well as accelerating B-BBEE through investing in infrastructure can only be achieved if South Africa has the capability and capacity to deliver infrastructure efficiently and effectively. In order to assess as to whether or not South Africa has this capability and capacity to delivery infrastructure, it is necessary to review the country's recent performance in delivering infrastructure.

### 3.2 Public expenditure

Between 1998/99 and 2017/18, the public sector spent R3 trillion on new infrastructure and the replacement, maintenance, repairs and upgrading, rehabilitation, renovation and refurbishment of and additions to existing infrastructure. Such expenditure increased from R48.8 billion in 1998/99 to R236.2 billion in 2017/18. In real terms, infrastructure spending grew by an annual average of 4.3 per cent.

Public-sector infrastructure expenditure as a share of gross domestic product (GDP) from 1998/99 to 2017/18 averaged 5.9 per cent as indicated in Figure 1. A spike in expenditure occurred around 2010 due to the hosting of the 2010 World Cup. Infrastructure expenditure was ramped up to not only provide the stadia but also to improve, amongst other things, fuel security through the construction of Transnet's New Multi-Product Pipeline designed to transport liquid petroleum fuel from Durban to Gauteng and projects relating to the improvements in transport e.g. the Gautrain rail commuter system, the King Shaka International Airport and the Bus Rapid Transit system. Public sector expenditure as a percentage of GDP in 2017 reverted back to the same percentage in 2007 of approximately 5%. However, this percentage is well below the target of 10% set in the NDP for public infrastructure investment. Instead of a steady increase in infrastructure investment as envisaged in the NDP, such investment has been in decline in real terms for the last decade. Underspending has also occurred during this period as indicated in Figure 2.

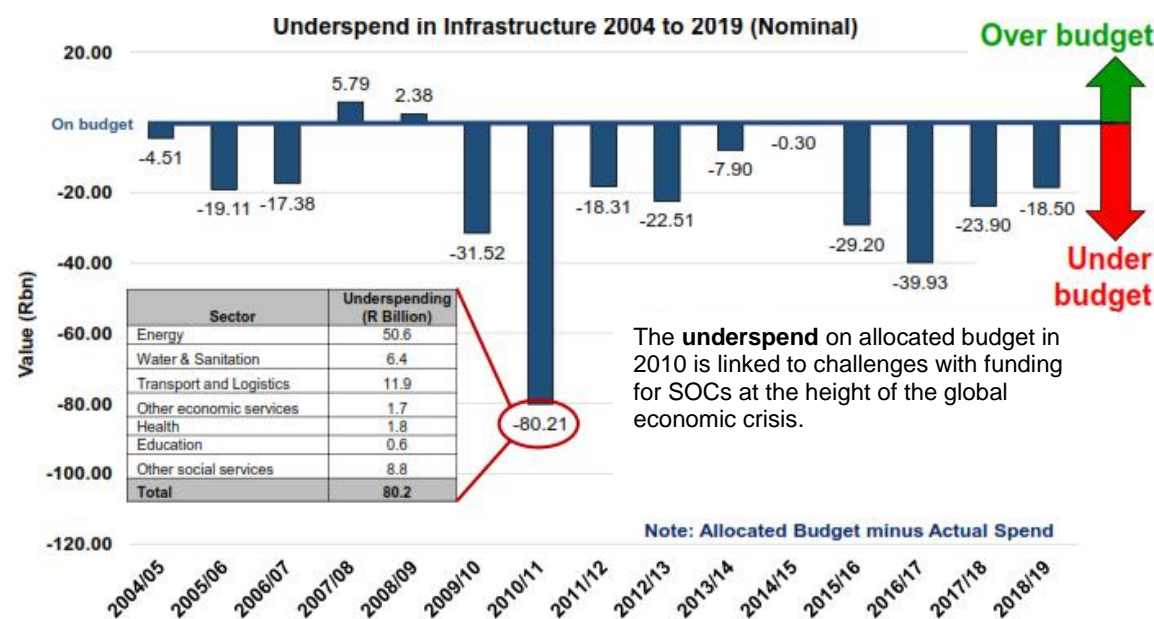


**Figure 1: Public sector infrastructure spending as a percentage of GDP** (source National Treasury Budget Review 2019)

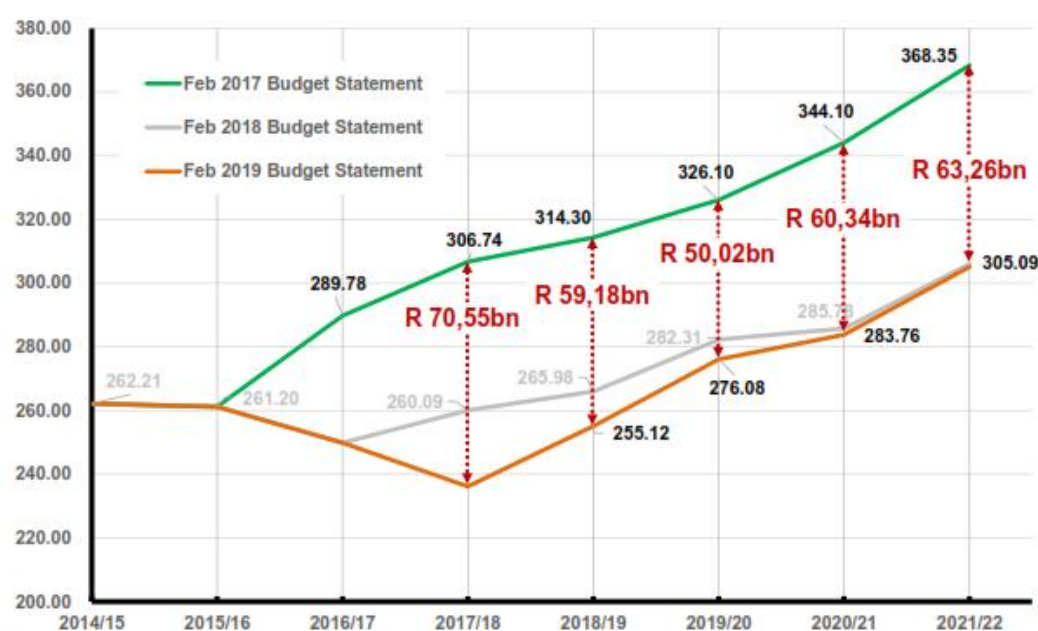
The PICC<sup>7</sup> point out that the five-year spending trajectory has been adjusted downwards every year since 2017 in the National Treasury Budget Review as indicated in Figure 3. This has a follow-on effect in future years. The total reduction in infrastructure spending over the 5 year period is R 303 bn. With a 10% increase in infrastructure investment (year-on-year) from

2019/20, it will only be possible to recover R60bn by 2022 with a net loss of R325bn (20%). A 17% increase in infrastructure investment is required to reach the trajectory as allowed for in the 2017 budget review (see Figure 4). To recover the original trajectory, it will be required to increase infrastructure investment by 28% year-on-year until 2022.

Table 1 provides data on public sector infrastructure expenditure and estimates from the 2015/16 financial year as published by National Treasury in a number of Budget Reviews. The expected expenditure over the MTEF period on the three priority focus areas of energy, water and sanitation and transport and logistics to 18.2%, 15,3% and 36,2% of the total expenditure, respectively. These three priority sectors account for approximately 70 % of the total investment in public sector infrastructure in line with the NDP priorities.

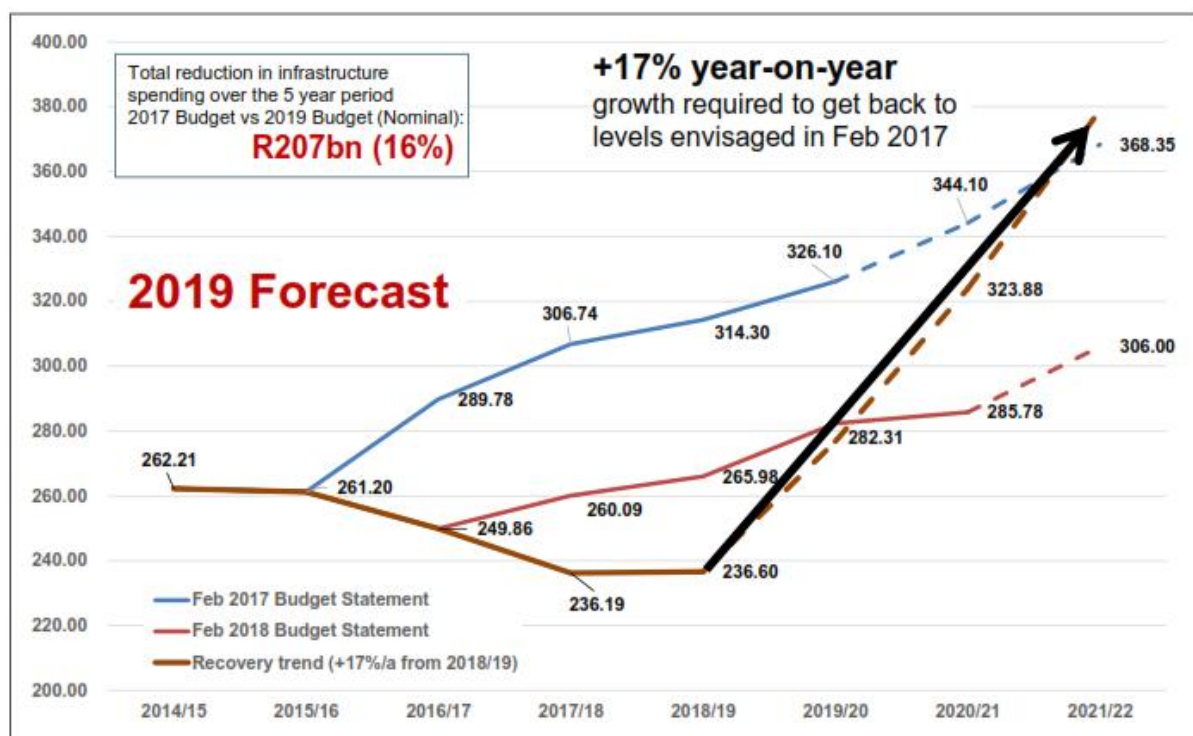


**Figure 2: Underspend in infrastructure (2004 to 2019) (nominal)** (source PICC derived from National Treasury, Budget Review February 2017, 2018, 2019)



**Figure 3: Change in infrastructure spending allocations (nominal values) 2017 Budget (February 2017) to 2019 Budget (February 2019)** (source PICC)





**Figure 4: Annual increase in investment required to reach levels foreseen in 2017** (source PICC)

**Table 1: Public-sector infrastructure expenditure and estimates** (source National Treasury Budget Review 2019)

	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	MTEF total
	Outcomes (R billion)			Estimates (R Billion)				
Energy	65.9	67.0	55.1	50.6	52.6	52.8	52.8	<b>158.1</b>
Water and sanitation	31.5	30.8	26.8	38.3	42.8	41.8	47.4	<b>132.0</b>
Transport and logistics	81.3	70.9	75.4	78.0	94.8	103.8	115.3	<b>313.9</b>
Other economic services	13.2	14.3	17.1	16.7	15.1	14.2	15.2	<b>44.5</b>
Health	10.3	10.4	9.7	12.1	11.8	11.1	11.5	<b>34.3</b>
Education	18.0	17.8	17.6	18.5	18.2	19.0	19.7	<b>56.9</b>
Human settlements <sup>1</sup>	18.3	18.3	14.3	18.2	18.8	19.0	19.7	<b>57.5</b>
Other social services	11.9	10.3	10	10.6	10.3	9.9	10.4	<b>30.6</b>
Administration services <sup>2</sup>	10.9	10.1	9.1	12.3	11.7	12.2	13.1	<b>37.0</b>
<b>Total</b>	<b>261.2</b>	<b>249.9</b>	<b>236.2</b>	<b>255.1</b>	<b>276.1</b>	<b>283.8</b>	<b>305.1</b>	<b>864.9</b>
National departments	14.5	15.8	14.9	15.9	16.0	16.8	18.6	<b>51.5</b>
Provincial departments	60.6	62.6	62.3	61.7	60.7	60.4	63.7	<b>184.8</b>
Local government	54.7	54.4	58.8	65.9	66.7	67.3	71.0	<b>204.9</b>
Public entities <sup>3</sup>	17.8	17.1	13.2	20.6	20.8	22.8	23.7	<b>67.4</b>
Public-private partnerships	4.3	4.8	4.8	5.9	6.1	5.5	5.8	<b>17.3</b>
State-owned companies	109.3	95.2	82.2	85.2	105.8	110.9	122.3	<b>339.0</b>
<b>Total</b>	<b>261.2</b>	<b>249.9</b>	<b>236.2</b>	<b>255.1</b>	<b>276.1</b>	<b>283.8</b>	<b>305.1</b>	<b>864.9</b>

1. Human settlements includes public housing to households and bulk infrastructure amounting to R57.5 billion over the MTEF period

2. Administration services include infrastructure spending by the Department of International Relations, the Department of Home Affairs, the Department of Public Works, Statistics South Africa and their entities

3. Public entities are financed by capital transfers from the fiscus and state-owned companies are financed from a combination of own revenue, borrowings and private funding

Capital expenditure by public sector institutions during the 2015 financial year amounted to R261 billion. New construction works amounted to R157 billion or approximately 60% of the capital expenditure. Expenditure on land and buildings, transport and equipment and plant, machinery and equipment accounted for the remainder.<sup>8</sup>

The underspending over the 2015/16, 2016/17 and 2017/18 financial years was approximately 10%, 12%, 16%, 20% 23% in human settlements, other social infrastructure, energy, water and sanitation and transport and logistics, respectively.

Estimated expenditure has consistently lagged behind actual expenditure as indicated in Table 2.

The data in Table 2 suggests that the state-owned enterprises and public entities have over the 2015/16, 2016/17 and 2017/18 financial years on average spent not more than 75% and 65% of their respective budgeted amounts while the state as a whole has spent not more than 85% of the available budget. The data also suggests that the underspend over this period increased from 10% in 2015/16 to 23% in 2017/18 during a time when National Treasury SCM instructions became applicable to major public entities and national and provincial business enterprises (see 4.1.4).

The data also suggests that in the NDP three priority areas, underspending over the 2015/16 to 2017/18 amounted to approximately 16%, 20% and 23% in the energy, water and sanitation and transport and logistics sectors, respectively.

**Table 2: Estimated versus actual expenditure** (source National Treasury Budget Review, 2016-2019)

Total	Financial year											
	2012/13		2013/14		2014/15		2015/16		2016/17		2017/18	
	Outcome	Estimated	Outcome	Estimated	Outcome	Estimated	Outcome	Estimated	Outcome	Estimated	Outcome	Estimated
National departments	11.4	-	11.9	-	13.5	-	14.5	17.3	15.8	16.6	14.9	16.7
Provincial departments	50.3	-	55.2	-	56.4	-	60.6	62.7	62.6	62.3	62.3	64.1
Local government	41.7	-	47.1	-	53.2	-	54.7	56.6	54.4	58.2	58.8	56.7
Public entities	16.1	-	15.4	-	19.2	-	17.8	28.7	17.1	22.0	13.2	23.9
Public-private partnerships	2.6	-	3.9	-	4.0	-	4.3	1.7	4.8	4.8	4.8	5.1
State-owned companies	111.3	-	111.2	-	115.8	-	109.3	123.4	95.2	125.8	82.2	140.3
<b>Total</b>	<b>233.3</b>	<b>-</b>	<b>244.8</b>	<b>-</b>	<b>262.2</b>	<b>-</b>	<b>261.2</b>	<b>290.4</b>	<b>249.9</b>	<b>306.7</b>	<b>236.2</b>	<b>306.7</b>
Energy	75.2	-	69.6	-	67.8	-	65.9	69.7	67.0	75.0	55.1	78.3
Water and sanitation	22.5	-	25.8	-	29.5	-	31.5	35.2	30.8	37.2	26.8	39.3
Transport and logistics	69.5	-	77.8	-	92.4	-	81.3	99.5	70.9	91.4	75.4	104.6
Other economic services	9.4	-	13.0	-	13.0	-	13.2	16.6	14.3	16.0	17.1	12.6
Health	9.7	-	10.0	-	8.7	-	10.3	9.2	10.4	11.0	9.7	11.2
Education	11.3	-	13.7	-	15.4	-	18.0	17.4	17.8	17.3	17.6	17.6
Human settlements	15.6	-	17.0	-	17.1	-	18.3	18.3	18.3	18.3	14.3	20.0
Other social services	13.7	-	12.9	-	13.1	-	16.3	16.6	10.3	15.6	10	16.1
Administration services	6.3	-	5.0	-	5.2	-	6.5	8.0	10.1	7.9	9.1	7.1
<b>Total</b>	<b>233.3</b>	<b>-</b>	<b>244.8</b>	<b>-</b>	<b>262.2</b>	<b>-</b>	<b>261.2</b>	<b>290.4</b>	<b>249.9</b>	<b>289.8</b>	<b>236.2</b>	<b>306.7</b>

The data provided in Table 2 can be misleading. For example, the cost overruns at Kusile and Medupi distorts the picture as this is committed expenditure. If these cost overruns are



removed, the inability to implement new projects as evidenced by under-expenditure is much higher. At the same time, the high reported expenditure of municipal and provincial infrastructure budgets is distorted by the transferring of budgets from underperforming entities to high performing entities. For example, in the past five years, since 2012/13, a total of R3.4 billion in MIG transfers was stopped and was reallocated from underspending municipalities to better-spending municipalities. This was not ideal, as it tended to penalise municipalities with a lower capacity and hence punish the poorer communities. This state of affairs is problematic as it perpetuates uneven development, something which the NDP sought to address. It also suggests that the capacity development interventions outlined in 4.1 have not been effective.

The Construction Industry Development Board (CIDB) in the Construction Monitor - Supply and Demand (April 2019) paints a somewhat different picture for local government. This publication points out that at the end of the 2017/18 municipal financial year, the total underspending of municipalities decreased from around R15 billion for the 2016/17 financial year to around R13 billion with metropolitan councils contributing around R11 billion to this underspending. In the 2017/18 financial year, metropolitan councils had difficulties spending their capital budgets. None of the metropolitan councils spent more than 80% of their capital budgets. The spend ranged between 55 to 78%. This was a decline/deterioration from the performance of the 2016/17 financial year in which only 2 metros spent below 80% of their capital budgets. The CIDB monitor also pointed out that in the 2017 /18 financial year 226 (or 88%) of municipalities spent less than 100% of their capital budgets, a figure which is approximately the same as in the 2016/17 financial year. It further indicated that in the 2017/18 financial year 30 (or 12%) of municipalities spent less than 40% of their capital budgets, 51 spent between 40% and 60%, 94 spent between 60% and 80%, 53 spent between 80% and 100% of their capital budgets. 24 municipalities overspent their capital budgets between 100% and 150% while 5 overspent by more than 200%.

The underspend in recent years has been masked by the reductions in spending allocations since 2015/16 shown in Figure 3. Under expenditure would have been significantly higher had there been no change in budgets.

In summary, falling public sector budgets and increasing underspend over time are the order of the day. At the same time, the effectiveness of interventions to improve government's inability to spend its infrastructure budget remains questionable.

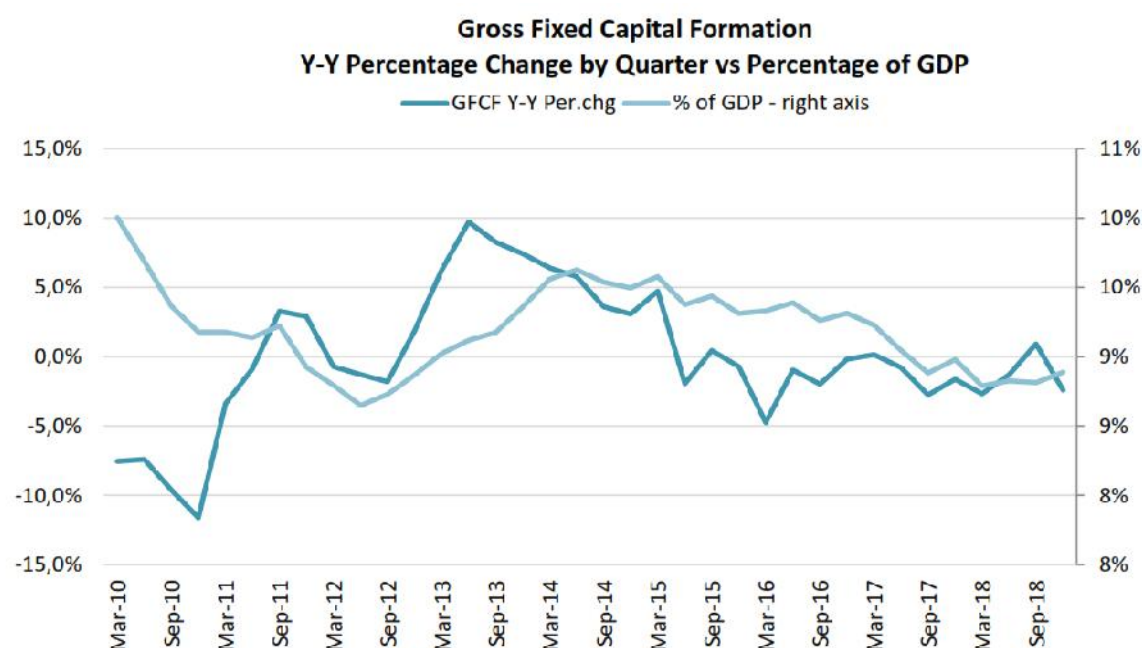
### **3.3 Performance of the construction industry**

Consulting Engineers South Africa (CESA) in their Bi-Annual Economic and Capacity Survey (July – December 2018) reported that the construction industry is under performing and is in recession. The sector contracted by 1,2 % in 2018 following an 0,6 percent contraction during 2017. CESA reported that the civil construction industry currently is in survival mode with downsizing, job cuts and retrenchments.

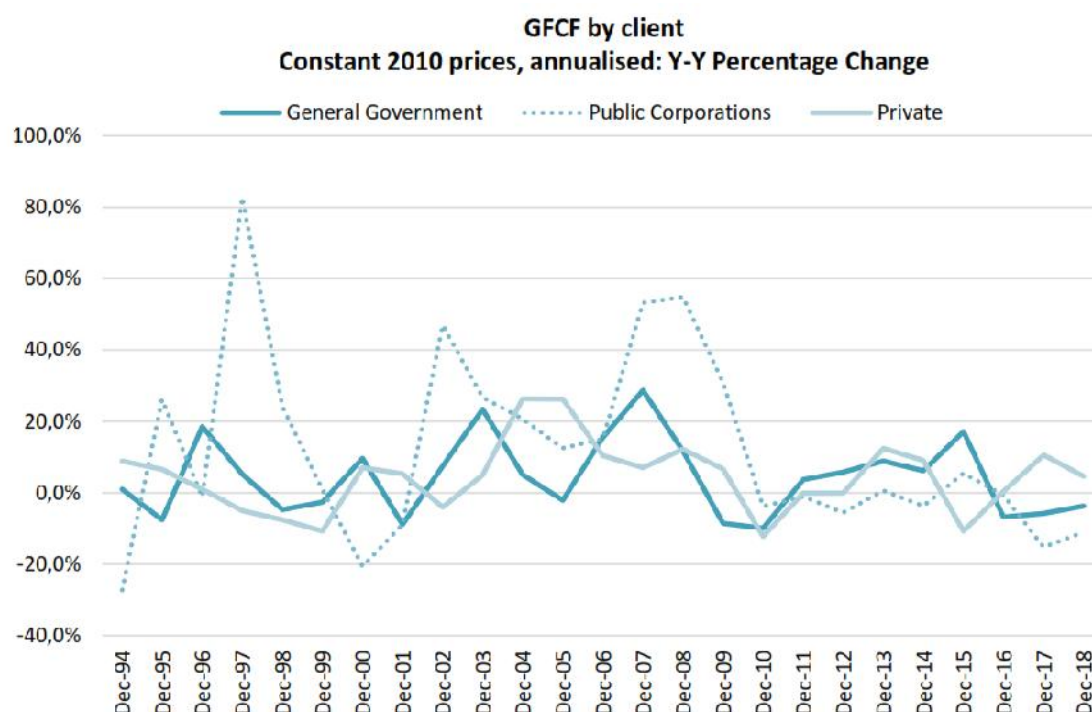
CESA also reports that gross fixed capital formation (GFCF) decreased by 2.4 percent in the 4<sup>th</sup> quarter of 2018, following a surprise expansion in the 3<sup>rd</sup> quarter of 0.9 percent. This marks a 1.4 percent overall decline in investment in the South African construction industry in 2018, following a 1.3 percent decline in 2017 (see Figure 5 and 6 and Table 3). CESA also notes that GFCF as a percentage of GDP averaged 8.9 percent in 2018 overall, and has not even been above 10 percent since the first quarter of 2015.

The total of R430,2 billion spent on construction infrastructure over the last year (in constant prices) indicated in Table 3 includes purchases of machinery and equipment, often imported, such as turbines. CESA point out that the most interesting observation from the data in Table

3 is that the private sector, due to the faltering growth in the public sector, has now become the biggest investor in the civil construction industry surpassing general government and SOE's investments for the first time ever.



**Figure 5: GFCF (Y-Y percentage changes vs percent of GDP)** (Source SARB Quarterly bulletin)



**Figure 6: Gross fixed capital formation construction** (source CESA Bi-Annual Economic and Capacity Survey, March 2019)

**Table 3: GFCF Residential, Non-residential and Construction works by client 2018**  
(source CIDB Construction Monitor Q1 2019)

2018	Government	SOE's	Private	Total
	Rand billion			
Civil works	77.325	90.433	91.974	259.732
Non-residential	32.010	3.260	49.118	84.388
Residential	1.785	0.065	84.236	86.086
<b>Total</b>	<b>111.120</b>	<b>93.758</b>	<b>225.238</b>	<b>430.206</b>

CESA, based on a sample of questionnaires that were returned from its members, reported that fee earnings for the consulting engineering profession in the last six months of 2018 decreased by 21.0% (in current prices) compared to the first six months of 2018. This followed a 10% decrease in the first six months of 2018 (see Figure 7). Large firms, medium and small/micro firms reported a decrease of 4.1%, 14.5% and 56.6% in fee earnings, respectively, for the last six months of 2018. CESA also reported the following for the last 6 months of 2018:

- ) net profitability was reported as being 11.6% on average which is inline within the two year average profitability which has been below 15% since 2011; and
- ) employment decreased by an average of 10% to an estimated 24 540.

The consulting engineering profession is engaged in the planning, design, project management and contract administration of infrastructure projects. More than half of the revenue generated in this industry lies in the services required prior to the commencement of physical construction. Accordingly, the downturn in revenue suggests a slow-down in the planning and design of projects within the pipeline of projects or delays in awarding of construction contracts or a combination of these two scenarios.



**Figure 7: Fee income for the consulting engineering profession, R billion, real prices annualised** (source: CESA Bi-Annual Economic and Capacity Survey, March 2019)

The South African Forum of Civil Engineering Contractors (SAFCEC) in their Economic Report for the second quarter of 2019 reported a 7.6% decline in revenue for the civil engineering industry in the 2<sup>nd</sup> quarter compared to the previous year and a shrinking 2 year order book. SAFCEC also reported a sharp decrease in employment (see Figure 8) and report that the civil engineering industry has now shed 45% of its total workforce since 2014.



**Figure 8: Employment trend with the second quarter of 2014 being assigned 100%**  
(source: SAFCEC Economic Report for the second quarter of 2019)

The SAFCEC reporting of a decline in order books and employment reflects the slowing down in both the funding of infrastructure and the failure to expend budgets. What is of concern are the job losses resulting from these reductions and loss of contracting capacity.

### 3.4 State of maintenance

The South African Institution of Civil Engineering (SAICE) produced in 2006, 2011 and 2017 an Infrastructure Report Card (IRC), following on the 2006 and 2011 editions. It reflects the expert view of the Institution and its members on the current condition of a broad range of public infrastructure. These report cards categorise sectors and subsectors of infrastructure into one of 5 grades as described in Table 4. The overall grade for 2006, 2011 and 2017 is indicated in Table 5. The grades allocated to all sectors and subsectors are summarised in Table 6.

**Table 4: Grades applied in the Infrastructure Report Card** (source: SAICE Infrastructure Report Card, 2017)

Grade				
A	B	C	D	E
World-class	Fit for the future	Satisfactory for now	At risk of failure	Unfit for purpose
Infrastructure is comparable to the best internationally in every respect. It is in excellent condition and well maintained, with capacity to endure pressure from unusual events.	Infrastructure is in good condition and properly maintained. It satisfies current demands and is sufficiently robust to deal with minor incidents.	Infrastructure condition is acceptable, although stressed at peak periods. It will need investment in the current Medium-Term Expenditure Framework (MTEF) period to avoid serious deficiencies.	Infrastructure is not coping with demand and is poorly maintained. It is likely that the public will be subjected to severe inconvenience and even danger without prompt action.	Infrastructure has failed or is on the verge of failure, exposing the public to health and safety hazards. Immediate action is required.

**Table 5: Overall grades for 2006, 2011 and 2017** (source: SAICE Infrastructure Report Card, 2006, 2011 and 2017)

Infrastructure score card	Overall score	SAICE's comments on the overall score
2006	D+	Although South Africa's built environment infrastructure is very good, even world class in parts, the relatively poor overall grade reflects extensive maintenance backlogs. These backlogs are caused primarily by funding and skills shortages
2011	C-	The focused investment over the past five years has resulted in more new infrastructure and an improvement in the condition of some existing assets. However, infrastructure at municipal level remains poor and is deteriorating in many places. Further, the resilience of all new and previously existing infrastructure is questionable without a much improved commitment to maintenance.
2017	D+	Although much of South Africa's built environment infrastructure is of high quality, the below-average grade reflects the continuing low maintenance levels, and even neglect in many areas, that is taking a toll on its resilience. A lack of commitment to long-term planning, adequate dedicated funding, proper management systems, data collection and skill deployment and collaboration are major contributing factors.

Table 4 suggests that there has been no significant improvement or deterioration in the state of South Africa's infrastructure. It remains on average at risk of failure. Gautrain, national roads, commercial ports, ACSA airports, Eskom's distribution lines and heavy haul freight railway lines are fit for the future. Sanitation in all areas outside of major urban areas and provincial, metropolitan and municipal gravel roads are unfit for purpose. Bulk water services, water supply for all areas other than major urban areas, solid waste collection and disposal in areas other than major urban areas, paved provincial and municipal roads outside of metropolitan areas, branch railway lines, PRASA passenger railway lines, local electricity distribution, health care facilities (hospitals and clinics) and TVET colleges are all at risk of failure. Such infrastructure in the main falls within the priority infrastructure focus areas on the NDP, namely energy, water and transportation which are required to support economic growth and social development goals.

CESA (2019) points out that the lack of attention to maintenance of infrastructure poses a serious problem for the economy. Not only is it much more costly to build new infrastructure, but dilapidated infrastructure hampers South Africa's economic growth potential. The cost of resurfacing a road after seven years at current prices, is estimated at R175 000 per kilometre, compared to R3 million per kilometre to rebuild, less than 6% of the rebuild price. In many cases, infrastructure is left to deteriorate to such a state, that maintenance becomes almost impossible.

The poor state of maintenance and the inability to improve the state of maintenance over time suggests that interventions such as the Infrastructure Delivery Management System (IDMS), the Cities Infrastructure Development Management System (CIDMS) and the National Infrastructure Management Strategy (NIMS) outlined in 4.1 which have provided tools and techniques have had a limited impact in improving performance.

### 3.5 Mega projects

Recent experiences with mega projects include:

- J The validated budget for the Gauteng Freeway Improvement Project was R11,4 billion. The estimated final cost estimated during 2010 indicated that the project exceeded R17,5 billion<sup>9</sup>.
- J The Guatrain Rapid Rail Link System reported a final cost of R25,2 billion, a figure that was significantly higher than the approved project budget of R6,8 billion in 2005.<sup>10</sup>

- ) Eskom's Ingula Pumped Storage Scheme commenced during 2005 and was expected to finish in December 2012. It was commissioned in 2016. The initial budget of R8,9 billion was eventually revised to R25,9 billion.<sup>11</sup>
- ) ACSA's King Shaka International airport failed to keep within its original R3,15-billion budget and revised the final budget to about R7,6-billion.<sup>12</sup>

**Table 6: Grading of state of sectors and subsectors (2006, 2011 and 2017)** (source: SAICE Infrastructure Report Card, 2006, 2011 and 2017)

Sector	Subsector	Grade		
		2006 report	2011 report	2017 report
Water	Bulk water services	D+	D-	D-
	Supply in major urban areas	C+	C+	C+
	Supply for all other areas	D-	D-	D-
Sanitation including waste water	Major urban areas	C-	C-	C-
	All other areas	E	E-	E
Solid waste management	Waste collection in the major urban areas	-	C	C
	Waste collection in all other areas	-	D	D
	Waste disposal in metros	C-	C+	C+
	Waste disposal in all other areas	D	D	D-
Roads	National roads	C	B	B
	Paved provincial roads	D-	D-	D
	Paved metropolitan roads	D-	C-	C-
	Other paved municipal roads	D-	D	D-
	Provincial, metropolitan and municipal gravel roads	D-	E	E
Airports	ACSA owned facilities only	B	B+	B+
Ports	Commercial ports only	C+	B-	B-
	Fishing harbours	-	C	-
Rail	Heavy haul freight lines	B	B+	B+
	General freight lines	C	C+	C
	Branch lines	E	D	D-
	Passenger lines - PRASA	D+	C-	D+
	Passenger lines - Gautrain	-	-	A
Electricity	Eskom's generating infrastructure	C+	C+	C+
	Eskom's transmission network	C+	B-	B-
	Local distribution	C- to D-	D	D
Health care	Hospitals	C	D+	D
	Clinics	D+	D	D+
Education	Public ordinary schools	-	D+	D+
	Universities	-	-	C+
	TVET colleges	-	-	D+
<b>Overall</b>		D+	C-	D+

The cost of the 715 km Transnet New Multi-Product Pipeline jumped from R12.7bn to R30.4bn in the nine years it has taken to complete.<sup>13</sup> Kusile and Medupi were originally due to come online in 2014 and 2012 respectively. In 2019 both are still under construction. Medupi's completion date has been pushed out until 2021 and Kusile, is scheduled for 2023.

When Eskom announced in 2007 that it was to build the two new mega coal power plants, the cost of Medupi was just under R70bn and Kusile R80bn. The current costs are now R208bn for Medupi and R239bn for Kusile. While some of the units have come online and are generating electricity, they have been plagued by problems. Eskom calls these "design faults" and intends rectifying them at a cost of R8bn.<sup>14</sup>

Not all mega projects in the public sector have failed in terms of time, cost and performance in use. A notable and well documented project which was delivered to world class standards is the delivery of the first phase of the SIPS 14 new universities project. A decision was taken by government during September 2011 to establish new universities in the two provinces in which did not have universities. Given the complex scope and challenging timeframes, the Department of Higher Education and Training (DHET) appointed the experienced Campus Planning and Development Unit at the University of the Witwatersrand to lead the delivery of the project. Site selection, land assembly, feasibility studies and academic, institutional and spatial planning followed this decision resulting in the new universities' formal establishment by notice in the government gazette during August 2013. Buildings were thereafter refurbished or repurposed to receive the first intake at the start of the academic year during February 2014 - 127 students at SPU and 169 students at UMP. (28 months from the time that a political decision was made to when the facilities were put in use.) The February 2015 student population rose to 337 at SPU and 828 at UMP. New facilities were, however, required to accommodate the February 2016 student population of 700 at SPU and the 1255 at UMP. The new facilities were built within budget, slightly below cost norms with less than 2% difference between the cost at the start of construction and the final cost despite there being up to 70% of the works not being capable of being priced when construction commenced. Expenditure peaked at approximately R 134 m per month. Their construction yielded high levels of broad B-BBEE and local participation and some 40 000 hours of structured workplace learning for 545 people.

These outcomes were achieved within the Constitutional imperatives for a procurement system.<sup>f</sup> This project piloted the principles and practices embedded in the SIPDM which did not require changes to SCM Regulations to be made (see 4.2.3).<sup>15</sup> As indicated in 5.3.3 this was achieved through client governance and organisational ownership practices which provided effective direction and oversight of the organisation's infrastructure delivery programme, CEO level client leadership at both a programme and project level and a strategic and tactical approach to procurement which supported effective implementation.<sup>16</sup>

---

<sup>f</sup> Universities and major state owned enterprises (e.g. ESKOM, Transnet and ACSA) and national government business enterprises (e.g. water boards) are subject to the Constitutional imperatives for the procurement system but are not subject to the SCM regulations issued in terms of the PFMA. The only material difference in the approach that the University of the Witwatersrand pursued was that the procurement and delivery function was not located in the Chief Financial Officer's office and a separate supply chain management policy was put in place for infrastructure, based on the draft *Standard for a Construction Procurement System* issued by National Treasury together with the draft PFMA Treasury Regulations for public comment during 2012 and which was incorporated into the *Model SCM Policy for Infrastructure Procurement and Delivery Management* published by National Treasury in 2015. Procurement was under the control of the client delivery manager. The three-committee system was followed. The bid adjudication committee was a cross cutting committee which dealt with all categories of university procurement (see <https://www.wits.ac.za/media/wits-university/faculties-and-schools/-engineering-and-the-built-environment/construction-economics-and-management/ipdm/documents/close-out-report/chapters-with-annexures/chapter9.pdf>).

### 3.6 Independent Power Producers Procurement Programme

The Department of Energy's (DoE) Independent Power Producers Procurement Programme (IPPPP) was established at the end of 2010 as one of government's urgent interventions to enhance South Africa's power generation capacity. The NDP called for an additional 10 000 MW electricity capacity to be generated by 2019 against a baseline of 44 000 MW. The Integrated Resource Plan (IPR) 2010 proposed a preferred energy mix with which to meet the electricity needs over a 20 year planning horizon to 2030. In May 2011, the DoE gazetted the Electricity Regulations on New Generation Capacity (New Generation Regulations) under the Electricity Regulation Act. This enabled the Minister of Energy in consultation with the National Energy Regulator of South Africa to determine what new capacity is required. A significant share of the new electricity capacity is being developed and produced by the Independent Power Producers.

The Department of Energy (DoE), National Treasury (NT) and the Development Bank of Southern Africa (DBSA) established the IPP Office for the specific purpose of delivering on the IPP procurement programme objectives. The primary mandate of the IPP Office is to secure electricity from renewable and non-renewable energy sources from the private sector. However, energy policy and supply are not only about technology, but have a substantial influence also on economic growth and socio-economic development. As such, the IPP programme has been designed to go beyond the procurement of energy to also contribute to broader national developmental objectives such as job creation, social upliftment and increasing opportunities for economic ownership.

By the end of March 2019, the Renewable Energy Independent Power Producers Procurement Programme (REIPPP) had, amongst other things, made the following significant impacts:<sup>17</sup>

- ) 6 422MW of electricity had been procured from 112 RE Independent Power Producers (IPPs) in seven bid rounds;
- ) 3 976 MW of electricity generation capacity from 64 IPP projects has been connected to the national grid;
- ) 35 669 GWh of energy has been generated by renewable energy sources procured under the REIPPPP since the first project became operational; and
- ) investment (equity and debt) to the value of R209.7 billion has been attracted of which R41.8 billion (20%) is foreign investment.

The REIPP programme required an exemption from the PPP regulatory framework and was characterised by very strong client governance and CEO-level client leadership by the Independent Power Producers (IPP) Office under the Department of Energy. The quality of the procurement process, both in terms of strategy and tactics, run by the IPP Office resulted in the development of trust in the procurement process amongst companies in the renewable energy and financial sectors, which in turn contributed to a marked reduction in the cost of renewable energy through successive bid rounds.



## **4 Government actions to achieve the NDP**

### **4.1 Initiatives aimed at improving government's inability to spend its infrastructure budgets effectively**

#### **4.1.1 Capacity building initiatives**

There have over the years been several initiatives aimed in one way or another at addressing government's inability to spend its infrastructure budgets well.

The capital or infrastructure requirements of government departments were historically budgeted for directly within the vote of the Department of Public Works (DPW) (see Annexure A). The Public Finance Management Act (Act 1 of 1999) changed this practice as it required that expenditure associated with a department's operations or activities be accounted for directly through that department's vote. This gave rise to the user departments (sponsors, e.g. Department of Health) and implementing agents (such as DPW) with different roles and responsibilities. Communication and co-ordination between departments was problematic. The Infrastructure Delivery Improvement Programme (IDIP) programme was conceived to address this problem.

IDIP was designed by National Treasury in collaboration with the departments of Basic Education, Health and Public Works, the Development Bank of Southern Africa (DBSA) and the Construction Industry Development Board (CIDB) to build capacity and support improvement in the planning, procurement and management of infrastructure delivery at the provincial level. The programme was designed to specifically address problems relating to a lack of capacity and institutional failures which stem from inadequate infrastructure planning and a lack of integration in planning, budgeting and execution, deficiencies in the institutional environment supporting delivery processes (user departments and implementing agents), the lack of the skills and capacity needed to plan and manage infrastructure delivery within departments and poor information management and reporting.<sup>18</sup>

The first phase, initiated in July 2004, was a pilot programme to develop methodologies and tools in three selected provincial departments: Education, Health, and Roads and Transport. The second phase, which began in June 2006, built on the lessons learned and practices developed in the pilot phase. A programmatic approach and management system were developed for the full rollout of the programme, which was implemented in the provincial departments of Health, Education and Public Works. As part of phase 2, the Infrastructure Delivery Management Toolkit was developed to map out best practice delivery processes. This became the backbone on which improvement initiatives were developed in participating departments.

The third phase of the development of the IDIP began in April 2010, the objective of which was to embed the methodologies of phase 2 and to design the appropriate human resource capacitation strategy to implement them. In the latter part of phase 2, the CIDB began review work on the IDM Toolkit to bring it into line with best practices while making it more accessible to departments. The revised Toolkit (see 4.1.2) was released on a web-based platform in October 2010 and became the basis for the development of a structured Infrastructure Delivery Management System (IDMS).

National Treasury initiated the fourth phase of the IDIP in April 2014 focusing on embedding the outputs and work done in the previous phases. Accordingly, this phase focused on the exiting of the Programme after the completion of the tasks performed by contracted Technical

Assistants (TA) and the sustainability of the Infrastructure Delivery Management System (IDMS) in provincial departments.

The National Treasury Strategic Plan 2015-2019 indicated that National Treasury in partnership with provincial health, education and public works departments, would train at least 150 officials each year on the IDM toolkit, improving capacity both in infrastructure planning and contract management. The plan also indicated that the Government Technical Advisory Centre (GTAC), an agency of the National Treasury, would continue to provide technical assistance to departments and municipalities on infrastructure project management and organisational development, based on requests for support and diagnostic reviews.

The Siyenza Manje (we are doing it now) initiative was launched by government in June 2006 and managed by the Development Bank of Southern Africa's Development Fund. This initiative was designed to leverage external expertise in project management, engineering and finance from amongst suitably skilled semi-retired personnel and to deploy them to almost 200 vulnerable and under-performing municipalities across South Africa in order to build institutional capacity, upgrade infrastructure and to expedite basic service delivery to local communities.

The Municipal Infrastructure Support Agency (MISA), which was proclaimed as a government component within Cooperative Governance and Traditional Affairs (CoGTA) in May 2012, is one of the Local Government Turnaround Strategy (LGTAS) targets meant to introduce a turnaround mechanism in dealing with the provisioning, refurbishment and maintenance of municipal infrastructure. MISA became the direct successor in responsibility to the support programme that the DBSA had been providing through the Siyenza Manje project.<sup>19</sup> (The infrastructure component of Siyenza Manje was transferred to MISA and financial management component transferred to National Treasury). MISA was allocated an operational budget of R820 million over three years and provided support to a total of 107 municipalities. MISA employed 68 technical professionals and 25 professional service providers. It supported 311 apprentices, 91 students in technical fields, 228 unemployed graduates and 83 municipal employees.<sup>20</sup>

Cuban engineers, including technicians and water scientists, arrived in South Africa in 2015 as part of a bilateral agreement to help with their technical expertise in South Africa's water sector. The group was part of the 35 engineers that were deployed in various clusters of the Department of Water and Sanitation throughout the country. Twenty of them returned to Cuba when their contract expired in June 2018.<sup>21</sup>

A notable gap in capacity building initiatives is the building of the capacity with organs of state to oversee the translation of a business case for a project into project outcomes.

#### ***4.1.2 IDM Toolkits and guidelines produced by National Treasury and the CIDB***

The first toolkit was produced in 2004 by the CIDB and National Treasury and comprised 6 modules (overview, infrastructure planning, infrastructure programme management, project delivery, construction procurement guidelines and project management basics). The 2004 toolkit located these processes within the generic supply chain management framework which was being developed by National Treasury.<sup>22</sup> A second edition of this Toolkit was brought out in 2006, where, amongst others, some improved elements of portfolio management were embedded, and enhanced programme management principles were included for both user departments such as Education, Health, Finance, etc., as well as implementers of delivery such as Public Works or implementing agents (see Annexure A).<sup>9</sup>

---

<sup>9</sup> An **implementing agent** is an agent appointed by a sponsoring department/SOE to implement a infrastructure/maintenance programme on behalf of the sponsor. The implementing agent may be another

The IDM toolkit 2010, which was developed by the CIDB in conjunction with National Treasury, Department of Public Works and the DBSA, is based on the premise that the Infrastructure Delivery Management System (IDMS) is represented by portfolio management (infrastructure planning and programme management), project management (implementation planning, design, works and close out) and operations and maintenance (recognise and accept assets, mobilisation for facilities management, operations, maintenance and demobilisation of facilities management). This toolkit comprises:

- ) 3 Delivery Process Guides (DP1 Portfolio Management, DP2 Project Management and DP3 Operations and Maintenance) and
- ) 3 Practice Guides (PG1 Provincial Infrastructure Strategy, PG2 Construction Procurement Strategy and PG3 Performance Management).

The IDM Toolkit 2010 provides a documented body of knowledge and a set of processes that was at the time considered to represent generally recognised best practices in the delivery management of infrastructure. It is focussed on the delivery and life cycle management of infrastructure and made almost no reference to supply chain management practices in an infrastructure context. The target users for this Toolkit include both technical and non-technical managers. It provides guidance for User Departments as well as Implementing Agents and asset custodians such as Public Works.

The Cities IDMS (CIDMS) (2016), which was developed by National Treasury through the Cities Support Programme, is a toolkit which provides principles, methodologies, processes, techniques and case studies to assist infrastructure planners and decision makers within cities to plan comprehensively for urban infrastructure, make infrastructure investment choices designed to future-proof cities, accelerate the delivery of infrastructure and establish systems and mechanisms that will ensure that infrastructure is optimally managed. The CIDMS is similar to the IDMS but more advanced.

The National Infrastructure Maintenance Strategy (NIMS) is a co-ordinated programme of actions developed jointly by the CIDB, the Department of Public Works and CSIR that is an essential part of government's vision of delivering infrastructure services to all. The action plan was published in 2007 while an update of NIMS and a maintenance budgeting guide was published in 2008. In 2017 six National Immoveable Asset Maintenance Management Publications were published i.e. the Maintenance Management Standard, Maintenance Accounting Framework, Monitoring and Maintenance Protocol, Maintenance Planning Guidelines, Competency Framework and Contractor Development in the Maintenance Industry.<sup>h</sup>

#### **4.1.3 The Presidential Infrastructure Coordinating Committee and the National Infrastructure Plan**

Cabinet established the Presidential Infrastructure Coordinating Committee (PICC) in 2012 to address the limitations on the development impact of infrastructure placed by weak capacity,

---

department (for example public works implementing on behalf of Health who is the sponsoring department) or another agent for example the Independent Development Trust (CIDB Toolkit Infrastructure Delivery Management Guidelines, 2004).

<sup>h</sup> The Government Immoveable Asset Management Act, 2007, provides for a uniform framework for the management of an immoveable asset that is held or used by a national or provincial department and the issuing of guidelines and minimum standards in respect of immoveable asset management by a national or provincial department. No standards, minimum requirements or regulations have been issued in terms of this Act

poor co-ordination and weak integration. The PICC was accordingly established in terms of the Infrastructure Development Act, 2014 (Act 23 of 2014) to:<sup>23</sup>

- coordinate, integrate and accelerate implementation;
- develop a single common National Infrastructure Plan that will be monitored and centrally driven;
- identify who is responsible and hold them to account; and
- develop a 20-year planning framework beyond one administration to avoid a stop-start pattern to the infrastructure roll-out.

A National Infrastructure Plan with 18 identified Strategic Integrated Projects (SIPs) has been developed and adopted by Cabinet and the PICC. This plan was a response to government's new growth path, with infrastructure identified as a key jobs driver that could lay the basis for higher growth, inclusivity via integration of communities into the economy and job creation.

The SIPs cover social and economic infrastructure across all 9 provinces (with an emphasis on lagging regions). SIPs cover catalytic projects that can fast track development and growth. For example, SIP 1 aimed to unlock the Northern Mineral belt around Waterberg through rail, water and energy investments. SIPs 8, 9, 10, 15 and 18 addressed historical imbalances in energy, water and broad services, with the ultimate goal of universal access. SIPs 12, 13 and 14 were aimed at health care, schools and higher education provision.

The Infrastructure Development Act was promulgated to:

- provide for the facilitation and co-ordination of public infrastructure development which is of significant economic or social importance;
- ensure that infrastructure development is given priority in planning, approval and implementation;
- ensure that the development goals of the state are promoted through infrastructure development; and
- improve the management of such infrastructure during all life-cycle phases, including planning, approval, implementation and operations.

The Council is also empowered in terms of the Act to identify "any *legislation and other regulatory measures that impede or may impede infrastructure development, and advise the executive authority of the relevant sphere of government*".<sup>i</sup>

---

<sup>i</sup> The objects of the Infrastructure Development Act of 2014 (Act No 23 of 2014) are to, amongst other things,

- ) a statutory instrument by which any approval, authorisation, licence, permission or exemption required in terms of other legislation can be facilitated and expedited;
- ) a statutory instrument by which obstacles to the expeditious implementation of the national infrastructure plan can be unblocked; and
- ) generally, practices and procedures which seek to ensure that infrastructure development is not undertaken merely in a transactional manner, but in a manner which seeks to advance national development goals, including local industrialisation, skills development, job creation, youth employment, small business and cooperatives development, broad-based economic empowerment and regional economic integration

#### **4.1.4 The Office of the Chief Procurement Officer**

The Office of the Chief Procurement Officer (OCPO) in 2013 “*commenced with modernising and overseeing the South African public procurement system to ensure that the procurement of goods, services and construction works is conducted in a fair, equitable, transparent, competitive and cost effective in line with the Constitution and all relevant legislation.*” The Office is not directly involved in procurement, but manages procurement reforms, maintains the procurement system and oversees the way in which government does business with the private sector.<sup>24</sup> The Office of the Chief Procurement Officer absorbed two functional areas from the previous Specialists Functions division. i.e. Supply Chain Policy norms and standards and Contract Management. The Office of the Chief Procurement Officer is made up of the following sections: <sup>25</sup>

- ) Policy and legal which manages and maintains the relevant regulatory environment for government procurement practices.
- ) Transversal contracting which effectively manages government transversal contracts so that cost savings and also socio-economic objectives are achieved.
- ) Governance, monitoring and compliance which oversees and monitors government sector procurement practices to ensure compliance within the regulatory framework.
- ) Strategic procurement to research, develop and implement strategic procurement practices so that cost savings and socio-economic objectives are achieved.
- ) Information and communication technology which designs and implements effective systems to improve government procurement practices.
- ) Stakeholders and client management which provides engagement platforms and an environment for SCM developments for internal and external stakeholders/clients.
- ) Infrastructure procurement which aims to provide regulatory instruments issued through the PFMA and MFMA to support infrastructure procurement and improve the outcomes of infrastructure projects.

The OCPO was responsible for developing the National Treasury Standard for Infrastructure Procurement and Delivery Management (SIPDM) (2015) (see 4.2.3) and the Framework for Infrastructure Delivery and Procurement Management (FIDPM) (2019) (see 4.2.5) which replaces the SIPDM. The OCPO is also developing state-owned construction contracts (see 5.4.)

#### **4.1.5 Project preparation facility**

The 2018 Medium-Term Budget Policy Statement (MTBPS) acknowledges that weak project preparation, planning and execution has resulted in lengthy delays, over- and underspending and problems with quality. This has often been ascribed to lack of proper planning and design before construction commences. In the MTBPS, government attributed the planning problems to a lack of technical expertise and institutional capacity.<sup>26</sup>

In response to the acknowledged shortcomings, government in 2018 announced the establishment of a project preparation facility, with representation from National Treasury, the Government Technical Advisory Centre, the Presidential Infrastructure Coordinating Commission, the Development Bank of Southern Africa, the Association for Savings and Investment South Africa, the Banking Association of South Africa, the South Africa Venture

Capital and Private Equity Association, and the New Development Bank. This facility will be situated in the National Treasury budget office and R625 million has been allocated over the next three years to support its operations. It is intended to deploy technical experts to sponsoring departments to support the development of investment-ready projects.

#### **4.1.6 Budget transparency and public participation**

South Africa is a founding member of the multilateral Open Government Partnership (OGP) initiative that aims to secure concrete commitments from governments to promote transparency, empower citizens, fight corruption, and harness new technologies to strengthen governance.<sup>j</sup> South Africa and New Zealand were ranked 1st out of 115 countries in the 2017 Open Budget Index (OBI) sharing this position with New Zealand. This ranking recognises the extensive budgetary information published by National Treasury on its website. It was, however, observed that the use of this data is not as extensive as it could be.

National Treasury has been working in partnership with IMALIYETHU, an open coalition of civil society organisations driven by an interest in promoting budget transparency and public participation, to develop an easily accessible online budget data portal. This portal, which will publish easily accessible data in a user-friendly format to enable more effective information sharing, analyses and research, has been named "vulekamali" and was launched on 20 February 2018.<sup>27</sup>

## **4.2 Legislative instruments**

### **4.2.1 Overview of applicable legislation**

Section 217 of the Constitution of the Republic of South Africa establishes "good governance" objectives for the public procurement system and establishes South Africa's preferential procurement policy. Section 217 of the Constitution requires that the preferential procurement policy be implemented in accordance with national legislation. The Preferential Procurement Policy Framework Act, 2000 (Act No 5 of 2000) establishes the manner in which preferential procurement policies may be implemented (see E.1 and E.4 of Annexure E).

The Public Finance Management Act of 1999 (Act No 1 of 1999) (PFMA) requires that accounting officers and accounting authorities put in place an appropriate procurement and provisioning system. The Act permits National Treasury to issue Regulations and Instructions applicable to all organs of state to which the Act applies concerning the determination of a framework for an appropriate procurement and provisioning system. It also empowers National Treasury to approve a departure from a treasury regulation or instruction. Supply Chain Management Regulations have been issued in terms of the PFMA which apply only to departments, constitutional institutions and national and public entities (i.e. Schedule 3A and 3C public entities). They do not apply to major public entities and national and provincial business enterprises (i.e. Schedule 2, 3B and 3D public entities)(see E.2 of Annexure E).

The Local Government: Municipal Finance Management Act, 2003 (Act No 56 of 2003) similarly requires that all municipalities and municipal entities have and implement a SCM policy which gives effect to the provisions of a prescribed legislative framework, the principles of which are established in the Act and the details of which are contained in the Regulations and guidelines issued in terms of the MFMA. The MFMA also permits National Treasury to approve a departure from a treasury regulation (see E.3 of Annexure E).

---

<sup>j</sup> See [www.opengovpartnership.org/](http://www.opengovpartnership.org/)

The Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003) establishes a code of good practice to inform the development of qualification criteria for the issuing of licenses or concessions, the sale of state owned enterprises and for entering into partnerships with the private sector and the development and implementation of a preferential procurement policy (see E.5 of Annexure E).

The Promotion of Administrative Justice Act (Act No. 3 of 2000) establishes fair administrative procedures, permits those affected by unfair administrative action to request reasons for such administrative action (see E.6 of Annexure E).

The Construction Industry Development Board Act of 2000 (Act No 38 of 2000) established the Construction Industry Development Board (CIDB) to implement an integrated strategy for the reconstruction, growth and development of the construction industry (see E.7 of Annexure E). The Act creates a register of contractors linked to a best practice contractor recognition scheme and a register of projects linked to a best practice project assessment scheme. Both of these registers are central to the implementation of the integrated strategy.

The register of contractors is intended to support risk management in the tendering process, reduce the administrative burden associated with the award of contracts and reduce tendering costs to both clients and contractors. The CIDB Act prohibits the award of a construction works contract in the public sector to an unregistered contractor.

The CIDB Act permits the CIDB to promote the standardisation of the procurement process within the framework of the procurement policy of government and to publish a code of conduct for all the parties engaged in construction procurement. The CIDB published a code of conduct in 2003 and a Standard for Uniformity in Construction Procurement in 2004 (see E.7 of Annexure E). The SCM Regulations issued in terms of the PFMA and MFMA recognise the CIDB requirement for bid documents embedded in the SIBD SFU.

#### **4.2.2 CIDB Standard for Uniformity in Construction Procurement**

The CIDB Standard for Uniformity in Construction Procurement (SFU) (see E.7 in Annexure A) and associated practice guides formed the basis for the development of the International Organisation for Standardisation's ISO 10845 family of standards for construction procurement. These standards are framed around the South African Constitutional imperatives for procurement, namely that the system is fair, equitable, transparent, competitive and cost effective and, subject to applicable legislation, may promote objectives additional to those associated with the immediate objective of the procurement itself. Members of ISO may adopt and reproduce ISO standards as national standards should they wish to do so. Countries such as Albania, Bosnia and Herzegovina, Czech Republic, Kazakhstan, Mongolia, Netherlands, Russia, South Africa, United Kingdom and Zimbabwe have adopted some or all parts of this family and republished them as national standards. The 2011 edition of the CIDB SFU was completely aligned with the provisions of SANS ISO 10845 parts 1 to 4.

In 2015 certain amendments were made to the CIDB Standard for Uniformity in Construction Procurement (SFU) which delinked the SFU from certain international practices embedded in the SANS ISO 10845 standards (see Annexure E). The major change related to the procurement evaluation methods to align them with the approach to functionality contained in the Preferential Procurement Regulations 2011.<sup>k</sup> This removed the option to base the award of a tender on the most economically advantageous or best value offer. As a result, tenders could only in terms of this standard be evaluated on the basis of lowest price adjusted for a preference. This amendment also introduced a requirement that construction procurement be

---

<sup>k</sup> The evaluation methods that were removed were aligned with the "objective criteria" provisions of the Preferential Procurement Policy Framework Act.

undertaken in accordance with the provisions of the roll out plan of the CIDB Competence Standards Framework for Construction Procurement and incorporated a number of standard bidding documents (SBD) forms issued by National Treasury in the Compulsory Enterprise Questionnaire.

The 2019 amendments to the CIDB SFU (renamed CIDB Standard for Uniformity in Engineering and Construction Works Contracts) omitted the definition for construction procurement and narrowed down the range of permissible standard forms of contract which may be used to those relating to construction works only. It also aligned the approach to the evaluation of tenders with that for general goods and services and required that a number of National Treasury Standard Bidding Documents which were purpose written for general goods and services be incorporated in construction contracts. The amendments also removed the requirement relating to the CIDB Competence Standards Framework for Construction Procurement, a document which was never published. The amendments removed requirements to advertise tenders on the CIDB website and included standard methods for procuring different categories of engineering and construction works contracts. The amendments also included a requirement, subject to the Minister determining a date and prescribing a threshold in the Gazette in terms of the CIDB Act, to include a condition that contracts above a threshold will comply with CIDB best practice standards published in terms of the project assessment scheme.

The CIDB register of contractors needs to be applied to maintenance contracts as construction works is defined broadly in the CIDB Act to include maintenance. The removal of the term service contract options from the CIDB SFU forces those wishing to comply with the CIDB prescripts to use inappropriate forms of contract as maintenance work does not involve the changing of the state of infrastructure.

#### ***4.2.3 Standard for Infrastructure Procurement and Delivery Management***

Draft Treasury Regulations to implement the PFMA were issued for public comment during November 2012. These draft Regulations included separate supply chain management Regulations for the delivery and maintenance of infrastructure linked to a Standard for a Construction Procurement System and a Standard for an Infrastructure Delivery Management System. The National Treasury Standard for Infrastructure Procurement and Delivery Management (SIPDM) combined these two standards into a single document. This document was informed by the comments received during the public enquiry process as well as experience gained in implementing these two standards on the SIPS 14 New Universities project (see 3.5). The SIPDM took into account the guidelines set out in the National Development Plan for the design of a procurement system that is better able to deliver value for money, while minimising the scope for corruption (see 2.5). In particular it differentiated between infrastructure procurement and the procurement of goods and services, it adopted a strategic approach to procurement above the project level, sought to build relationships of trust and understanding with private contractors through framework agreements, required the use of professional expertise in ensuring the quality of certain key procurement and delivery management practices and incorporated effective and transparent oversight functions to assess value for money.

The SIPDM also provided a platform enabling support structures to develop professional supply chain management capacity through training and accreditation. A memorandum of understanding was entered into between the Office of the Chief Procurement Officer and the South African Institution of Civil Engineering (SAICE) and Consulting Engineers South Africa (CESA). National Treasury developed a set of guidelines for implementing the SIPDM. SAICE edited and published these guidelines in the Civilisation magazine and distributed 25 000 copies of these guidelines to various industry organisations. CESA co-hosted 14 application



workshops in centres around the country during 2017 aimed at the capacitation of officials and built environment professionals in implementing aspects of the SIPDM. SAICE and CESA developed a multiple-choice web based examination to verify an individual's knowledge and appreciation of the SIPDM. CESA hosted examinations in centres throughout South Africa. The Chief Procurement Officer issued certificates to those that passed the examination.

The SIPDM establishes requirements for the components of an SCM system in an infrastructure context<sup>1</sup>. It also included the procurement of goods and services necessary for a new facility, as delivered to be occupied and used as a functional entity. An instruction was issued in terms of the PFMA during November 2015 requiring accounting officers and accounting authorities to develop a suitable supply chain management policy for infrastructure procurement and delivery management and to implement the SIPDM. A Model SCM Policy for Infrastructure Procurement and Delivery Management, linked to the SIPDM, was issued in terms of the MFMA as a guideline determining standards for municipal SCM policies. The SIPDM and the associated Model PFMA and MFMA SCM policies were designed to enable accounting officers and accounting authorities to put in place the necessary governance arrangements to authorise, direct, empower, provide oversight and limit the actions of management in the delivery of infrastructure projects.

The SIPDM regulates:

- ) the decision making process associated with procurement and the planning, design and execution of infrastructure projects through control frameworks and policies associated with the assigning of responsibilities within SCM policies to individuals or persons for approving or accepting deliverables associated with a gate (control point) or the authorising of a procurement process or procedure;
- ) aspects of delivery management in areas such as institutional arrangements, demand management, acquisition management, contract management, logistics management, disposal management, reporting of supply chain management information, assessment of SCM performance and risk management and internal controls; and
- ) procurement processes, methods and procedures and procurement documents.

The SIPDM requires that procurement be undertaken in accordance with four parts of SANS ISO 10845 which cover construction procurement procedures, processes and methods, the development of procurement documents and conditions of tender and the calling for expressions of interest. The SIPDM requires that the provisions of the CIDB SFU be applied where aspects of the national register of contractors or register of projects established in terms of the Construction Industry Development Board Act are implemented through procurement documents.

The OCPO held a number of engagements with the CIDB to revise the CIDB SFU to align with the requirements of the SIPDM. However, such alignment did not take place due to significant changes in leadership within National Treasury and resistance from the CIDB board who saw themselves as the regulator for construction procurement rather than National Treasury.

The SIPDM in its introduction and scope makes it clear that it establishes a supply chain management system for infrastructure procurement and delivery management (see Annexure D). It stresses the urgent need to separate supply chain management requirements for general

---

<sup>1</sup> The SIPDM defines **infrastructure** as immovable assets which are acquired, constructed or which result from construction operations or movable assets which cannot function independently from purpose-built immovable assets. Infrastructure can also include Information and Communication Technology (ICT) networks and systems that are used to communicate and to create, disseminate, store and manage information.

goods and services from those for infrastructure delivery in order to improve project outcomes and made reference to the NDP proposals for differentiation between the different types of procurement which pose different challenges and require different skills sets.

The aforementioned initiatives with CESA and SAICE ended abruptly with a change in leadership within the OCPO. Subsequent initiatives for securing service providers have tended to target non-built environment professionals to deliver training on the SIPDM, e.g. the Eastern Cape Department of Cooperative Governance and Traditional Affairs targeted those with B-Degrees in Public Administration, Finance or Supply Chain Management to conduct such courses.

#### **4.2.4 National Treasury SCM instructions**

National Treasury issued a number of SCM instructions following the publication of the NDP (see E.2.3 of Annexure E). Following the establishment of the OCPO during 2013 instructions started to be made applicable to all organs of state which are subject to the PFMA including major public entities and national and provincial business enterprises (i.e. Schedule 2, 3B and 3D public entities) (see E.2.3 of Annexure E).

Very soon after the publication of the SIPDM, National Treasury issued an instruction dealing with the prevention and combating of abuse in the supply chain management system. This instruction omitted to take into account the manner in which risk is allocated and managed through contracts in infrastructure projects. (The SIPDM prohibited the inclusion of contingency<sup>m</sup> amounts to fund the employer's risks in tendered contract prices, made provision for a stepped approach to access contingencies through project governance structures and required the reporting of contingency amounts, excluding those relating to price adjustment for inflation, in an annual report provided to the relevant treasury where the tendered contract amounts were exceeded by more than 20%.) This instruction required that contracts not be varied by more than 20% or R 20 million (including VAT) and any deviation above this threshold would only be allowed in exceptional cases subject to prior written approval from the relevant treasury. This instruction overwrote the provisions of the contracts that were entered into in accordance with the provisions of the CIDB SFU and ignored the increase in the prices brought about by inflation in long term contracts.

The obtaining of permission from the relevant treasury to exceed the stipulated threshold amounts led to lengthy delays. Approvals were frequently denied. This has resulted in expensive unintended consequences including the raising of the original contract price to include provisions for contingencies including price adjustment for inflation, the procurement of professional services on a percentage of construction cost basis, the retendering of the professional services to advance projects, an inappropriate transfer of risks to contractors, the withholding of monies due to contractors and a significant slow-down in delivery.

This instruction not only seriously hampered the procurement and delivery of infrastructure but also undermined the implementation of the SIPDM from the outset. A recent National Treasury instruction has withdrawn the instruction requiring PFMA compliant organs of state to implement the SIPDM before it was effectively implemented in favour of a one size fits all approach to procurement which gives token recognition to the different skills sets required in an infrastructure procurement context and the need for a strategic and tactical approach to infrastructure procurement in order to achieve quality project outcomes.

---

<sup>m</sup> A contingency is a sum of money budgeted for or included in a contract to cover construction work that may be required, but cannot be foreseen or predicted with certainty.

#### 4.2.5 Framework for Infrastructure Delivery and Procurement Management

The Framework for Infrastructure Delivery and Procurement Management (FIDPM) was issued through a Treasury Instruction issued in terms of the PFMA in April 2019. This instruction repealed the PFMA instruction for the implementation of the SIPDM.<sup>n</sup>

The FIDPM which applies to organs of state which are subject to the PFMA prescribes minimum requirements for the implementation of the Infrastructure Delivery Management System (IDMS) through infrastructure delivery management processes consisting of portfolio, programme, projects, operations and maintenance of infrastructure and infrastructure procurement gates.<sup>o</sup> The framework specifies responsibilities for performing activities and making decisions at control points.

The FIDPM describes the typical cyclical processes which are performed in phases and are reviewed and updated on an annual basis relating to portfolios, programmes, operations, maintenance and projects and identifies control points and control point deliverables. It also sets out the gates associated with the procurement of infrastructure.

The focus of the FIDPM is on the IDMS and not on infrastructure specific supply chain management issues. It introduces a “project management body of knowledge” based on the IDMS philosophy. The FIDPM does not establish any requirements for infrastructure procurement as it envisages that such procurement will be undertaken in accordance with applicable legislation. In other words, it reverses the differentiation between infrastructure procurement and the procurement of goods and services in the SIPDM, and requires both to be dealt with in the same way.

The FIDPM views the project stages as being sequential and prohibits the continuation beyond a stage gate before a stage deliverable is approved. The SIPDM provided a more flexible approach to accommodate the different types of projects (maintenance, rehabilitation, refurbishment and alteration of existing infrastructure) and sectors (building, construction and process plant) within which projects are delivered. It allowed stages to be omitted where they were not necessary. It also permitted activities to be undertaken in parallel or series provided that each stage is completed in sequence. The FIDPM approach is only appropriate for the delivery of routine new infrastructure projects. It presents challenges in contracts relating to the supply and maintenance, refurbishment or rehabilitation of infrastructure and complex projects.

The FIDPM removed all the provisions of the SIPDM relating to framework agreements and infrastructure procurement and requires all procurement to be in accordance with the provisions of the “*CIDB prescripts and all infrastructure related procurement legislation.*” It is not clear as to what precisely the CIDB prescripts are as Regulations are issued by the Minister. Presumably, the recently published CIDB Standard for Uniformity in Engineering and Construction Works Contracts is regarded as a prescript. This prescript has now narrowed

---

<sup>n</sup> The guideline determining standards for municipal SCM policies which is linked to the SIPDM has not been replaced.

<sup>o</sup> The FIDPM defines the following terms:

- J **Infrastructure delivery** is the combination of all planning, technical, administrative and managerial actions associated with the construction, supply, refurbishment, rehabilitation, alteration, maintenance, operation or disposal of infrastructure
- J **Infrastructure Delivery Management** is the application of the infrastructure delivery management processes of portfolio, programme, operations, maintenance and project management, to plan and implement the work required to sustain the performance of infrastructure assets, for public service delivery.
- J **Infrastructure procurement** is the procurement of goods or services including any combination thereof associated with the acquisition, refurbishment, rehabilitation, alteration, maintenance, operation or disposal of infrastructure.

down its scope to engineering and construction contracts and is no longer applicable to professional services, term services and supply contracts in the delivery of infrastructure (see 4.2.2).

In December 2019, an amendment to the National Treasury instruction requiring the application of the FIDPM was issued. This amendment removed all requirements relating to delivery management for schedule 2 and schedule 3 entities subject to the PFMA. Accordingly, the delivery management requirements only apply to departments i.e. the target audience for the IDMS. However, the procurement requirement remains applicable to all organs of state subject to the PFMA.

#### **4.2.6 Preferential Procurement**

The 2017 Preferential Procurement Regulations introduced two new mechanisms to achieve preferential procurement in addition to the award criteria already in use, namely, qualification criteria including set asides and mandatory contracting conditions. An organ of state may in terms of these Regulations prequalify enterprises for preferential treatment based on an enterprise's B-BBEE status level of contributor or Exempted Micro Enterprise or Qualifying Small Enterprise status or should they undertake to subcontract at least 30% of the value of their contract to a QSE or EME with or without 51% ownership by black people who may be women, youth, have disabilities, reside in underdeveloped areas or townships or who are military veterans and cooperatives which are at least 51% owned by black people. Any tender submitted by a tenderer which fails to meet any pre-qualifying criteria stipulated in the tender documents is an unacceptable tender and as such is not considered.

An organ of state if feasible is also required to advertise the tender with a specific tendering condition that the successful tenderer must subcontract a minimum of 30% of the contract value to the aforementioned EMEs and QSE and cooperatives. The organ of state is required to make available the list of all suppliers registered on a database approved by the National Treasury to provide the required goods or services in respect of the applicable designated groups from which the tenderer must select a supplier. In order to limit economic rent, these Regulations prohibit the award of a contract if the price that is offered is not market related.

An implementation guide has also been issued in terms of these Regulations.

#### **4.2.7 CIDB register of contractors and register of projects**

The CIDB established a register of contractors and a register of projects to implement an integrated strategy for the reconstruction, growth and development of the construction industry in 2004. The CIDB Act envisaged that, within a reasonable period after the establishment of the register of contractors, a best practice contractor recognition scheme would be established to enable organs of state to manage risk on complex contracting strategies and to promote contractor development in relation to best practice standards and guidelines. The CIDB published in 2015 a Board Notice to the effect that the Board had established this scheme and made reference to four published best practices. No regulations have been issued regarding the manner in which the scheme is to be applied or how the published standards enable risk to be managed. The Act also envisaged that a best practice project assessment scheme would also be introduced in terms of which projects above a threshold would be assessed for compliance with CIDB best practice standards and guidelines and clients engaging in this scheme would pay to the CIDB prescribed percentage of the contract sum. The CIDB published in 2019 a Board Notice to the effect that the Board had established this scheme and made reference to five published best practices. Again, no regulations have been issued which indicate how the assessments are to take place or what the assessment fee percentages are (see E.7 in Annexure E).

The CIDB register of contractors is intended, amongst other things, to support risk management in the tendering process. Tender values are linked to a CIDB contractor grading designation. The Construction Industry Development Regulations establish the CIDB contractor grading designation and the associated criteria and tender value ranges (see E.7 of Annexure E). The 2013 amendments to the Regulations increased the tender value range by 30% and adjusted the associated grading criteria. The 2019 amendments to the Regulations increased the tender value ranges by 50% without adjusting the grading criteria. The CIDB has issued a circular to amend the current values contained in the Regulations.

### **4.3 Support to supplier industries (local content)**

The Preferential Procurement Regulations 2011 and 2017 issued in terms of the Preferential Procurement Policy Framework Act of 2000 2017 permits the Department of Trade and Industry in consultation with the National Treasury to designate a sector, sub-sector or industry or product in accordance with national development and industrial policies for local production and content and stipulate a minimum threshold for local production and content. An organ of state is required in the case of a designated sector or product to advertise the invitation to tender with a specific condition that only locally produced goods or locally manufactured goods, meeting the stipulated minimum threshold for local production and content, will be considered.

Minimum thresholds for local content have to date been established for a number of products including steel power and monopole pylons, steel substation structures, powerline hardware, street lighting poles, steel lattice towers, office and school furniture products, bases and mattresses, solar water heater components, electrical and telecom cables, valves and actuators, electricity meters, transformers and shunt reactors, residential water meters, pumps, MV motors, large bore spiral submerged arc welded steel conveyance pipes, solar PV panels, steel products and components for construction, steel value added products, rail signalling systems, dredging equipment and associated components and products, plant and equipment associated with permanent ways.

### **4.4 Innovative Building Technologies**

Innovative Building Technologies (IBTs) is a generic term used to describe the use of alternative building systems, products and materials, preferably made in a factory, either in part or whole, and assembled on site. IBTs are used to reduce time, reduce cost, enhance performance, enhance health and safety and enhance environmental performance. With regular maintenance, IBTs can match the durability of conventional building technologies. The National Building Regulations are performance-based regulations and as such permit the use of IBTs in South Africa.

The Presidential Infrastructure Coordinating Commission (PICC) took a resolution to use IBTs for clinic, school and student residence construction and where appropriate for other public facilities construction and refurbishment, including houses based on the following elements:<sup>28</sup>

- Schools: a phased introduction of 60% of new schools built to use IBT, introduced in 30 schools in 2013/14 and 100 schools in 2014/15
- Student accommodation: the first pilot of 5000 beds spread between urban and rural universities
- Clinics: propose phasing-in to 60% over three to five years

- Early childhood learning facilities: phasing-in to 60% over three years
- Housing developments: develop showhouses using IBT, across high-, middle-, and low-income types to build public support

The CSIR was appointed to prepare the implementation plan for the roll-out of IBT's in terms of the Presidential Infrastructure Coordinating Commission (PICC) Council resolution that requires 60% of government's social infrastructure building to be constructed from IBTs by 2017.

The uptake on the use of IBTs following the implementation of pilot projects has been minimal. There are many reasons for this including they are potentially more expensive than traditional methods, they do not inspire customer trust, they can be difficult to add onto or repurpose and they may not be as aesthetically pleasing. Alternative building methods also come with a hidden price tag that can impact on quality and finish. Most of the alternative construction methods have concentrated on providing alternative walling which normally comes at a cost less than 10% of the project cost and roofing systems.

The use of clad walling systems has resulted in a negative perception in the lower end of the housing market called the "Knock Factor Effect". People knock the walls, if they sound hollow they instantly perceive the build as not solid or secure. They want the solidity of the traditional materials over the perceived flimsiness of panels in the alternative ones.<sup>29</sup> In addition to the impact of perception, alternative building materials are not always readily available in South Africa and often have to be imported. At the same time, IBTs commonly generate lower levels of employment per unit of expenditure and limited work opportunities for those living in close proximity to the site.<sup>30</sup>

#### **4.5 Promotion of more energy-efficient buildings and the use of techniques to reduce demand on electricity**

The National Building Regulations were amended during 2011 to introduce requirements for Energy Usage in Buildings. These regulations establish requirement relating to the orientation, shading, services and envelope (elements of a building that separate a habitable room from the exterior of a building or a garage or storage area) of buildings. These regulations also established a requirement that at least 50% of hot water heating requirements by volume be by means other than electrical resistance heating including but not limited to solar heating, heat pumps, heat recovery from other systems or processes and renewable combustible fuel.

Eskom and the Department of Energy have initiated various programmes promoting energy efficiency and the use of alternative energy including the solar water heating rebate programme which was launched in 2008.

#### **4.6 Addressing spatial divides in the planning of infrastructure**

The Spatial Planning and Land Use Management Act (SPLUMA) of 2013 (Act No. 16 of 2013) was assented to in 2013. It provides the framework for spatial planning and land use management. It specifies the relationship between spatial planning and land use management systems and other kinds of planning. It redresses past spatial and regulatory imbalances and promotes greater consistency and uniformity in the application procedures and decision making by authorities responsible for land use decisions and development applications. It also establishes Municipal Planning Tribunals.

The Spatial Planning and Land Management Act seeks to extend the benefits of spatial planning to urban and rural areas which do not have spatial planning and land use

management legislation and as a result are excluded from such benefits. It has also been developed to address the sustainable development of land which requires the integration of social, economic and environmental considerations in both forward planning and ongoing land use management to ensure that development on land serves present and future generations. It is designed to promote social and economic inclusion. SPLUMA's implementation has not been without unintended consequences – it paralyses municipalities who do not have the technical capacity to make decisions. This in turn contributes to the vicious cycle of paralysis and under spending.<sup>31</sup>

The Department of Cooperative Governance and Traditional Affairs published an *Integrated Urban Development Framework: A new deal for South African cities and towns* (IUDF) in 2016 as government's policy position to guide the future growth and management of urban areas.<sup>32</sup> The IUDF responds to the post-2015 Sustainable Development Goals (SDGs), in particular to Goal 11: Making cities and human settlements inclusive, safe, resilient and sustainable. It also builds on various chapters of the National Development Plan (NDP) and extends Chapter 8 'Transforming human settlements and the national space economy' and its vision for urban South Africa. The IUDF's overall outcome – spatial transformation – marks a New Deal for South African cities and towns, by steering urban growth towards a sustainable growth model of compact, connected and coordinated cities and towns. To achieve this transformative vision, four overall strategic goals are introduced:

- ) spatial integration to forge new spatial forms in settlement, transport, social and economic areas;
- ) inclusion and access to ensure people have access to social and economic services, opportunities and choices;
- ) growth to harness urban dynamism for inclusive, sustainable economic growth and development; and
- ) governance to enhance the capacity of the state and its citizens to work together to achieve spatial and social integration.

A draft National Spatial Development Framework (NSDF) was published for comment by the Department of Rural Development and Land Reform and the Department of Planning, Monitoring and Evaluation during 2018.<sup>33</sup> This framework seeks to make a bold and decisive contribution to bringing about the peaceful, prosperous and truly transformed South Africa. While the NSDF recognises the challenges involved in bringing about the necessary changes in planning, budgeting and implementation, it is also very clear as to their importance in contributing to the joint crafting of a shared future.

## 5 Assessment of the reasons for disappointing outcomes

### 5.1 Introduction

#### 5.1.1 Overview

There are several reasons for disappointing public sector infrastructure outcomes post the publication of the NDP. These include the deterioration of government finances, deteriorating state owned enterprise balance sheets and decreasing public sector investment in infrastructure, compounded by a lack of private sector investment in infrastructure. An analysis of these reasons is, however, outside of the scope of this paper as this paper focuses on that which is in the control of the government i.e. government's capability to effectively, efficiently and effectively deliver infrastructure projects, the use of procurement as an instrument of industrial policy and the unintended consequences of SCM policy, practices and regulatory instruments.

Corruption and state capture have also had an impact on public infrastructure delivery and on the construction industry. An analysis of such impacts is also beyond the scope of this paper.

Poor and expensive infrastructure project outcomes have also resulted from weak and inappropriate SCM practices by various organs of state. Anecdotal evidence suggests that this can have a significant impact on the cost of infrastructure to the state. The common tick box approach to the assessing of functionality by underqualified SCM staff who don't understand the construction industry can lead to the overlooking of capable tenderers due to their responses not matching the exact answers that these evaluators sought or alternatively irrelevant criteria which were set and evaluated. A pending court case illustrates this.<sup>34, p</sup> Due to a lack of reliable data in the public domain, an analysis or quantification of the costs associated therewith has not been possible and is therefore also beyond the scope of the paper.

International and local researchers have found a direct linkage between the role played by the client and infrastructure project outcomes regardless of size, complexity and location. The root cause of project failure or poor project outcomes can most often be attributed to a lack of governance and poor procurement and delivery management practices, all of which are under the control of the client.<sup>35, 36, 37, 38</sup>

The APM Group (multinational management accreditation body) point out that *"many project failures have their ultimate origin in defects in the identification, assessment and preparation (appraisal) of the project, poor structuring and poor management of the tender process, or poor contract management (which is also related to preparation, as the contract management strategy has to be considered when the contract is drafted and appropriate provisions*

---

<sup>P</sup> A joint venture between WBHO (one of South Africa's major construction companies) and Icon Construction filed in the KwaZulu-Natal High Court in Pietermaritzburg on 6 December 2019 an application to set aside a tender awarded by Umgeni Water in KwaZulu-Natal to Klomac. They have claimed in court papers that the award to Klomac is R919m more expensive than its tender for the project. They also say that Klomac's recommended price is R514m more expensive than Umgeni Water's estimated construction costs for the project and R121m more than Umgeni's total budgeted project costs. The WBHO-Icon was successful in Part A of its application, to have the court interdict Umgeni Water and Klomac from implementing the tender, pending the outcomes of Part B of the application for the court to review and set aside the tender award. Part B will be heard on March 20, 2020. WBHO-Icon put forward that the rehabilitation project is of a civil construction nature and that it is questionable that Klomac, a mechanical engineering contractor, scored well in the functional evaluation. *"Quite simply the second respondent (Klomac) cannot be considered a suitable bidder for the tender"* They also argued that because of the *"inconsistent, uncertain and contradictory" evaluation of bidders, the tender process has been "procedurally unfair" and "non-transparent", which warrants that it be started afresh."*



*incorporated into the contract.)*” This body furthermore lists the following common project management and governance factors that compromise public sector project outcomes:

- ) *“Lack of management capacity and proper skills (lack of skilled resources) and lack of funds to hire advisors).*
- ) *Lack of continuity/frequent changes in the project team.*
- ) *Lack of clear project ownership and leadership.*
- ) *Failure in taking and managing decisions (insufficient delegation of powers, external interference).*
- ) *Lack/absence of a champion.*
- ) *Lack of an “independent” or unconflicted advocate.*
- ) *Lack of proper quality control mechanisms.*
- ) *Failures in stakeholder identification.*
- ) *Failure to communicate (inside, outside, to the public — raising acceptance and managing resistance, and to investors).*
- ) *Failure to ensure that the project matches the government’s strategic objectives or changes in the government objectives.*
- ) *Political rush and unrealistic time scales.”<sup>39</sup>*

A starting point in understanding the reasons for disappointing project outcomes is to understand the critical role of an organ of state as a client in delivering infrastructure projects and the requirements for taking decisions within the infrastructure project life cycle (see A.4). The following subsections describe various aspects of the responsibilities of a client in delivery management, including programme or project-level planning, estimating costs, and managing risks and change management. Thereafter section 5.1.6 provides an overall summary of delivery management responsibilities.

Many client bodies in South Africa are currently not carrying out many of these delivery management responsibilities effectively, and this is one of the main causes of the poor infrastructure outcomes described in the previous chapter. It is important to have an understanding of these delivery management responsibilities in order to have an appreciation of the capabilities and capacities required by clients in order to carry out effective delivery management.

### **5.1.2 Programme and project-level planning**

The Institution of Civil Engineers (ICE) have, based on the guidance on strategic infrastructure planning and prioritisation issued by a number of organisations, developed a set of guiding principles for prioritising and planning infrastructure, including:<sup>40</sup>

- 1) the starting point is to identify strategic objectives;

- 2) the best strategic infrastructure planning systems embrace three stages which broadly speaking establish a vision, conduct a needs assessment and use that to build a national strategy;
- 3) the national vision needs to reflect the country's national characteristics, the challenges it has inherited and its aspirations for the future;
- 4) an infrastructure strategy needs to cover all aspects of implementation including policy and regulatory changes, funding and financial arrangements; and
- 5) high quality consultation and stakeholder engagement should be an integral part of the process and should not be an afterthought.

South Africa has a national vision for infrastructure which, in addressing the legacy of apartheid, plans to eliminate poverty and reduce inequality by 2030. At the same time, there are in place comprehensive national strategic plans for infrastructure. However, problems arise in the translation of these plans into implementation. Implementation of high-level strategic plans require further detailed planning. Such planning is an integral part of delivery management and includes:

- ) establishing a detailed brief and scope following the conducting of a needs and demand analysis which compares technical and financing options, a viability analysis, a risk and sensitivity analysis, environmental impact assessments, the due diligence assessments and an implementation readiness assessment;
- ) ensuring co-ordination and integration with related infrastructure such as water, roads, housing and schools; and
- ) prioritisation of projects within a programme.

This programme or project-level planning is often very weak in client bodies in South Africa.

### **5.1.3 Life-cycle costing**

Whole life costs should inform decisions that are taken i.e. all significant and relevant initial and future costs and benefits associated with infrastructure throughout its lifetime from inception to construction, operation and disposal. Whole life-cycle costing is considered to be a better way of assessing value for money than construction costs, which can result in lower short-term costs but higher ongoing costs through the life of infrastructure. This can also apply to costs such as design fees, where saving money on fees at the beginning of a project can be outweighed by very much higher ongoing costs through construction and operation. For example, the Federation of Canadian Municipalities points out that *“Engineering design” typically represents 1 to 2 percent of the overall lifecycle cost of a project, with construction accounting for approximately 6 to 18 percent of the cost. All the rest - 80 to 93 percent of the lifetime asset cost - is accounted for by operations, annual and capital maintenance and decommissioning.*<sup>41</sup>

The estimation of construction costs takes place against the backdrop of cost envelopes, risk allocation, and probability calculations. There will always be costs which cannot be foreseen or activities that do not proceed as planned. The challenge of aligning realistic life-cycle costs estimates with a procurement process that may favour those who tender the lowest construction cost adds to the problem. In addition, the outturn cost can be significantly different from the initial tender price and is a function of the ability of the client and a contractor to mitigate risks and manage change (see 5.5.7.3).

Life-cycle costing is still often the exception rather than the norm amongst client bodies in South Africa, with many infrastructure projects still being awarded on the basis of initial construction costs only, ignoring life-cycle costs.

#### **5.1.4 Estimating project costs**

Early estimates are inherently challenging, due to the nature, scale and complexity of infrastructure projects, particularly major ones. A lack of data from incomplete design, scoping and investigation and the nature of working in an established built environment all add to this challenge (see 5.3.1). There are a number of well-known reasons why a project schedule or budget might slip, and which need to be managed, once a contract is awarded. These may be broadly categorised as being external and project delivery challenges.

Two of the most prevalent external factors in mega projects are the economic climate and how a project exists within political structures that may change during the course of its lifetime. Others can be managed within a project and should be considered delivery challenges for the client and the delivery management team. These include management of optimism bias (see 5.3.1), leadership capability, communication and scoping and management of risk, including provision for contingency. Many of these push factors occur once a project is underway.<sup>42</sup>

The total of the prices in infrastructure contracts can also increase due to changes which may be required to enhance the quality or performance or address shortcomings which, if not corrected, would impair the functioning of completed infrastructure. These changes can, however, present contract management challenges, which in turn result in time and cost overruns.

#### **5.1.5 Managing project risks and change**

Risk, the impact of uncertainty on project objectives, is too often recorded but not addressed in infrastructure projects in South Africa and elsewhere. An interventionist risk management culture by not only the client but also throughout the supply chain needs to be developed in all phases of the project.

Change is any deviation from the way work was planned, designed, budgeted or scheduled. It can arise from design changes, scope of work changes, delays in finalising / issuing production information, unforeseen site conditions, regulatory changes, inadequate specifications / production information, schedule changes and subcontractor performance.

Change is expected on any infrastructure project. These changes are often as a result of evolving circumstances and requirements. However, the current infrastructure procurement regulatory framework in South Africa assumes that costs should be fixed after procurement, which results in any changes to the cost of a contract being viewed as a deviation from procurement prescripts. This is not appropriate for infrastructure,

A clear understanding of the impact of change is required to support an informed, proactive, ideally collaborative decision on changes. Change can be either positive or negative. Positive change comes about when it enhances the project outcomes or rectifies circumstances that would otherwise harm a project. Negative change results in project overruns and associated impacts.

There are two fundamental categories of the impact of change, namely direct impacts (the direct cost of implementing or accommodating a change) and secondary impacts (disruption, cumulative impact, ripple effects, etc.). The secondary impacts relate to the additional cost of

performing work which is not directly changed, that is the unchanged work. This is the added cost due to lowered productivity or increased rework on the unchanged work. These impacts are as a result of out of sequence working, engineering rework, reduced productivity, hiring new staff with the requisite qualifications / experience to recover the programme time lost, increased overtime, night shifts, management / oversight stretch and attention span, workforce morale, out of sequence flow of information to vendors, partners, etc.<sup>43</sup>

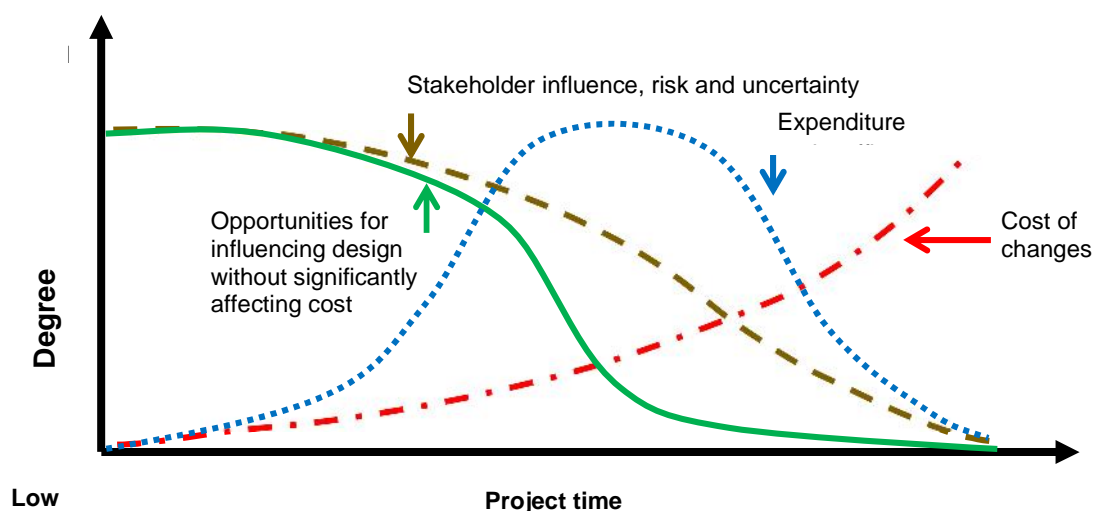
The secondary impacts of change can have a far greater impact on the project than the direct impacts of change. This is due to the fact that they grow disproportionately over more and more changes, they can appear sometime after the incident change event has occurred and variations in project conditions drive different secondary impacts. Early resolution can cut their impact significantly. Secondary impacts are significantly reduced by less tight project schedules.

The impact of project changes needs to be managed to ensure the outcomes of the project are in line with expectations. The absence of diligent and timeous implementation of change management can have dire consequences, resulting in cost and schedule overruns, lost profits and ruined relationships as indicated Figure 9. Client bodies need to have appropriate delegations for decision-making making in place, to provide the client delivery manager with the authority to make the required decisions timeously. This is often not the case in client bodies in South Africa.

Clients need to take decisions at key points in the work-flow within the project cycle (see D.3 in Annexure D) to regulate work in relation to its changing context. This involves the comparing of progress against objectives and taking some corrective action where necessary. This may involve:

- taking steps to change the performance of the activity to bring it closer to what was planned; or
- changing the plan so that it more closely reflects the changed situation brought about by the departure from the plan.

Changes late in the project should as far as possible be avoided.



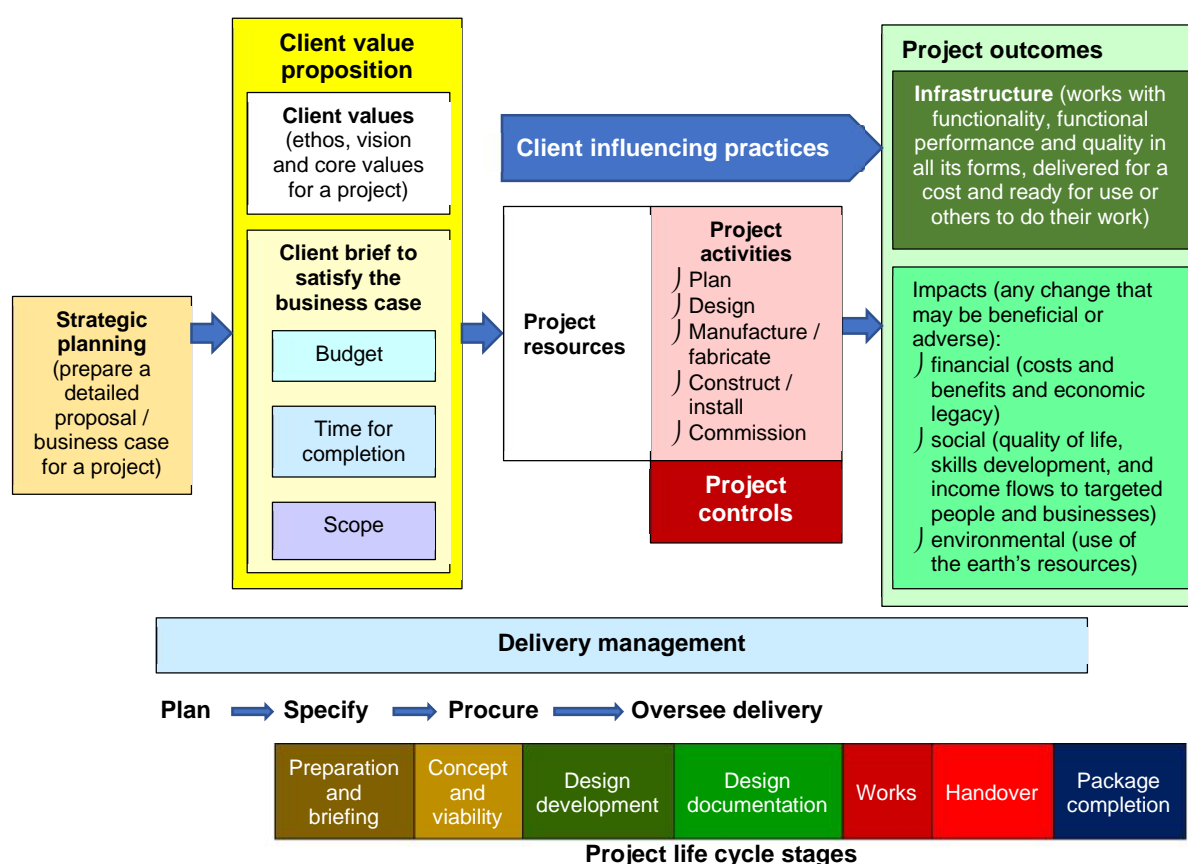
**Figure 9: Indicative impact of key variables on the delivery of infrastructure over time**

### 5.1.6 Delivery management practices

Delivery management (the critical leadership role played by a knowledgeable client to plan, specify, procure and deliver infrastructure projects efficiently and effectively, resulting in value for money) is required to translate the value proposition associated with a business case into project outcomes (see D.3 in Annexure D). Clients need as such to:

- ) **plan** – decide in detail what needs to be done, how it is to be resourced and achieved and in what time frames, and set a budget;
- ) **specify** – define the client's functional and other requirements for the project clearly and precisely;
- ) **procure** – obtain project resources (internal and external) to execute project activities with care and effort; and
- **oversee delivery** – observe and define the execution of the project to realise the client's value proposition

Clients need to influence project outcomes through leadership, governance and procurement practices, strategies and tactics. Those tasked with project activities need to manage project activities within budget, schedule, quality, and safety, health and environmental parameters as indicated in Figure 10.



**Figure 10: Client functions in the delivery of infrastructure projects and typical stages of the project life cycle**

Delivery management activities include the development, if necessary, of prefeasibility and feasibility reports to present sufficient information to determine whether the project should be implemented, particularly in respect of high value projects, infrastructure that requires special design considerations, public private partnerships or projects which are delivered incrementally over a number of years. Such reports are not necessary for projects of a routine nature in which the business case parameters can be tested and assessed through the project life cycle.

Delivery management also commonly includes the overseeing of:

- ) the development of a procurement strategy for each project or programme of projects together with the structure and composition of the client delivery management team to oversee the implementation of such strategy;
- ) the procuring of resources whenever they are required to advance the project;
- ) engagements with stakeholders and utilities;
- ) management of contracts including the timeous payment of contracted resources; and
- ) activities associated with the project life cycle stages i.e.
  - project planning activities associated with each work package including the development of:
    - o a strategic brief enabling the professional team to develop a solution for the brief;
    - o a concept report enables decisions to be taken regarding the proposed solution to satisfy the strategic brief and whether or not the project should proceed to implementation;
  - the development of the design and the documentation of the design enabling either construction (where the constructor is able to build directly from the information prepared) or the production of further information for construction or manufacture;
  - the delivery of the works on a site;
  - the handing over of completed works to the end users and those responsible for maintenance activities; and
  - the close out of contracts and projects.

Governance authorises, directs, empowers, provides oversight and limits the action of management. Governance decisions need to be taken regarding the admission of a project into a pipeline of projects, the feasibility of projects and the acceptability of the end of stage deliverables in the project life cycle (see Annexure D).

Governance at the highest level within an organ of state needs to focus on the attainment of the organisation's core purpose over the long term and ensuring that the right project purpose is achieved in the right way. Governance at a programme and project level provides a way for senior management and notable stakeholders to exercise oversight and ensure the intended strategic outcomes of projects are realised. Project governance accordingly comprises those areas of governance that are specifically related to project activities. It provides a

comprehensive, consistent method of controlling the project and ensuring its success and includes the establishment of appropriate and effective delegations of responsibility.

## 5.2 Ineffective interventions

A review of the performance of the sector post the publication of the NDP (see chapter 3) suggests that the reasons for poor public sector infrastructure outcomes relate in part to ineffective interventions which have focussed on (see 4.1.1 and 4.1.2):

- ) introducing basic portfolio, programme and project management practices aimed at addressing challenges relating to implementing agents delivering infrastructure on behalf of user departments which have merely increased the administrative burden and introduced layers of reporting to sustain management posts that were created without improving project outcomes; and<sup>9</sup>
- ) boosting in-house technical and management skills through technical assistance.

No evidence-based research has, for example, been found to support any performance improvement brought about by the Siyenza Manje project (and its successor in MISA) and the Infrastructure Delivery Improvement Programme (2004 to 2017) (see 4.1.1).

In contrast, the University of the Witwatersrand has produced a number of evidence-based research papers and a comprehensive close out report on the SIPS 14 new universities project (see 3.5).<sup>44</sup> The papers point to the positive impact on project outcomes of the application of a number of the provisions of the SIPDM and associated procurement and delivery management (SCM) policies.

A case study was presented on the SIPS 14 new universities project (see 3.5) at the National Treasury and University of Pretoria's IDMS Executive course during November 2017 and April 2018. Participants at this course participated in a group exercise following the presentation and were asked to identify and rank the critical innovations or practices that are a prerequisite to successful infrastructure project outcomes in the public sector. The ranked responses at both workshops were the same, namely procurement strategy, governance, client leadership and a skilled client delivery management team.<sup>45</sup> These solutions are not dissimilar to those proposed in the 2003 CIDB Strategy to Promote Infrastructure Procurement and Delivery Management within the Public Sector which gave rise to the Infrastructure Delivery Improvement Programme and the IDMS (see 4.1.1 and 4.1.2). (This strategy identified the key challenges at the time as being lack of delivery management skills, lack of resources, inefficient / inappropriate systems and processes and inconsistent procurement procedures.)

The IDMS system as formulated in the recently published FIDPM (see 4.2.5) and IDM toolkit (see 4.1.2) focusses on the outlining and describing of basic portfolio, programme, operations, maintenance, project and procurement processes and the establishment of minimum requirements relating thereto and the location of control points. It is silent on contract management, an area which was comprehensively dealt with in the SIPDM. The FIDPM includes a requirement to produce a procurement strategy but has removed most of the

---

<sup>9</sup> The Project Management Institute defines a **project** as a temporary endeavour undertaken to create a unique product, service or result, a **programme** as a group of related projects managed in a co-ordinated way to obtain benefits and control not available from managing them individually and a **portfolio** as a collection of projects or programmes or other work that are grouped together to facilitate effective management of that work to meet strategic objectives. **Project management** and **programme management** is defined as the application of knowledge, skills, tools, and techniques to project and programme activities to meet the project and programme requirements, respectively. **Portfolio management** is defined as the centralised management of one or more portfolios, which includes identifying, prioritising, managing and controlling projects, programmes and other work to achieve specific strategic business objectives.

procurement innovations and tactics which underpin an infrastructure procurement strategy such as framework agreements and quality as an evaluation criterion<sup>r</sup>, which formed an integral part of the SIPDM and are not addressed in the amended CIDB SFU. It is also lacking guidance on governance<sup>s</sup> for the organisation as a whole to achieve its core purpose over the long term as well as on areas of governance that are specifically related to infrastructure-related activities. Such governance arrangements should provide a comprehensive, consistent method of controlling a project and ensuring its success and the establishment of appropriate and effective delegations of responsibility, all of which were included in the SIPDM and its associated model SCM policies (see 4.2.3).

The IDMS has sought to address performance improvement through project, programme and portfolio management processes and techniques framed around a particular type of delivery whereby an implementing agent delivers projects on behalf of a user department and has shied away from supply chain management as it has relied on the OCPO and the CIDB to deal with SCM issues. As such it compartmentalises the delivery of infrastructure projects into processes which fall under the control of the chief financial officer and management processes which fall under the control of senior management who are ultimately responsible for infrastructure. This has given rise to the establishment of project management or programme management offices which are frequently staffed by underqualified officials who gather information from the outsourced supply chain and generate the numerous reports demanded by the IDMS and SCM system as they have a technical background but add little or no value in the delivery of infrastructure.

### **5.3 Failure to learn lessons from successful and unsuccessful mega projects and international experience**

#### **5.3.1 International perspective**

The term “mega project” often refers to an extremely large scale project, a time to complete of 5 years or more, and which generates high public attention. These factors introduce complexities into their execution. The complexities in managing mega construction projects are generally linked with the technical, social and managerial aspects of large scale projects. Technical complexities of mega construction projects are determined by the technologies employed in the design and construction processes. Social aspects relate to complexities from the inadvertent impact of mega projects on the environmental and social systems within their location of implementation. Managerial complexities are caused by the business and governance aspects of projects including financial arrangement, scheduling, resource deployment, and decision management.

Mega projects are often commissioned by governments and delivered with the involvement of private enterprises. Mega projects are frequently located in remote locations with difficulties of access, climate, and terrain, and usually involve large work forces. This makes for logistical and construction management difficulties. They are also frequently characterised by uncertainty, complexity, technological sophistication, funding concerns, political

---

<sup>r</sup> The SIPDM defines a **framework agreement** 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 work to be call-off or instructed basis over a set term without necessarily committing to any quantum of work. This is achieved by issuing orders (instructions) during the term of such a contract.

<sup>s</sup> BS 13500 defines **governance** in an organisational context as the system by which the organisation is directed, controlled and held accountable to achieve its core purpose over the long term. ISO 21505 defines **governance** in a portfolio, programme and project management context as principles, policies and frameworks by which an organisation is directed and controlled. Effective leadership cannot be exercised in the absence of strong governance.



sensitiveness, dynamic interfaces, significant political or external influences, large number of partners, public attention because of substantial impacts on communities, environment and budget and disappointing outcomes.

Project complexity is identified in most parts of the literature as the major cause of poor performance of megaprojects in terms of cost, schedule, performance in use and satisfying the business case. Other causes of poor performance in megaprojects are rooted in issues such as a lack of realism in initial estimates, low level of contingencies in estimates, insufficient consideration of changes in project specifications, designs and technical difficulties, exchange rates, undervaluation of price changes, expropriation costs, safety and environmental demands and shortage of resources. They also include ineffective stakeholder management, scope changes, public resistance, poor risk management, lack of understanding of the direct and secondary impacts of change, lack of owner's abilities and strategies to manage mega projects, lack of appropriate scheduling tools and underestimating the technical requirements. The major causes of schedule delay arise from lack of owner's abilities and strategies to manage mega projects, lack of appropriate scheduling tools, underestimating the technical requirements, and public resistance due to environmental and social concerns.<sup>46</sup>

International research has identified the root cause of many of the major problems associated with projects such as inaccurate projections of costs, demands and other impacts of plans as:<sup>47</sup>

- ) 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 UK's HM Treasury Green Book: Appraisal and Evaluation in Central Government (2011) 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 UK publication introduces an explicit adjustment procedure to redress the systematic optimism ("optimism bias") that historically 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.

Recent publications have made suggestions, based on experiences in delivering large infrastructure projects, as to how clients can improve infrastructure project outcomes (see 1.3). These suggestions in essence relate to the putting in place of governance systems, the establishment of trust based engagements of stakeholders throughout the delivery process, the embracing of the soft issues of project delivery including leadership, attitudes and behaviour, the adoption of a strategic and tactical approach to procurement, the putting in place of reliable data gathering systems to inform decision making and the development of strong capabilities.

### **5.3.2 Reasons for poor performance**

The construction industry tends to bury problematic projects as quickly as possible and rarely document the lessons learned. Nevertheless, the indicative high level reasons for some of the poor mega project outcomes (see 3.5) can be gleaned from articles, reports and documents published on the internet.

Eskom has conceded multiple failings that led to cost overruns and delays at the Medupi and Kusile coal-fired power stations, including inadequate planning and front-end engineering development, as well as ineffective contracting strategy, execution and oversight. Contractors also performed poorly and incurred limited penalties, while strikes and demonstrations compounded the implementation woes. Turnover at the top did not help matters - the company has had 11 permanent and acting chief executives since construction began.

A former Eskom's group executive is on record as indicating that things went awry when Eskom was ordered to fast-track the process. At the same time, there was a shortage of contractor capacity given the worldwide demand for large-scale generation. This meant that the main contractors could virtually name their price and conditions. The accelerated process also had its own consequences. For example, it has emerged during the delivery process that the site's geotechnical aspects had not been properly examined. This resulted in flawed reports and contributed to some of the design deficiencies.

Eskom also assumed much of the risk of developing Medupi and Kusile when it decided to coordinate the projects, rather than appoint an external organisation to oversee engineering, procurement and construction - a common practice in plant development. For example, Eskom had to manage the interfaces between contracts with more than 50 contractors on the Kusile. This required Eskom to issue numerous tenders and to manage diverse contractors and to commission and hand over completed works to end users with contractors having split responsibilities. As delays crept into the project, the sequence of work backed up, and a number of contractors found themselves unable to access the site on their contractually agreed start dates. Such contractors as is the norm within the construction industry were entitled to recover losses from Eskom from stipulated start dates, regardless of whether the work had been initiated as they had begun to incur costs from their supply chain. Furthermore, some contractors incurred costs for the storage of overseas-manufactured equipment that could not be brought onsite as a result of delays. Such equipment had to be stored offshore or in local storage by the contractor, including preservation and testing, a costly undertaking.

Rotek Industries, a wholly owned Eskom subsidiary, was appointed to establish the Kusile site—a process that entailed digging drains, laying pipes and doing the earthworks and terracing. Its contract was terminated early on because it was unable to deliver. This created a bottleneck for other contractors, which filed for damages. Eskom has paid out R14.8 billion to settle the claims, which totaled R252.9 billion and filed claims of its own worth R2.6 billion against companies that failed to meet their contracts.

Insufficient stakeholder management eventually led to labour unrest - yet another project shortcoming that had expensive and time-consuming consequences.

Insiders at Kusile suggest a lack of satisfactory project controls became apparent early on in the project (inter-related areas of schedule, cost and scope). For example, the baseline schedule - the immovable reference that enables an accurate variance to be established between planned and actual time and cost - was found to have been revised numerous times. Control over the essential aspects of Kusile began to unravel, and Eskom's project teams were faced with multiple issues on all sides, including a significant number of contractor claims. The root causes of these challenges stemmed from weak delivery management, including inadequate planning, poor engineering designs, and contract interface dependencies leading to cost and time implications and delayed or no access to the site.<sup>48, 49</sup>

A further complication in the Medupi and Kusile project is the use of standard industry forms of contract which, contrary to international best practice, were significantly and extensively modified. This introduced many uncertainties in the commercial arrangements including how contractors would be compensated for risk events for which they were not responsible for, the

risks borne by the Employer and how disputes would be resolved.<sup>†</sup> This inevitably led to risk pricing and increased contract prices and has made claims very difficult and costly to settle. The eventual settling of all claims and final accounts in the years to come could cause the current projected final project costs to increase significantly.

Another mega project with poor outcomes has been Transnet's new multi-product pipeline project. During December 2005, South Africa experienced a series of interruptions to fuel supplies. There were stockouts at many locations throughout the country, including shortages of jet fuel at Cape Town International Airport. Supply interruptions negatively impacted many sectors of the economy with the severity of the hardship ranging from relative inconvenience to loss of business and reputation. Government and public concerns about the fuel crisis led to government intervention to address the security of fuel supply to the economic hub of South Africa. The proposed development of a new pipeline from Durban to Gauteng was expedited so that such a pipeline could come into operation at the latest during the second quarter of 2010. In order to meet the imposed deadlines, an early start to construction was required.<sup>50</sup>

A review of Transnet's new multi-product pipeline commissioned by the Minister of Public Enterprises in December 2010, found that "systemic failings" by all key role players within Transnet, at the level of the main contractor, as well as at shareholder level, namely the department, contributed to cost overruns of R14-billion and a delay of three years on the project. The project management setup within Transnet Capital Projects was found to lack sufficient capacity and depth of experience for the client overview of a megaproject of this complexity. In addition, there was an inadequate analysis of risks and an over-reliance on the engineering, procurement and construction management (EPCM) contractor while the overall management of the project was flawed.<sup>51</sup> However, despite corrective action being taken, further problems were experienced which again increased costs and delayed completion – the cost in the nine years that it took to reach completion jumped from R 12,7 billion to R 30,4 billion. In 2017, Transnet informed the National Energy Regulator of South Africa that the project has been affected by various factors including contractor performance, contract management on Transnet's part, inclement weather and industrial action-related delays.<sup>52</sup>

The Gauteng Freeway Improvement Project (GFIP) to upgrade the highways between Johannesburg and Pretoria was originally costed at R4,6bn in the mid-2000s for a 340km upgrade. It ended up costing just under R18bn for 193kms. The Organisation Undoing Tax Abuse (Outa), following a year-long study involving whistleblowers, road engineers and quantity surveyors, concluded that the 193km freeway improvement project should have cost no more than R8bn, even allowing for cost escalations and other contingencies. Outa have fingered collusion as a major contributing factor as the Competition Commission had found that the price of the GFIP was inflated through collusive practices.<sup>u</sup> The SA National Roads Agency (Sanral) did its own inquiry and concluded that construction companies had overcharged them by R750m, though not all of this was GFIP-related. However, Sanral is on record that the Outa study is a rehash of an old study and made incorrect comparisons while falling into the trap of generalising complex engineering projects.<sup>53</sup> If Sanral's assessment is

---

<sup>†</sup> Standard forms of contract provide the agreed procedures for the administration of the contract. They provide fixed terms which enable the risks to be allocated between the parties.

<sup>u</sup> In 2006 there was a secretive road contractors meeting where the colluders agreed to allocate tenders for the construction of roads. At this meeting it was also agreed that those firms not interested in winning tenders would nevertheless submit "cover bids", which are sham bids intended to lose while lending legitimacy to the tender process. The losers would receive compensation, or "loser's fees", from the winners.

The 2013 Competition Commission investigation into collusion in the construction industry focused on just 300 or so projects, which included the Gauteng freeways. The investigation did not cover the 10,000-odd projects that defined South Africa's infrastructure boom between 2002 and 2010. Due to the sheer workload in wading through so many projects, the Commission opted for a "fast-track" settlement process which allowed guilty firms to come clean of their own accord in return for leniency. Based on the sample of 300 projects investigated by the Commission, penalties totaling R1,46bn were levied against 15 firms for collusive behaviour. The colluders agreed to pay a further R1.5bn commitment to social development over 12 years, and to accelerate transformation of the sector. Only a portion of these penalties relate to GFIP.

accepted, the differences between what was planned and what was delivered can be attributed to a combination of optimism bias, strategic representation and inefficiencies in delivering the project.

### **5.3.3 Reasons for good performance**

The outcomes of the SIPS 14 project for the delivery of the first phase of government's new universities are outlined in 3.4. The collaborative approach adopted to manage risks not only enabled the client value proposition for the project to be attained but also mitigated the need for time consuming and expensive litigation to resolve disputes. Only one dispute was referred to an adjudication<sup>v</sup> relating to professional negligence to enable professional indemnity insurance to be paid, which was speedily dealt with.

What is unusual about this project is that a 295 page close out report, complete with 97 reference documents, was produced in 2018. This report provides a succinct anatomy of the project including the delivery of higher education infrastructure facilities, from the adoption of the business case to the handover and close out of the first delivery phase. This close out report has been placed in the public domain on a website as a resource for all those involved in research, teaching or delivering infrastructure projects.<sup>54</sup>

The successful outcomes of the project can be attributed to a combination of:<sup>55</sup>

- ) strong governance arrangements being in place to enable sound decision making;
- ) project delivery being managed as an enterprise rather than an ad-hoc collection of contracts;
- ) a client delivery manager being appointed who had single point accountability for delivering the client's value proposition and who provided strong leadership in the delivery process;
- ) a competent client delivery management team being assembled, using the negotiated procurement procedure, who had complimentary expert skills;
- ) procurement being delinked from the "buying" function of a SCM unit located within the chief financial officer's office and led by the client delivery manager as a strategic function with involvement of registered built environment professionals to ensure the quality of the documents and professional judgement in the evaluation of tenders;
- ) the adoption and implementation of innovative procurement strategy and tactics aligned to the client's procurement and delivery management objectives which enabled competent and capable contractors and consultants to be appointed;
- ) the high quality of procurement documents and well documented and described procurement processes, procedures, methods and policies which permitted the award of contracts to be made on the basis of financial offer, preference and quality;
- ) the setting of control budgets for projects and the accessing of contingencies to fund risk events on a stepped access basis;

---

<sup>v</sup> Adjudication is an accelerated and cost-effective form of dispute resolution that, unlike other means of resolving disputes involving a third party intermediary, the outcome is a decision by a third party which is binding on the parties in dispute and is final unless and until reviewed by either arbitration or litigation.

- ) early contractor involvement (i.e. the appointment in most instances of a contractor before the design was complete) which enabled fragmentation in design to be addressed;
- ) clearly defined roles and responsibilities between the client delivery management team and the delivery team
- ) framework agreements which incentivised performance in order to secure future orders and enabled long-term relationships focused on maximising efficiency and shared value; and
- ) the adoption of a collaborative culture to mitigate risks.

This project piloted the principles and practices embedded in the SIPDM (see 4.2.3). The project accordingly validated many of the provisions in this standard.

The approach adopted in the delivery of the two new universities can be implemented on any project irrespective of its size. The lessons from the new universities project aligns with recent international publications aimed at improving infrastructure project outcomes (see A.4 of Annexure A). It also resonates with the Institution of Civil Engineer's (an international learned society with membership in more than 150 countries) view that “ *The role and performance of the client is the single most important factor in determining the success of construction projects and capital works programmes, regardless of their size, complexity or location.*” (see Annexure C).<sup>56</sup>

The DHET's Macro Infrastructure Framework Support Team, drawing on the experience gained in delivering the new universities, insights gained from performing oversight visits to review grant funded infrastructure projects, the provision of various levels of support to build capacity within universities to undertake strategic planning resulting in the business case for a project and perform delivery management function in overseeing the conversion of a business case into project outcomes and emerging international practices, has developed a five level maturity model which has universal applicability.<sup>57</sup> This client maturity model equips client organisations to improve their infrastructure delivery management capability from an immature process to a continuous improved or optimised (mature) process. It has been developed around the following four key client processes and associated practices which if embraced have the greatest potential to improve project outcomes and deliver value for money:

- 1) client governance and organisational ownership;
- 2) client leadership at the infrastructure programme level;
- 3) client leadership at the project level; and
- 4) infrastructure procurement.

The five levels of maturity are as follows:

- ) Level 1: Ad-hoc: An improvised process capability
- ) Level 2: Basic: A basic, disciplined process capability
- ) Level 3: Structured: A fully established and institutionalised process capability

- ) Level 4: Integrated: Full integration with other organisational processes resulting in synergistic benefits
- ) Level 5: Optimised: Processes focus on continuous improvement and adoption of lessons learned and best practices

Projects associated with client organisations who have a level one maturity typically take a long time to get off the ground and project success depends mainly on a fortunate combination of the contracted professional team and the contractor who provides the works. Such projects are driven by the contracted professional team. Projects, on the other hand, that are associated with client organisations which have a level five maturity are consistently delivered with successful project outcomes and realise value for money.

The model is structured in such a way that a client organisation can identify what practices should be prioritised and what actions are needed to improve an organisation's "as-is" position in order to consistently produce successful infrastructure project outcomes which realise value for money. Organisations involved in the delivery of infrastructure should aim as a minimum to operate at Level 3. The prerequisites for operating at this level are (see A.4 in Annexure A):

- 1) a client delivery manager<sup>w</sup> who is an appropriately qualified and experienced built environment practitioner and able to lead the infrastructure projects and programmes;
- 2) an effective organisational governance structure which enables the appointed client delivery manager to exercise CEO level leadership;
- 3) appropriate delegations of authority which enable decisions to be made swiftly to ensure delivery in an accountable manner;
- 4) enabling policies which facilitate or do not preclude the application of sound infrastructure procurement practices in order to achieve desired outcomes and value.

## 5.4 Gaps in the work of the OCPO and CIDB

The preamble to the Construction Industry Development Board Act of 2000 states that "*the specialised and risk-associated nature of construction places an onus on the public sector client to continuously improve its procurement and delivery management skill in a manner that promotes efficiency, value for money, transformation and the sustainable development of the construction industry*". The Act accordingly tasks the CIDB amongst other things to promote *best practice through the development and implementation of appropriate programmes and measures aimed at best practice and improved performance of public and private sector clients . . . in the construction delivery process*" and "*identify delivery constraints in the public sector and advise the Minister on policy, practice and procedural reform in relation to public sector client performance and public sector capacity improvement.*" The Act also empowers the CIDB to "*establish a knowledge centre through which industry and clients can access knowledge and experience on innovation and best practice.*"

---

<sup>w</sup> A **client delivery manager** is an individual who with single point accountability and access to senior client management, leads the client delivery management team, who provides leadership and direction to the delivery team, meaningfully engages with internal and external stakeholders and is held accountable for project outcomes.

A **Delivery team** is that part of the supply chain which, in relation to the physical delivery of infrastructure:

- a) performs project management services to deliver the development and implementation of the project;
- b) provides design services to integrate client's requirements into workable solutions;
- c) provides professional support services in areas such as health and safety, environmental compliance, cost control, geotechnical investigations, traffic studies etc.; and
- d) provides new infrastructure or rehabilitate, refurbish or alter existing infrastructure.

The CIDB has over its almost two decades of existence made little progress on its mandate for clients as evidenced by the material currently on its website and as evidenced by the ongoing challenges with infrastructure delivery management and procurement. The CIDB does state on its website under the section for Infrastructure Delivery Management that *“Notwithstanding budget increases over the years, delivery of public infrastructure remains dogged by budgets under-spending, poor planning, cost overruns, quality issues and sometimes project failure, among others. There are concerted efforts to build greater delivery efficiency in the public sector. This is at the forefront of the cidb mandate.”* However, to overcome these issues, the CIDB only offers clients the Infrastructure Delivery Management Systems (IDMS) (see 4.1.2), Standards for Gateway Reviews, the National Infrastructure Maintenance Strategy (NIMS) (see 4.1.2) and Guidelines for Labour-intensive Construction Methods. It does not provide guidance regarding the key challenges of client delivery management and infrastructure procurement. It does not provide any case studies to support public sector capacity improvement or international best practices to improve performance.

The Office of the Chief Procurement Officer (OCPO) met with the Standing Committee on Appropriations (SCOA) to discuss their work during April 2018. The OCPO presented a briefing report, highlighting new initiatives, the progress on specific initiatives, major challenges and developments since previous meetings.<sup>58</sup> Much of the presentation focused on modernisation initiatives within OCPO including the development of state-owned construction contracts. The reported goal for the state-owned contracts was to provide standardised contracting for state-owned construction. Currently, contracting standards were driven by the private sector and this was perceived to disadvantage the state. *“The initiative would enable the state to be able to influence the content of contracts and to bring the contracts in line with the regulatory framework and legislation such as the Public Finance Management Act (PFMA), the Municipal Finance Management Act (MFMA), the Preferential Procurement Policy Framework Act (PPPPA), and other relevant legislation. The initiative would also enable the state to align its contracting with the country’s socio-economic requirements.”* It was furthermore reported that *“the current contracting environment did not address Black Based Empowerment (BBE) and preferential procurement regulations.”*

The OCPO appears to have embarked upon the development of a state-owned standard form of contract<sup>x</sup> in response to concerns raised by Black Business Council Built Environment (BBCBE) with the CIDB almost a decade ago. The BBCBE took issue with the CIDB’s adoption of the four standard forms of contract for construction works published by two local and two international industry bodies.<sup>y</sup> They wanted the state to have its own form of contract so that they as stakeholders could propose amendments to these forms of contracts. The BBCBE was of the view that the current contracts are not pro-development and the CIDB was not assisting the industry.

The CIDB commissioned a discussion paper on the suitability of the four forms of contract in the South African context in 2014.<sup>59</sup> The drafters of the discussion paper expressed the view that *“It is our perception that the real discontent has not been established and although there has been criticism of the four contracts no-one has stated exactly what the real issues are. Unfortunately contracts cannot replace management. . . . Considering that they are serving*

<sup>x</sup> A standard form of contract or standard contract is commonly used on infrastructure projects. Such contracts are usually 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

<sup>y</sup> The current owners of the four standard forms of contracts used in South Africa are the:

- J Joint Building Contracts Committee (JBCC), whose constituents include organisations representing built environment professionals, contractors and building owner organisations;
- J International Federation of Consulting Engineers (FIDIC), the global representative body for national associations of consulting engineers in more than 100 countries;
- J South African Institution of Civil Engineering, a local learned society; and
- J Institution of Civil Engineers, a UK based learned society with membership in more than 150 countries.

*their purpose, it is stressed that withdrawal of endorsement would be a retrograde step and would probably be met with significant resistance from parastatals.*" The CIDB held several engagements with the representatives of the industry bodies who owned the various forms of contract. No concrete proposals were made regarding what needed to be amended to address the concerns. The industry representatives concluded that the frustrations more than likely lay in the manner in which the contracts were being set up and managed by the state. One of the local forms of contract invited a representative of the South African Black Technical and Allied Careers Organisation (SABTACO), a member of the BBCBE, to participate in the revising of its form of contract so that their concerns could be addressed.

Contract documents used for construction works are compiled in accordance with the provisions of the CIDB Standard for Uniformity and international best practice comprise a number of component documents as indicated in Table 7. Standard forms of contract contain standard conditions of contract which are made contract specific through contract data. Constraints to performing the work such as subcontracting to Exempted Micro Enterprises and Qualifying Small Enterprises can be accommodated in the scope of work. This allows contracts to be set up for different legislative regimes and to accommodate a wide range of specific requirements. Any requirements relating to the manner in which the contracts are managed can be included in the SCM policy of the organ of state that makes use of the contracts or in the contracts with service providers who are contracted to manage a contract as agents of organs of state.

**Table 7: Component documents of a construction works contract**

Heading		Broad outline of contents
Agreements and contract data	Form of offer and acceptance	Formalises the legal process of offer and acceptance.
	Contract data	Identifies the applicable conditions of contract and associated contract-specific data that collectively describe the risks, liabilities and obligations of the contracting parties and the procedures for the administration of the contract.
Pricing data	Pricing assumptions	Provides the criteria and assumptions which it is assumed (in the contract) that the tenderer has taken into account when developing his prices and fee percentages in the case of cost-reimbursable contracts.
	Pricing schedules/ activity schedule/ bill of quantities	Records the contractor's prices for providing goods, services or construction works which are described in the scope of work section of the contract.
Scope of work		Specifies and describes the goods, services or construction works which are to be provided and any other requirements and constraints relating to the manner in which the contract work shall be performed.
Site information		Describes the site at the time of tender to enable the tenderer to price his tender and to decide upon his method of working and programming, and risks.

The rationale for embarking upon the development of state-owned forms of contract is therefore questionable. It is indicative of a lack of regard for the infrastructure-related professional bodies which have developed the existing contract documents over many years.

Central issues that needs to be dealt with in infrastructure projects are:

- 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;



- how are changes to the information used to produce the works assessed and paid for; and
- how are risks (see Annexure C) allocated between the parties and how are contractors compensated for risk events for which they are not responsible for.

Standard forms of contract are drafted around significantly different objectives and principles e.g. master-servant relationships or collaboration between two experts, risk sharing or risk transfer, independent or integrated design, short-term relationships based on one-sided gain or long-term relationships focused on maximising efficiency and shared value, etc. The manner in which they deal with delays and disruptions also varies. Some standard forms of contract are drafted around specific contracting strategies such as design by employer with bills of quantities and as such do not offer flexibility in the allocation of risks. Other standard forms of contract cover the full range of risk allocations and pricing strategies and permit flexible allocations of risk. The selected standard form of contract needs to support the selected contracting strategy. It is for this reasons that the CIDB did not endorse only one form of contract. It offered a range of contracts to enable organs of state to approach the market using different approaches to managing their risk on projects with very different levels of complexity, scale and duration.

The forms of contract endorsed by the CIDB were drafted by committees / panels comprising experienced and knowledgeable built environment practitioners who consulted extensively with potential users of the documents during the drafting process i.e. clients, agents of the client and contractors. Lawyers were then typically brought in to review the final text ahead of publication. The development of these forms of contract is informed by the experience gained during the application of previous forms of contract that have been developed by the owners of such publications. The development of a new form of contract is a very time-consuming exercise and typically takes several years to perfect. Frequently consultation with potential users is required and pilot versions need to be tested ahead of finalisation.

The OCPO has not engaged with industry bodies in the development of the state-owned contract. It is not clear how a one size fits all form of contract will address the needs of all public sector clients who have projects of differing complexity, scale and duration.

It is of interest to note that the summary of the April 2018 meeting with the Standing Committee on Appropriations (SCOA) notes that *“several members expressed dissatisfaction at the slow pace of OCPO. There was widespread concern about the escalating costs of many public projects.”* Reforms such as bringing out a state-owned form of contract are unlikely to address the ability of public sector clients to manage the delivery of infrastructure projects on time, within budget and to the right quality.

The SIPDM which was published in 2015 had the potential to address many of these issues. However, the removal of key guidance regarding infrastructure procurement and client delivery management through the withdrawal of the SIPDM in favour of the FIDPM does little to address the current issues facing clients. It appears that the reforms of the OCPO are not directed at improving the performance of clients in delivering infrastructure projects, but are more directed at aligning or accommodating some aspects of infrastructure procurement within the administrative approach for general goods and services and forcing implementation of the IDMS management system.

## **5.5 Public sector SCM practices**

### **5.5.1 Introduction**

The almost complete outsourcing of professional design and project construction management functions (see A.3 and Annexure A) as well as the construction function has meant that the quality of public sector supply chain management (including procurement and delivery management) (see Annexure D) has become the determining factor in the success of public sector infrastructure investment.

### **5.5.2 Recent research findings**

The Auditor-General (AG) reported an increase in non-compliance amongst national and provincial government departments and their entities with SCM legislation during 2017-18.<sup>60</sup> The status was even worse than in 2014-15, in spite of all the AG reporting in this area, the red flags that the AG had raised, the AG's many recommendations made and the governance, monitoring and compliance function of the OCPO to ensure compliance within the regulatory framework (see 4.1.4). Uncompetitive and unfair procurement processes and inadequate contract management were common. 52% of departments had insufficient funds to settle all liabilities that existed at year-end if the unpaid expenses at year-end were also taken into account. This means that these departments started the 2018-19 financial year with part of their budget effectively pre-spent. Some departments did not pay their creditors when their budgets started running out and thereby avoided unauthorised expenditure, but the payments were then made in the following year, effectively using money intended for other service delivery priorities. This continuing 'rollover' of budgets had a negative impact on departments' ability to pay creditors on time and to deliver services. This accounts for the high spending amongst departments indicated in Table 2.

The AG also reported that National Treasury had during 2018 flouted its own policies and regulations as it incurred nearly R770 million in irregular expenditure and paid another R67m for goods and services not received.<sup>61</sup> Furthermore, the Auditor General (AG) reported an increase in material compliance findings amongst municipalities on supply chain management from 72% to 81% during 2017-18 – the highest since 2011-12.<sup>62</sup> The audits again identified a number of shortcomings in the development and maintenance of infrastructure by municipalities. These included the underspending of grants, delays in project completion, and non-compliance with supply chain management legislation.

Recent research undertaken by the Public Affairs Research Institute (PARI, 2019) has found that public procurement in South Africa suffers from a number of problems namely slow delivery, massive inefficiency, much gaming of the system, relatively poor value for money, and widespread failure to achieve broader economic objectives.<sup>63</sup> The PARI report identifies four causes, namely lack of appropriate capacity within procuring units, procurement has been misplaced within financial management structures and processes, the current state of the legal regime for public procurement and a lack of focus on strategic delivery.

A 2019 study conducted by the Human Science Research Council (HSRC) sheds some light on many of the causes of disappointing public sector outcomes. This study, amongst other things identifies the key issues undermining effective and efficient procurement of public infrastructure and in which phase of the project cycle these issues occur. The study accordingly provides some useful insights into the differences in opinion, lack of clarity, lack of awareness and confusion surrounding different aspects of infrastructure regulation, policy and processes in South Africa. Focus group interviews were conducted with key stakeholders in the public, private and civil society sectors. In addition, 21 qualitative key informant interviews were held with senior executives or managers at the Office of the Auditor-General,

Eskom, Transnet, the South African National Roads Agency Limited (SANRAL), Petro-SA and the Construction Industry Development Board (CIDB).<sup>64</sup> The key finding of this study is that there are differences in understanding and interpretation of infrastructure regulation, policy and practice which undermine the effective and efficient procurement of public infrastructure.

This is not unexpected as there are many differences in the manner in which organs of state are regulated through the SCM Regulations issued in terms of the PFMA and the MFMA and the manner in which SCM is further regulated through the issuing by National Treasury of instructions and guidelines under the PFMA and the MFMA, respectively (see E2 and E.3 of Annexure E). This is furthermore compounded by the making of National Treasury instructions applicable to major public entities and national and provincial business enterprises which are not subject to the SCM Regulations issued in terms of the PFMA (see 4.2.1 and E.2) and the confusing plethora of guidelines and circulars which have been issued to clarify various aspects of the SCM Regulations, instructions and guidelines and the Preferential Procurement Regulations.

Conflicting and ill-informed National Treasury instructions have also contributed to the confusion (see 4.2.4 and 5.5.6). Furthermore, the Construction Sector Codes of Good Practice on Broad Based Black Economic Empowerment are difficult to administer in the granting of preferences. This scorecard only applies to entities which derive more than 50% of their Annual Revenue from Construction Related Activities. The turnover thresholds for Exempted Micro Enterprises and Small Qualifying Enterprises are significantly lower than is the case for the generic scorecard. There are also differences in the way in which the status of such entities is verified.

The lack of clarity regarding the status of the CIDB Standard for Uniformity in Construction Procurement (see 4.2.2 and 4.2.2 and E.7 Annexure E), the issuing of CIDB best practice notes linked to Construction Industry Regulations which are yet to be published and the recent changes to the Regulated grading criteria issued through circulars add to the confusion. The updating of guidance and the refreshing of websites leaves a lot to be desired. The CIDB website, for example, currently has 11 procurement best practices tools and guides, 3 guides on quality as an evaluation criterion, 7 guides on applying the register of contractors and 30 CIDB Inform Practice Notes which provide guidance and clarity in achieving client objectives in construction procurement and delivery. It also has a number of procurement document templates and guidelines. These guides are not necessarily aligned with the more recent versions of the CIDB SFU and the most recent Construction Industry Development Regulations and National Treasury instructions (see 4.2.2 to 4.2.5, 4.2.7 and E7 of Annexure E).

### **5.5.3 The public sector SCM paradigm**

There has been over the last few decades, particularly within the public sector, a change in the way organisations function as indicated in Table 8. Procurement and delivery management practices under the administration paradigm (see Table 9) tend to degenerate into a “ticking of boxes” exercise where compliance with rules or the application of mechanistic approaches are more important than project outcomes. The management paradigm has the potential to improve project outcomes as it permits managers the discretion to explore and apply different options. The governance paradigm has the greatest potential to deliver value for money as it focuses on strategic objectives and outcomes.<sup>65</sup>

Under the management paradigm, executives and senior managers need to take responsibility and be accountable for outcomes, apply their minds to the best way of doing things, think about doing things differently to achieve better outcomes and take responsibility for finding ways of achieving more with less. Governance processes need to be in place to authorise,

direct, empower, provide oversight and limit the actions of management to ensure that the right purpose is pursued in the right way.

The procurement system inherited by South Africa's first democratic government was based on an administration paradigm. The PFMA and the MFMA and the related 2005 Supply Chain Management Regulations shifted the paradigm from administration to management in the area of general goods and services (acquiring of standard, well defined products and services) and to some extent in infrastructure which involves the development of a product on a site.

**Table 8: Shifts in public sector paradigms**

Paradigm	Defining characteristics
Public administration	<ul style="list-style-type: none"> <li>✓ Dominance of rules to the extent that public servants don't do anything unless there is a rule allowing it. (The job of public servants is to implement the rules)</li> <li>✓ Highly centralised decision making</li> <li>✓ Management discretion discouraged</li> <li>✓ Incremental budgeting</li> <li>✓ Unresponsive, inefficient, slow and inappropriate public administration bureaucracies</li> </ul>
Public Management	<ul style="list-style-type: none"> <li>✓ Decentralisation of decision making. (Give managers responsibility for decision making but make them accountable)</li> <li>✓ Focus on bringing lessons from private-sector into government in order to make government business like</li> <li>✓ Emphasis on clear accountability (Implementation distanced from policy makers, single-point accountability for accounting officers /heads of departments).</li> <li>✓ Emphasis on efficiency and cost management, controlling inputs and outputs, performance management and audit</li> </ul>
Public governance	<ul style="list-style-type: none"> <li>✓ Pluralist- multiple inter-dependent actors contribute to the delivery of public services</li> <li>✓ Concerned with "relational organisation" with the focus on inter-organisational relationships and the governance of processes</li> <li>✓ Trust, relational capital and relational contracts as the core governance mechanisms</li> <li>✓ Stresses service effectiveness and outcomes (as opposed to efficiency focus)</li> </ul>

**Table 9: Characteristics of the different paradigms for SCM systems**

Paradigm	Defining characteristics of the supply chain management system
Administration	<p>System is administrative in nature and rule driven where compliance with rules and ticking of boxes is more important than project outcomes.</p> <p>Highly centralised decision making where management discretion is discouraged.</p> <p>System is unresponsive, inefficient, slow and incorporates inappropriate bureaucracies.</p>
Management	<p>System provides a wide range of options enabling a strategic approach to procurement to be taken to improve project outcomes both in terms of strategy and tactics</p> <p>Decision making is decentralised.</p> <p>Emphasis is on clear accountability, efficiency, effectiveness and project outcomes.</p>
Governance	<p>Governance enables alignment of choices with organisational strategic objectives and values, stakeholder aspirations and collaborative relationships between "buyers" and "sellers" or "suppliers"</p>

The work on procurement undertaken by the CIDB during the first decade of its existence resulted in an innovative world class procurement system which enabled a strategic approach to procurement to be taken (see 4.2.2). The SIPDM and associated policies (see 4.2.3) added governance to what was already contained in the CIDB and South African national standards. Accordingly, this standard shifted the supply chain for infrastructure into the governance paradigm.

An examination of recent trends in the issuing of, repeal of and amendments to the legislative instruments associated with SCM (recent revisions to the CIDB SFU (see 4.2.2), the withdrawal of the SIPDM in favour of the FIDPM (see 4.2.5), and the Treasury instructions that have been issued) suggests that there is a U-turn back to an administrative system rather than

the embracing of a public governance system. This is one of the underlying causes of the poor performance in the delivery of infrastructure.

#### **5.5.4 Public sector supply chain management practices**

The development of suitable capacity and processes for the supply chain management of infrastructure projects in the public sector has lagged behind the process of outsourcing outlined in A.3 of Annexure A. The reason for this is that supply chain management has largely been treated as a general administrative function in the public sector, rather than a strategic part of infrastructure delivery. Within the public service, supply chain management is still generally seen as an administrative function requiring relatively low skills levels rather than a professional function.

While the process of outsourcing infrastructure-related functions has followed an international trend, public sector supply chain management has not similarly followed the international trend towards strategic supply chain management. Infrastructure supply chain management in the public sector in South Africa remains largely embedded in the 'administrative' public administration paradigm and has not successfully progressed to a 'new public management' or 'new public governance' paradigm. It is not the principle of outsourcing which is at fault, but rather the public sector's poor procurement practices and poor management of outsourced infrastructure-related functions.

In the private sector, procurement and purchasing are frequently seen as two separate business processes that both relate to the sourcing and acquisition of goods and services. The purchasing of general goods and services for consumption is commonly handled by a purchasing (or buying) department. Such a department is usually also responsible for receiving the goods and for making payments to suppliers. The purchasing processes and procedures are generic in nature and are not tailored to suit the size and scope of each business. Such processes which are transactional in nature, are applied routinely and focus on the achievement of short term goals.

Procurement<sup>z</sup>, on the other hand, is the strategic process of sourcing a product or service which includes the identification of a specific product or service requirement, the establishing of payment terms, the putting in place and administration or management of contracts, the minimisation of risks, identification of measures to secure cost savings, while focusing on value and return on investment. Purchasing is commonly a back office or administrative function often linked to a finance department whereas procurement is a front office or strategic function linked to the department or director responsible for delivering projects and services.

It should be noted in this regard that the Association of Project Managers (APM), the chartered body for the project profession in the UK, warns against the handling of procurement by a specific purchasing resource or department rather than being a central competency within portfolio, programme and project management. They point out that to do so in complex projects frequently leads to "*unforeseen issues developing, leading to time cost and quality over runs*".<sup>66</sup>

---

<sup>z</sup> There are commonly three phases to the **procurement** process, namely:

- ) a **planning phase** during which decisions are made as to what, where and when goods and services are required, how the market is to be approached and what is the number, type, nature and timing of the required contracts;
- ) an **acquisition phase** during which contracts are entered into following the execution of a selection procedure; and
- ) a **contract management** phase during which compliance with requirements, changes in requirements and risk events which manifest during the execution of contracts are managed.

The PFMA and MFMA locate overall responsibility for governing procurement within National Treasury (see E.2 and E.3 in Annexure E). This is understandable given the nature of the treasury function within government, namely to secure and allocate a budget, oversee the execution of a budget and account for expenditure within an annual cycle<sup>aa</sup>. PARI (2019) argues that a basic factor leading to problems associated with the public procurement system is that procurement has been misplaced within financial management structures and processes which has led to an excessive compliance orientation. Procurement has for quite some time been subsumed under financial management and not viewed as a management speciality in its own right. The procurement function ought to be much closer to the primary competences which it supports rather than put aside at a distance. This would enable technical line departments or end-user professionals to play an active role in procurement. Procurement powers are currently located with financial officers, supply chain management units, and bid committees. The net result is public procurement is a financial-clerical function distant from rather than closely supportive to operational needs.<sup>67</sup>

PARI's view resonates with the view of the DHET MIF Support Team (see section 5.3.3) and the approach taken in the successful delivery of the new universities where built environment professionals with procurement expertise developed procurement documents, prepared tender evaluation reports and managed contracts.<sup>68</sup> Ad-hoc bid specification and evaluation committees finalised and approved the outputs of the built environment professionals. A standing bid adjudication committee which dealt with all types and categories of tenders across the organisation recommended the award of contracts. Delegated persons made the award. A client delivery manager supported by a technical and administrative team provided client leadership at a CEO level, oversaw the development of procurement strategy and tactics and was held accountable for project outcomes. The administrative team prepared the necessary documents for payment and developed and kept up to date a number of registers for project governance purposes which captured information such as that relating to planned procurements, contractual commitments, contracts, payments and purchase orders. The administrative team provided all the project information required by the chief financial officer with all the information required to manage and report on the project finances. Procurement in the delivery of infrastructure should be driven by line managers and not SCM units (buying departments).

It is of concern that the SIPDM and its associated policies which sought to engage built environment inputs in the procurement process and to manage the supply chain differently to general goods and services for consumption, with an appropriate skills set, has been strongly resisted by SCM units and the Office of the Chief Procurement Office in National Treasury. The FIDPM read together with the latest revisions the CIDB SFU has removed these provisions arising from stated concerns relating to:<sup>69</sup>

- ) *“ultimate accountability of the bid committees as prescribed by the National Treasury Regulations;”*
- ) *“impact of prescribed professional registration to the readiness and capacity of institutions;”* and
- ) *“one institutional Supply Chain Management System (SCM) with differentiated procurement processes as opposed to two SCM Systems.”*

What is also of particular concern is that the latest amendments to the CIDB SFU have narrowed down the applicability of this standard to construction contracts only. This means, for example, that the National Treasury General Conditions of Contract, a contract which is

---

<sup>aa</sup> See section 216 of the Constitution (Treasury Control)

not fit for purpose, will form the basis of the contract for the procurement of professional services and SCM officials will apply a “buyer” approach and mindset appropriate to purchasing transactions. This practice has resulted in project delays and inappropriately skilled or inappropriately qualified professional services providers being appointed which has resulted in major cost overruns on projects, inefficient infrastructure being delivered, an alarming increase in the failures of structural systems in buildings, the construction of inefficient facilities, the rise of costly disputes and the delivery of substandard poor quality infrastructure which requires excessive maintenance.

The SIPDM was intended to be implemented incrementally commencing with the establishment of the policy and the implementation of the control frameworks. Compliance with these requirements for audit purpose was 1 April 2017 and 1 July 2017 for those subject to the PFMA and MFMA respectively. Full implementation was required by 1 July 2018 and 1 July 2019 for those subject to the PFMA and MFMA, respectively. Instead of addressing any shortcomings or capacity constraints, National Treasury threw the “baby out with the bathwater”, by replacing it with FIDPM, which no longer differentiates between infrastructure / construction procurement and the procurement of general goods and services and rigid delivery management gates which are not always appropriate (see 4.2.5). This will inevitably lead to further increases in underspending, poor project outcomes and auditor general findings.

### **5.5.5 Public sector SCM skills set**

PARI (2019) argues that a basic cause of the problems with public procurement is the lack of appropriate capacity within procuring units. PARI regards capacity as not merely resources but includes also capabilities (appropriate skills and experience)).

The Cabinet Committee for Governance and Administration adopted recommendations in 2014 pertaining to SCM reforms and capacity development, noting the strategic importance of SCM in service delivery and in achieving South Africa’s developmental and transformational objectives. In order to position SCM as a strategic function, Cabinet approved a range of steps to reform the SCM system which includes amongst others, that SCM performance criteria be included in the performance agreements of Accounting Officers from 1 April 2015 and that Accounting Officers would conduct a capacity review of SCM staff and take remedial action where required.

The National Treasury Supply Chain Management (SCM) baseline study indicated the following:<sup>70</sup>

- 1) the majority of employed SCM staff are in the Logistics Management function with few staff employed in Contract Administration/Management and SCM Performance Management functions while the least officials are within transversal contracting and supply risk management functions;
- 2) 4% of staff have no matric qualification;
- 3) 2% of officials belong to a professional body or association with 50% of such officials belonging to the Chartered Institute of Procurement and Supply (CIPS);
- 4) 41% of staff have a national diploma, 19% a bachelor degree and 1% post graduate qualification; and
- 5) only 19% of staff has completed SCM related qualifications with the majority of courses under accounting and public management.

This base line study did not indicate that there were any registered built environment professionals within SCM units, despite the fact that procurement forms an integral part of the architectural, landscape architectural, engineering, construction and project management and quantity surveying professional practice in the delivery of infrastructure as indicated in Annexure A. Accordingly, the SCM cohort of officials indicated in the base line study do not have the necessary qualifications and contextual knowledge to manage the supply chain for infrastructure projects as indicated in Annexure D.

SCM officials in various organs of state have engaged in a “turf” war with built environment professionals and have found ways of excluding them from participating in procurement processes, particularly during the acquisition phase. In order to obtain technical inputs and reports during the implementation phase, project management offices have been established. These offices are frequently staffed by technicians with basic built environment qualifications, many of whom are not registered with a built environment council.

The South African Institution of Civil Engineering (SAICE) published a book in 2005 which examined the imbalances within the civil engineering profession which concluded that there is a critical shortage of experienced civil engineering professionals, particularly mid-career civil engineers responsible for production works.<sup>71</sup> This publication looked at the metric of population to registered engineers in countries where such data could be located which indicated that South Africa lagged far behind developed countries. This led to calls for an order of magnitude increase of the graduation of engineers from tertiary education in order to meet the demand and national development goals. This fuelled significant increases, particularly in engineering technicians (junior qualification) which were to a large extent absorbed by the public sector, typically with little or no mentorship from senior experienced engineers. The effectiveness of these employees in infrastructure delivery is questionable, both in terms of their qualifications and in-service training.

A 2012 SAICE publication used the same data but compared it to a different metric, namely GDP per registered engineer. This painted a very different picture and indicated that South Africa was not that far behind developed countries.<sup>72</sup> This paper pointed out that the median age for civil engineers (engineers and technologists) was 39 in 1971 which increased to 52 in 2005. Currently it is around 55 years. The mentoring of graduates towards professional registration and the number of mid-career professionals available for productive work therefore remains a challenge.

The HSRC (2019) study made a number of skills findings, namely:

- 1) there is a dearth of the skills needed to understand the systems, regulations and processes that had been put in place as well as the skills to be able to develop construction requirements, that is, identify and prioritise infrastructure projects, develop specifications, and accurately estimate quantities;
- 2) the dearth of skills results in projects being frequently under- or over-designed, and under- or over-costed; and
- 3) officials do not always have the necessary ability to properly assess the progress reports, quality assurance reports and site condition assessment reports submitted by the consultant / supervising engineer;

The HSRC report found that in addition to the skills deficit there is a lack of experience among those making key project decisions, which results in the wrong priorities being put in place. As a result, societal problems requiring technical solutions were addressed through non-technical responses. The HSRC report furthermore points out that the state has in recent years lost a



significant amount of its technical expertise and capacity as a result of unhealthy political dynamics and other factors. This has led to a hollowing out of capable professionals with integrity from many public institutions, which has undermined these institutions' ability and will to perform their essential tasks accurately and reliably. As a result, problems tend to arise throughout the project cycle.

Many organs of state no longer have experienced professionals capable of conceptualising and developing comprehensive briefings for outsourced professional services or having the expertise to make inputs into, evaluate and accept the outputs of such service providers including the inputs into procurement documents<sup>bb</sup>. The inevitable outcome is that projects are identified but not advanced. This may in part be the reason for the drastic drop in fee income for the consulting engineering profession indicated in Figure 7. If this is the case, it does not bode well for the future as this would indicate that the planning of the pipeline of future projects is being compromised by an inability of an inept SCM system to procure professional services.

### ***5.5.6 The impact of uncertainty in the regulation of public sector procurement***

PARI (2019) point out that the law and policy of public procurement in South Africa is contained in a complicated, fragmented, and inconsistent regulatory framework. There exists something like 22 pieces of primary legislation dealing with public procurement in a direct and significant way, with subordinate legislation bringing the total of distinct pieces of regulation to around 85.<sup>73</sup> This presents a challenge even for those experienced and expert in public procurement to determine which laws are applicable to which intended procurements. PARI concludes that the regime is overly fragmented and complex as well as exhibiting over-regulation and excessive rigidity in the framing and the interpretation of its rules.

The HSRC (2019) found that there is widespread confusion among even senior infrastructure procurement and SCM officials over what the law expects of them, arising from a plethora of legal prescripts that officials cannot keep track of, or clearly understand and implement. Several respondents indicated that infrastructure procurement needs to be treated differently from other less dynamic and fluid procurement processes, and that the draft FIDPM of November 2018 does not reflect such a recognition. This confusion about the legal requirements for infrastructure procurement is, coupled with a lack of capacity and experience in some procuring entities and often paralysing fear on the part of many officials regarding the potential legal and personal financial consequences if they get it wrong. This is perceived to arise from the Auditor General's new powers to hold officials individually responsible to reimburse the state for value lost or monies misspent. This has slowed down the pipeline of projects being put out to tender.<sup>74</sup> For example, a state owned entity, with a strong record of good governance has indicated that the time taken to get an invitation to tender to the market has increased dramatically from 3 months to 18 months. Part of these delays are attributable to increasingly strict audit procedures which have necessitated checking and rechecking in

---

<sup>bb</sup> A **procurement document** is a documentation used to initiate and / or conclude a contract. Procurement documents:

- ) require those engaged in procurement processes to submit particulars sufficient for the employer to evaluate their submissions;
- ) set out the criteria by which submissions 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 contracted party is paid for the goods, services or construction works.

Procurement documents are foundational to successful infrastructure project outcomes. The drafting of such documents requires a high level of skill and a thorough understanding of the subject matter.

order to ensure that errors are prevented and that the entity receives a highly prized clean audit from the Auditor General.

The fear of undertaking procurement is so great in certain organs of state that implementing agents are appointed merely to avoid procuring resources themselves.

The National Department of Public Works in their 2017/2018 Annual Report stated that only 18% of tenders were awarded within 56 working days of closure of tender. Lengthy tender periods make it extremely difficult to deliver value for money on infrastructure projects where there are interdependencies and interfaces between contracts associated with a project.

The recent introduction of the FIDPM (see 4.2.5) and the revised CIDB SFU (see 4.2.3) increases rather than reduces uncertainties. This is most likely to further reduce the ability of organs of state to spend their infrastructure budgets and to slow down delivery.

### ***5.5.7 The hampering of the effective, efficient and economic use of resources in the delivery of infrastructure***

#### **5.5.7.1 General**

The World Bank in their Procurement Regulations for IFP Borrowers (2016) define value for money as “the *effective, efficient, and economic use of resources*”. The UK National Audit Office (2010) and the SIPDM define value for money as “*the optimal use of resources to achieve intended outcomes*”. Put differently, value for money is the attainment of a most desirable or satisfactory outcome namely that the value proposition that was set for the project at the time that a decision was taken to invest in a project is as far as possible realised. It is about maximising actual outcomes and impacts and spending money well and wisely.<sup>75</sup>

The Constitution establishes basic values and principles governing public administration and requires National Legislation to ensure the promotion of these values. The Constitution specifically requires the efficient, economic and effective use of resources in an accountable manner.<sup>cc</sup> The Constitution also establishes the overarching principles for procurement namely that the system be fair, equitable, transparent, competitive and cost effective which, subject to national legislation, may provide for categories of preference and the protection or advancement of persons, or categories of persons, disadvantaged by unfair discrimination. At the same time, public procurement is an administrative action and as such needs to be lawful, reasonable and procedurally fair as dictated by the Bill of Rights (see 4.2.1 and E.1 of Annexure E).

Procurement in all its three phases (planning, acquisition and contract management) needs to support the efficient, economic and effective use of resources in an accountable manner. PARI (2019) point out that a lack of focus on strategic delivery is an underlying cause of problems in public procurement and argue that a lack of focus on strategic delivery cannot be attributed to the prevalence of corruption within South Africa’s public procurement system. Simply put the procurement system has not successfully engaged with issues of operational efficiency, value for money and effectiveness. This is due in part to over-regulation, a one-size fits all approach to procurement and an excessive rigidity in the framing and the interpretation of procurement rules which frustrates or stifles rather than supports effective delivery. This is also understandable given the low levels of skills available to the state (see 5.5.5) and the tendency within government to revert back to an administration paradigm (see 5.5.3 and 5.5.4).

---

<sup>cc</sup> See Section 195(1)(b) and (f) of the Constitution read together with Section 195(3) which requires legislation to support these principles.

The other reason for the lack of focus on issues of operational efficiency is the failure to recognise the differences between the procurement of general goods and services for consumption and the procurement of infrastructure projects. The main areas of differences between these two categories of procurement (see Annexure C) relate to:

- ) satisfying the business need;
- ) demand management;
- ) risks (effect of uncertainty on objectives);
- ) final contract price of contract;
- ) budget, contract price and purchase order value;
- ) conditions of contract;
- ) interdependencies and interfaces between contracts;
- ) procurement focus; and
- ) value for money (cost effectiveness)

The supply chain for infrastructure needs to be managed differently to the supply chain for general goods and services (see Annexure D). This is because the procurement of general goods and services usually involves the direct acquisition of products which are standard, well-defined and readily scoped and specified. The process normally involves the production of a specification which then forms the requisition. An immediate choice can be made in the terms of the cost of goods and services satisfying the specified requirements, which can be paid for upon delivery.

In contrast, it is usually not possible to directly acquire infrastructure in the way that general goods and services are acquired. Infrastructure supply chain management involves the procurement, programming and coordination of a network of suppliers of goods and services which are required to collectively deliver or alter an asset on a site. This network can include different companies specialising in design, manufacture, supply, assembly or construction.

There are many more risks to manage in infrastructure procurement, due to unforeseen events during the delivery of the project. In addition, infrastructure requirements are often established from a perspective of desired performance, rather than a well-defined specification. A range of different combinations of goods and services with differing characteristics such as initial cost, reliability, life-cycle costs, and operating costs may satisfy the performance requirements. A construction product is usually delivered and paid for incrementally over a period.

Risks are relatively low in the procurement of general goods and services as they are typically linked to the ability of the supplier / contractor to timeously supply the required goods or to provide the required service to the standard demanded by the purchaser or employer within the tendered amount. There is accordingly limited change management required in the performance of a contract. As a result, the National Treasury General Conditions of Contract makes no standard provisions for price adjustment for inflation and requires an amendment to the contract to be effected to vary or modify any of the terms of the contract including any variations in prices or changes to the prices or the time for delivery.

Risk taking is necessary in infrastructure projects (see Annexure C). Risk management 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. Good practice is to assign risk to the party best able to manage it or enter into collaborative arrangements which enable risk to be proactively managed by both parties. The parties to a contract face choices on how to deal with the inherent project risks. Risks can be transferred or accepted. Accordingly, 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 used to produce the works are 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 and to make the necessary adjustments. They also contain change management procedures to make adjustments to the prices and time for completion to compensate contractors and consultant for risk events which occur for which they are not responsible for.

Risks in infrastructure projects also needs to be mitigated through the procurement process. Good practice is to undertake a strategic and tactical approach to the procurement of resources to ensure that suitably qualified and experienced resources are procured to deliver the required project efficiently, effectively and economically.

#### **5.5.7.2 Oversight provided by National Treasury and the CIDB**

Public sector procurement expenditure in 2017 was around R960 billion or approximately 20% of GDP.<sup>76</sup> Accordingly, expenditure on infrastructure is between 20 and 25% of the total annual procurement expenditure. Given that there are significant differences between infrastructure procurement and the purchasing of goods and services for consumption (see Annexure C) there is strong case for differentiating legislative requirements for infrastructure procurement and delivery management i.e. the management of the supply chain for the delivery of infrastructure. Given the scale of infrastructure procurement and the complexities associated therewith, it is also not unreasonable to have those with a thorough understanding of infrastructure audit the procurement process and give advice or grant approval for any departures from regulations / instructions issued in terms of the PFMA or MFMA.

The CIDB issued the SFU under a very narrow legislative mandate (see E.7 of Annexure E) as it had to be fitted in under the PFMA and MFMA SCM regulations. The CIDB had no mandate to grant approval for any departures from these regulations or for that matter from the SFU. The CIDB has staff who are able to respond to basic questions raised regarding the SFU but not much more than this. The institutional knowledge relating to the earlier versions of the SFU and associated practice guides is no longer within the CIDB as evidenced by an inability to update the guidance provided on their website to align with the changes made in the 2019 edition of the SFU let alone the 2015 edition.

The SIPDM was crafted and structured to fit within the PFMA and MFMA SCM regulations. It has enjoyed widespread support within the professions as evidenced by SAICE's and CESA's support in the rollout and accreditation process (see 4.2.3). The HSRC (2019) research notes that National Treasury *"is now reviewing the SIPDM – and the outcomes so far (November 2018 draft) have been shocking: many of the controls and transparency measures had been removed."* This indicates a lack of consultation with or the avoidance of the inputs of experienced built environment practitioners familiar with the delivery environment in the formulation of the document.

National Treasury post the publication of the SIPDM issued Instruction No 3 of 2016/17 and the Preferential Procurement Regulations. Aspects of this instruction and these Regulations, depending upon how they are interpreted, are incompatible with or conflict with provisions of the SIPDM (see 5.5.7.3 and 5.5.7.4). The SIPDM was also issued at a time when instructions

issued in terms of the PFMA were being made applicable to the major public entities and national and provincial business enterprises (i.e. Schedule 2, 3B and 3D public entities) (see E2.3 of Annexure E). (It should be noted in this regard that PFMA SCM regulations are not applicable to schedule 2, 3B and 3D public entities). The OCPO was responsible for providing advice, direction and approving departures without having any in-house registered built environment professional expertise with infrastructure procurement and delivery management experience. Accordingly, advice and decisions were based on the approach to purchasing general goods and services including that embedded in the National Treasury General Conditions of Contract. Long delays and answers to questions ensued. Approvals for deviations were frequently denied as this was the “safest” response to give.

The HSRC research also provides some useful insights into the auditing process for adherence to the provisions of the SIPDM – *“the AG comes from too much of a purist financial perspective, which does not take into account the real-life vagaries of infrastructure development – the uncertainties that might affect costs”*. Indeed, the AG process *“should not involve a thin black line.”* Also, typically, the AG approach is a tick-box one – which means that officials respond to the ticks rather than the intent behind them. The kinds of questions that should be asked are not *“Have you met the [substantive] requirements?”* but *“Have you implemented the system?” “How have you implemented the system?” “What problems have you encountered in implementing the system?” etc.”*

### 5.5.7.3 Evaluation criteria

The Common Law of Business Balance, which is widely attributed to John Ruskin (1819-1900), states that *“There is hardly anything in the world that someone cannot make a little worse and sell a little cheaper, and the people who consider price alone are that person’s lawful prey. It’s unwise to pay too much, but it’s worse to pay too little. When you pay too much, you lose a little money — that is all. When you pay too little, you sometimes lose everything, because the thing you bought was incapable of doing the thing it was bought to do.”* This Common Law of Business Balance is increasing being recognised internationally in the evaluation and awarding of infrastructure contracts. Constructing Excellence in the UK has issued a health warning against the use of lowest price tendering as such practices may seriously damage financial health and reputation and may have undesirable and unexpected side effects.<sup>77</sup> The British Standards Institute in explaining a definition of value for money states that *“this means that awarding contracts on the basis of lowest price tendered for construction works might not provide the best value for money”*<sup>78</sup> The World Bank’s new procurement regulations state that *“value for Money has been introduced as a core procurement principle in all procurements financed by the World Bank. This means a shift in focus from the lowest evaluated compliant bid to bids that provide the best overall value for money, taking into account quality, cost, and other factors as needed.”*<sup>79</sup> The Infrastructure Client Group argue that lowest cost does not always represent value for money as the process of designing infrastructure, obtaining tenders, administering contracts and dealing with claims all incur transaction costs, management cost and overheads down the supply chain.<sup>80</sup> The United Nations point out that *“selecting offers which present the optimum combination of factors such as quality, life-cycle costs and other parameters which can include social, environmental or other strategic objectives which meet the end-user needs. Best value does not necessarily mean the lowest initial price option, but rather represents the best return on the investment, taking into consideration the evaluation criteria in the specified solicitation documents.”*<sup>81</sup>

BS 8534:2011 suggests that *“mechanisms specific to each contract should be developed to evaluate the quality and price (whole-life cost) components of each bid in a fair, transparent and accountable manner. Any mechanism of this type should be used to help clients come to a reasoned judgement rather than provide a prescriptive mechanistic approach for its own sake.”* ISO 10845 makes provision for the evaluation of financial offer, preference and quality

in the evaluation of tender offers as did the CIDB SFU up to 2015. This it achieved by applying a preference points system in accordance with the provisions of the PPPFA and added points for quality as other objective criteria as provided for in the Act. In terms of this approach the tenderer with the most points for preference, financial offer and quality is considered to be the most competitive. These provisions were included in the SIPDM but are not included in the versions of the CIDB SFU from 2015 and onwards.

The Preferential Procurement Regulations included the concept of functionality in the 2001 Regulations. It allowed price to be split into price and functionality. The Courts declared this invalid as price and functionality were two different concepts. The 2011 Preferential Procurement Regulations and 2017 Regulations included functionality as a precursor to applying the preference points system. In terms of this approach tenderers had to pass a threshold functionality score before they could be scored in terms of price and preference only. This means that quality (beyond meeting a minimum functionality requirement) according to this interpretation of the PPPFA cannot be taken into account in the award of tenders. This is contrary to the Constitutional requirement to promote value for money. It is also contrary to the NDP goal of professionalising the public service (see 2.5). Consideration of quality has been ruled out because it inevitably involves an element of professional judgement, and there has been a return to, or a re-emphasis of, the bureaucratic box-ticking approach to procurement which views professional judgement as something to be ruled out.

A Judge in a reportable case asserted that *“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 of commodity which is fit for purpose. It is based on the objectively measurable 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”*<sup>82</sup> This finding resonates with the Section 195 Constitutional imperative to promote value for money through national legislation.

#### **5.7.5.4 Management of contingencies**

The objective of the SCM Treasury Instruction Note 3 of 2016/17 is to provide guidance on measures to prevent and combat abuse in the Supply Chain Management System. In order to curb the expansion or variation of contracts, this instruction stipulated that contracts may not be varied by more than 20% or R 20 million (including VAT) from the original contract value for construction related goods, works and or services and stated that any deviation in excess of the prescribed thresholds will only be allowed in exceptional cases subject to prior written approval from the relevant treasury.

This instruction is confusing as it does not define what precisely a variation or expansion is. The National Treasury General Conditions of Contract (GCC), which is suitable for use in the purchasing of general goods and services, requires that no variation in or modification of the terms of the contract is to be made except by written amendment signed by the parties concerned. Prices charged by the supplier for goods delivered and services performed under this contract are not varied from the prices quoted by the supplier in his bid, with the exception of any price adjustments authorised in Special Conditions of Contract or in the purchaser's request for bid validity extension, as the case may be. The abuse of the system in terms of the National Treasury GCC occurs when no provision is made in the contract for increasing prices and the prices are increased by more than a margin e.g. the contract is increased in

quantum or expanded to cover items which did not form part of the original scope in order to avoid embarking on a fresh procurement process.

The SIPDM requires that a suitable form of contract be selected from a range of standard forms of contracts published by the CIDB, Joint Building Contracts Committee (JBCC), International Federation of Consulting Engineers (FIDIC), the Institution of Civil Engineers and the South African Institution of Civil Engineering. These forms of contract enable different risk allocations to be made between the parties to a contract.

The major difference between infrastructure contracts and the National Treasury GCC is that there is very little need or no need to draft bespoke special conditions of contract for infrastructure contracts as the standard reasons for price adjustment and the administrative procedures to effect such changes are embedded within the standard contract. Standard contract adjustments, depending upon the nature of the contract and the contracting and pricing strategy that is adopted, can include:

- ) price adjustment for inflation;
- ) the impact on cost of changes in legislation;
- ) the impact on cost of foreign currency fluctuations;
- ) the cost of risk events that materialise in the contract for which the contractor is not at risk;
- ) changes in scope of contract to enhance quality, performance or to or address shortcomings which can impair performance;
- ) the differences between final and estimated quantities;
- ) inclusion of items which ought to have been included in the bill of quantities but for whatever reason were omitted;
- ) correction of assumptions made regarding items which were identified but could not be fully priced at the time of tender e.g. specialist subcontracts; and
- ) the application of a pain and gain mechanism in target contracts.

The application of the aforementioned terms and conditions of a contract, although changing the total of the prices and the time for completion at the start of a contract, does not constitute an amendment to the contract. Amounts due in terms of the contract nevertheless need to be funded, and the consequences of late delivery need to be accommodated. As is the case with the National Treasury GCC, an amendment to the contract is required to increase the prices for reasons not provided for in the contract e.g. change in or expansion of the scope of the contract. Such an amendment is required to be in writing.

Accordingly, in the procurement of general goods and services under the National Treasury GCC where there is no price adjustment for inflation, the budget, the contract price and the purchase order can have the same value. The same is not true in infrastructure contracts as the risks are shared between the parties in order to reduce the outturn cost of the contract. If all the risks are passed onto the contractor, the state will pay for risks events that are priced but do not materialise during the execution of the contract. Savings are made by the state by accepting certain risks and funding such risks through budget allowances (contingencies).

Contracts are set up so that the party to the contract which is best able to manage the risks does so. This enables the cost of infrastructure to be reduced.

The SIPDM prohibited the inclusion of contingencies and allowance for contract price adjustments in the contract amounts and established a stepped approach to access the contingencies provided for in a budget through control gates. Contingencies should be part of project budgets and not part of contract amounts. Approvals at an increasing level of seniority are required to authorise changes in prices and changes in time for completion. This encourages the finding of alternative ways of dealing with the drivers of changes in cost and time. The SIPDM also made provision for the reporting of cost increase, excluding price adjustment for inflation, which exceeded 20% in the annual reports.

SCM units, National Treasury and the Auditor General commonly interpret Instruction Note 3 to mean that no increases above the 20% of the starting contract price are permitted. They treat infrastructure contracts in the same way as that for general goods and services. This has led to several approaches to “get round” this requirement all of which increase the cost of infrastructure. For example, contingencies are included in the contract value. This simply inflates the contract by the quantum of the contingency as those responsible for delivering the project consider the contingency amount to be authorised expenditure and spend it. Alternatively, professional fees are contracted on a percentage of construction cost basis to avoid the application of this instruction. These approaches provide no incentive to reduce costs.

The application of Instruction Note 3 has had a very negative impact on the construction industry. Projects have been delayed, particularly large projects which were started several years ago and for whatever reasons were suspended or delayed for a period of time. These delays and suspensions resulted in increases in costs due to inflation. Consultants who undertook the initial work could not continue as their fee amounts exceeded the 20% or R 20 m including VAT limit. New tender processes were initiated to secure new consultants to take over the design work. Alternatively, new approaches to delivering infrastructure were tried e.g. the contractor was assigned responsibilities for completing the works. This has contributed in part to the recent under expenditure of state owned enterprises. It has also resulted in delays in payment for amounts due in terms of the contract (see 5.7), litigation by contractors to obtain what is due to them in terms of the contract and the transferring of excessive risk to contractors. It has also contributed to the demise of large contractors (see 5.9) and caused unnecessary increases in project costs due to delays and disruptions in completing projects.

The application of SCM Treasury Instruction Note 3 of 2016/17 to infrastructure projects is a symptom of the resistance in National Treasury to treating infrastructure procurement differently to the procurement of general goods and services. While changes to contracted prices are exceptions in the procurement of general goods and services, such changes are the norm rather than the exception in construction projects, due to the range of risks involved (see Annexure C). These changes need to be managed through the use of appropriate contract documentation and a stepped approach to accessing contingencies to fund the state's risk as provided for in the SIPDM.

#### **5.5.7.5 Use of procurement as an instrument of policy**

The Preferential Procurement Policy Framework Act (PPPFA) requires an organ of state to determine its preferential procurement policy and implement it in accordance with a prescribed preference points system. The PPPFA Regulations, contrary to the provisions of the Act, have since 2001 prescribed the specific goals which an organ of state may apply with increasing rigidity over time and in so doing have removed the ability of an organ of state to set its own goals. The 2011 and 2017 Regulations have confined the goals to those relating to B-BBEE contribution levels and prescribe the points allocation. The delivery of construction projects



involves the manufacturing of a product on a site. Local communities expect and demand participation in projects given that there are opportunities for large numbers of skilled and semi-skilled persons on a site. Depending upon the nature of the works, there are many subcontracting opportunities e.g. in building projects there are requirements for several trades and local materials. Local businesses also have legitimate expectations and demands. The awarding of points for preference to main contractors for their B-BBEE level earned in another location do not assist these expectations.

Clients delivering infrastructure projects need to deal with the risks posed by not accommodating the demands of local communities. Prior to the issuing of the Preferential Procurement Regulations, the construction industry linked preferences to participation goals (percentage of contract price executed by target groups) linked to targeted labour and enterprises. Points were awarded in proportion to the tendered participation goals i.e. tenderers competed for work on the basis of price and what they could offer to the community. Credit towards participation goals were denied if written subcontracts were not entered or if such subcontracts contained unacceptable terms such as a right of set off not provided for in law, no recourse to independent inexpensive adjudication in the event of a dispute arising, payment procedures based on a pay-when-paid system etc.<sup>dd</sup> The outcomes of this approach are well documented.<sup>83</sup> This very effective approach has been side-lined and relegated to the inclusion of forms in a tender document and the ticking of boxes. Empowerment needs to be driven intelligently and strategically. This is yet another example of where purpose-written Regulations for infrastructure could significantly improve legislated outcomes.

The Preferential Procurement Regulations 2017 introduce a number of challenges for infrastructure projects as they are geared more towards the procurement of general goods and services. The Regulations for example do not define the term subcontracting which has a particular meaning in infrastructure projects. The common usage of the term is to employ an entity to do work. This on a construction contract includes the provision of materials and equipment and does not necessarily mean subcontracting another entity to execute a discrete portion of the work. Limitations on the amount of work which may be subcontracted to others to avoid fronting and requirements for subcontracting a minimum amount of work to smaller contractor can be a challenge, particularly where the price for the award of a contract needs to be market related and the contracts are large. The term where feasible is not defined. The standard bidding forms which are used for determining preferences require the name of the subcontractor to be included at tender stage, suggesting that the subcontract work be subcontracted to a single subcontractor. Accordingly, the Regulations raise expectations for a minimum quantity of work to be subcontracted to target groups which can lead to delays and disruptions in implementing projects as expectations need to be managed (see 5.6)

#### 5.5.7.6 Local content

The local production and content requirements of the Preferential Procurement Regulations 2017 are described in 4.4. These Regulations have been specifically drafted for the procurement of goods. All the Standard Bidding Documents have been prepared on the basis that there is a price list for the specific line items for goods which are the subject of each instruction i.e. a simple transaction. They have not been designed for construction works where prices are for elements, components or activities that form part of the works where the prices are all inclusive for their construction or installation including materials, plant, labour, equipment, supervision, finance charges, site overheads, company overheads, profit etc. and only some of material and plant incorporated in the works are subject to local production and content requirements.

---

<sup>dd</sup> This system of procurement became known as **targeted procurement**. Several South African national standards were developed to implement a number of targeted procurement procedures. These standards formed the basis of the ISO 10845 standards published by the International Organisation for Standardisation.

This requires a very different approach to measure, quantify and verify local production and content post the award of the contract. A one-size-fits-all approach is inappropriate and the reason for poor local content outcomes. There are also many more materials that could be included in these designations which can significantly boost the local South African industry. This is yet another example of where purpose written Regulations for infrastructure could significantly improve legislated outcomes.

#### **5.5.7.7 Use of the negotiation procedure**

Instruction Note 3 of 2016/17 issued in terms of the PFMA stipulates that the only deviation from inviting competitive bids is in the case of emergencies or where only one supplier possesses the unique and singularly available capacity to meet the requirements of the institution. The SIPDM, taking into account the specifics of infrastructure projects, permitted contracts to be negotiated under certain systems within an organisational governance and annual reporting system. In addition, it permitted the use of the negotiated procedure for services or works which are largely identical to work previously executed by a contractor or professional service provider and where it is not in the interest of the public or the organ of state to solicit other tender offers. It also allowed for negotiated contracts for professional service contracts below a threshold value which can be based on time and proven cost. The latter provision gave organs of state rapid access to professional inputs to provide strategic advice etc. to enable projects to progress and to ensure the necessary quality checks when procuring infrastructure.

In the SIPS 14 new universities project the breakdown of expenditure in the first phase was 94% competitive tender and 6% negotiated contracts (see 3.5). Most of the expenditure incurred through negotiated contracts related to the appointment of the client delivery management team with the correct skills set to efficiently and effectively perform the client function. The savings to the project brought about by this team is estimated to be in the region of 30 to 60%, depending on the proficiency of those performing the client function. Accordingly, the use of the negotiated procedure in this instance was not only cost-effective but also yielded value for money. Under Instruction Note 3 this would not have been possible, given the tight timelines and the low likelihood of obtaining a favourable response or a response within a reasonable time period.

### **5.6 Local participation empowerment challenges**

The Preferential Procurement Regulations 2017, which requires where feasible on contracts having a value of R30 million or more, that at least 30% of the contract value on state construction contracts to be allocated to certain designated groups, including black-owned SMEs (small and medium-sized enterprises), has had severe unintended consequences. It is not always practical or feasible to break work down on large civil engineer construction contracts into packages for SMEs. The lack of definition and guidance on this topic is problematic.

The 30% requirement has given rise to the emergence of business forums (sometimes connected to, aligned with or protected by political leaders) that use 'mafia'-style tactics to forcibly secure participation in infrastructure construction projects, based on this 30% 'local participation' requirement. These groupings use violence or threats of violence to secure some form of participation in a project to the value of at least 30% without necessarily being able or willing to contribute substantive value in the form of skills or materials towards delivery of the project.

Many of the gangs are armed and threatening, demanding that new businesses employ locals rather than trained personnel from outside the area. They started off invading construction sites in KwaZulu-Natal (KZN). Virtually every major construction site in KZN has reportedly been affected by these forums or similar structures. It then spread to Gauteng and has now gone countrywide. What has made the situation worse is that managers of the construction sites that have been targeted often end up paying off the business forums to make them go away and to prevent the project from being disrupted, or hiring some of their members, often at extortionate rates and under duress, which only serves to encourage this kind of extortion.<sup>84</sup>

Work on the R1.63 billion Mtentu bridge in the Eastern Cape, a bridge which will be one of the longest main span balanced cantilever bridges in the world when completed (220m high with a span of 1.1km), began in November 2017 and it was originally expected to be completed in 2020/21, with construction lasting for a period of 40 months. The contractor, a joint venture between a South African company and a specialist Europe-based company, terminated its contract with the SA National Roads Agency Limited (Sanral) to build the bridge in February 2019, citing that it had not been on site since 22<sup>nd</sup> October 2018 due to threats of violence and high levels of community unrest and protest action related to demands made against Sanral. Even without these disruptions, this was a demanding project which required compliance with the most stringent international engineering and safety standards.<sup>85</sup>

The Association of South African Quantity Surveyors (ASAQS) has called for a major intervention to protect infrastructure projects, investor confidence, and the safety of professionals in the built environment who are working on project sites.<sup>86</sup> The CEO of SAFCEC notes that construction projects worth around R27.5-billion<sup>87</sup> have been violently disrupted or halted in South Africa in recent times. SAFCEC believes that the unrest often witnessed at construction sites is driven, to a degree, by the desire of the surrounding communities to become involved in and gain economically from projects in their area. These expectations are genuine and cannot be dismissed and have to be met. On the other hand, violence is driven by mafia-style gangs which are often linked to local, provincial and national political figures.<sup>88</sup> SAFCEC wrote a letter to the President in March 2019 pleading for government intervention.<sup>89</sup>

Currently there are very few public sector projects in parts of the country that are not disrupted by these demands. Delays in starting projects and claims for additional time and costs associated with such activity are becoming the order of the day.

## **5.7 Payment practices**

Government departments and entities currently owe construction and building industry contractors about R5.5 billion. Recent business failures and job losses in the sector have been blamed on the non-payment or late payment of contractors. The Executive Director of the Master Builders South Africa (MBSA) is of the view that this practice by government departments and entities is the number one challenge facing the industry and reports that there has been no improvement in this area year-on-year. He points out that in the majority of cases the work has been completed but for one or other reason the government department or entity is unable to pay and attributes this to poor budgeting, a lack of proper financial management in the department or government entity, corruption and the lack of consequence management.

The Construction Industry Development Board (CIDB) has reported that 60% of payments to contractors are delayed for longer than 30 days after invoicing.<sup>90</sup> CESA in their Bi-Annual Economic and Capacity Survey (July – December 2018) reported that large, medium and small consulting firms indicated that 42%, 20.4% and 15.4% of their income is still outstanding. CESA report that late payment, which currently averages 39.9%, has become a serious

constraint as the overall industry is in such a dire state, with many stakeholders struggling to meet their financial obligations.

Some government bodies manage to consistently pay their suppliers within 30 days. The regulatory framework therefore cannot be the cause of late payments. The main cause is a lack of basic standardised administrative processes in government bodies to manage payments. In addition, as many as a third of municipalities are on the verge of bankruptcy and they regularly deal with this by delaying payments to suppliers – effectively borrowing from suppliers. There is also another reason for some of the delayed payment by departments and state owned enterprises, namely PFMA SCM Treasury Instruction note 3 of 2016/17 which requires approval for deviations from the relevant treasury to exceed a 20% threshold (see 4.2.4 and 5.7.5.4) for contract variations.

## 5.8 Political interference

The HSRC (2019) reports that there is a climate of fear in organisations due to political meddling in what should be professional, technical decision-making. *“Legislation with good intentions, such as that relating to broad-based black economic empowerment is manipulated for political, partisan or personal interests. Officials are now afraid to do or say anything, or to commit themselves on paper, lest it be twisted and manipulated, and used against them later on.”* The report also cites the view of a state owned enterprise which raised serious concerns over poor governance. *“There is too much power in the hands of just a few senior people and they’re susceptible to political influence. There is an imbalance in power between internal executives [professionals] and external (politically-connected) executives. The immature executives in our organisation, they are not able to withstand the political pressure from the political executive.”*

The professionalisation of the public service can counter this interference. However, little progress has been made in this regard to date, particularly in so far as infrastructure projects are concerned.

## 5.9 Demise of the large contractors

The CEO of SAFCEC has recently asserted that South Africa can ill afford to lose any more depth in its construction industry, after a number of the large contractors have filed for business rescue as lost capacity takes years to rebuild. The construction industry is a cyclical industry and is prone to booms and downturns, the last boom being in 2010 around the time of the 2010 world cup (see Figure 1). During this boom, the large construction companies increased their overheads and became bloated. When the market shrunk, they were faced with the choice of either shrinking their overheads through retrenchments or winning contracts at all costs to maintain their overhead percentages.<sup>91</sup> Some companies took on work outside South Africa when their home base operations were weak. Any loss-making contract entered into put their finances under strain, particularly when operating under very tight profit margins.<sup>ee</sup>

The problems in the industry have been largely attributed to a combination of a lack of large government infrastructure contracts because of government’s strained financial resources and problematic and loss-making contracts.<sup>92</sup> Industry bodies have also cited the late payment

---

<sup>ee</sup> Construction companies work with low profit margins and overheads. The International Federation of Consulting Engineers’ FIDIC Conditions of Contract for Construction for Building and Engineering Works Designed by the Employer (Redbook) 2017, for example, states that the applicable percentage for profit for payment on a Cost plus Profit basis if not otherwise stated is five percent. Profit and overheads of the larger construction companies is typically between 5 and 8%.

issue as a cause for many businesses going into business rescue and, in some instances, filing for final liquidation.<sup>93</sup>

The HSRC (2019) has identified in their research the negative effect of over-regulation, namely the shifting of excessive contractual risk onto the contractor. Treasury Instruction No 3 (see 5.7.5.4) requires Treasury permission for contract values to be increased by more than 20% or R 20 m including VAT. Prior to the introduction of this instruction, certain risks used to be shared between the contractor and the employer. In order to limit the outturn costs of a contract, to remain within the 20% or R20 m including VAT limit, and to avoid any exceedance which is frequently flagged as wasteful expenditure and is regarded as somebody not having done their job properly, organs of state are shifting all risks to contractors. For example, a particular state owned entity used to require a contractor to include in their tender price a cost of 20 days of inclement weather per year, while the cost of any additional day thereafter would be carried by the entity. Since about 18 months ago, this entity has required that the contractor cover the costs of any delays as a result of the 20 days of rain. The pushing of risks onto the contractor had come about, it was speculated, because of cost overruns (which are common in construction contracts due to unforeseen risks) and the resulting requirement that the entity seeks Treasury's approval, which was usually refused, and because of the Auditor General's stricter definition of "wasteful" expenditure. This transfer of risk has also resulted in marginal contracts becoming loss making contracts and has further stressed the industry.

The rebuilding of the construction industry when work picks up is likely to be very slow for a number of reasons. In the past, contractors have had confidence that there would be "light at the end of the tunnel" and as such would retain their core staff and weather the storm. There is currently a lack of confidence due to a number of factors including government's inability to reign in the "construction mafia," unpredictable and harmful procurement practices, the deterioration of government finances, deteriorating state owned enterprise balance sheets, decreasing public sector investment in infrastructure, and the ever diminishing pool of experienced professional engineers and other registered built environment professionals.

Organs of state will have difficulty in attracting South African contractors to undertake large contracts as the larger contractors are unlikely to raise the required amounts for the performance bonds. Innovative approaches will need to be taken to manage risk so that medium to large South African contractors can undertake the work successfully. This will require approaches such as framework agreements, target contracts, collaborative working etc, all of which will be very difficult if not possible to implement in the current legislative environment informed by the OCPO's understanding of risk mitigation and construction contracts and interpretation of legislation.

## **5.10 Attracting private investments**

PPPs (see E.2.4 in Annexure E) have attracted some private sector investment in public infrastructure e.g. toll roads, government office accommodation, prisons, and more recently, renewable energy. However, to date, PPPs have not resulted in sufficient scale of private sector investment in public infrastructure in South Africa (less than 2% of investment in public infrastructure has been through PPPs (see Table 1)). Given the country's fiscal constraints, and given that there is no shortage of money or management capacity in the private sector, this is an anomaly. The problem is a dearth of properly prepared and bankable projects, as well as a lack of transparent, efficient and effective processes for bringing projects to the market (with the exception of the IPP Office (see 3.6)).

There is huge potential for increasing private sector investment in public infrastructure in South Africa. For example, there has been very little private sector participation in the financing and

management of municipal water supply and sanitation infrastructure to date (one of the focuses for infrastructure in the NDP), despite strong motivations for such participation, viz:

- 1) the need for improvements in municipal water supply and sanitation infrastructure is very large, and hence a large programme could be put in place;
- 2) many municipalities are struggling to adequately finance and to manage their water and sanitation infrastructure, which is often in a very poor condition, with severe consequences for service delivery, public health and industry;
- 3) there are sustainable revenues associated with the supply of water, the reduction of water losses, the installation of bulk water and sanitation infrastructure, the treatment of waste-water, and from the sale of treated waste-water; and
- 4) many municipalities are struggling to put in the place the required capacity and capability to manage their water supply and sanitation infrastructure systems, and there is an urgent need to mobilise private sector finance, efficiencies, skills and resources in this regard.

In addition, many of the infrastructure PPPs that have been entered into (such as PPPs for government offices) rely on the fiscus for their income streams, are under-written by government guarantees, and do not transfer much real risk to the private sector. There needs to be a greater focus on projects which do not further impair government's balance sheet and which do not rely on the fiscus for their income streams.

There are a number of possible reasons for the disappointing level of private sector investment in public infrastructure. The current PPP regulatory framework is generally sound but is lengthy and requires tenderers to make a significant investment of resources into the process. It is also demand-driven, i.e. it relies on government bodies to propose PPP projects. There is a need for a review of this regulatory framework and the adoption of a more supply-driven approach, which would involve the identification of infrastructure sectors in which there is potential for private sector investment and the active facilitation of private sector involvement in these sectors. The current framework is also based on a project approach, and there has been a lack of development of programmes (consisting of a number of underlying projects) for private sector investment. The project preparation costs for privately-financed public infrastructure projects are prohibitive for individual smaller projects. In addition, there is generally an absence of capacity to manage PPP processes in government bodies. There is a widely-held view amongst government officials that PPPs are too complex, take too long, and are too expensive.

The successful Renewable Energy Independent Power Producers Programme (REIPP) (see 3.6) provides an example of a different approach to PPP's, with some of the characteristics of an alternative approach as described above. For the REIPP, the national government identified renewable energy as an infrastructure sector suitable for private sector investment, and a national initiative was put in place to facilitate a programme of private sector investment in renewable energy projects. In other words, it was a supply-driven approach. Most of the preparatory work was carried out at national level for the programme as a whole (there was not a separate PPP feasibility process for each individual renewable energy project) and there was a national procurement process for the programme as a whole. The IPP Office was able to take this approach to the REIPP as it obtained an exemption from the PPP regulations.

## **6 Gaps, shortcomings and course corrections**

### **6.1 Observations**

The current levels of public sector expenditure are significantly lower than the NDP target of 10 percent of gross domestic product (GDP) for 2030, financed through tariffs, public-private partnerships, taxes and loans, focussing on transport, energy and water is for a number of reasons not being achieved. Currently public infrastructure investment is just under half of this value.

The demand for infrastructure relating to energy, water and transport remains. Load shedding due to capacity constraints, poor maintenance of plant, and poor delivery of new power stations has harmed economic growth. South Africa is a water scarce country. The drier cycles associated with climate change has put pressure on water resources. This is compounded by poor maintenance of water infrastructure (see 3.4). As a result, towns have run out of water and Cape Town has come close to running dry in the years following the publication of the NDP. Sanitation facilities are in a very poor condition. Provincial, metropolitan and municipal gravel roads are unfit for purpose while paved provincial and municipal roads are at risk of failure (see Table 6). All of this will delay rather than accelerate the realisation of the aim of the NDP to eliminate poverty and reduce inequality by 2030.

The identified crisis looming within the public sector in the generational reproduction of professional built environment expertise to engage in long-term strategic planning to develop the business cases for projects, to plan, specify, procure and oversee the delivery of infrastructure associated with delivery management processes within the infrastructure project life cycle (see 5.1) and to adequately maintain infrastructure due to the ageing cohorts continuing to leave the system remains unaddressed. The situation has worsened since the publication of the NDP due to inappropriate SCM practices and initiatives which marginalise built environment expertise and make a career in the public sector very unattractive to such professionals. This is of great concern as the lack of in-house technical expertise, particularly in provincial and local government, results in an inability to ensure that the work is done to an adequate or appropriate standard or to maintain the infrastructure once the work has been completed.

Good progress has been made to address the spatial divides in the planning of infrastructure that exacerbate social inequality and economic inefficiencies. The Spatial Planning and Land Use Management Act of 2013 provides the framework for spatial planning and land use management. The Department of Cooperative Governance and Traditional Affairs' Integrated Urban Development Framework provides government's policy position to guide the future growth and management of urban areas. However, these legislative and policy frameworks require municipalities to have the necessary technical capacity to make decisions.

Four of the six key proposals to grow the construction sector outlined in 2.4 have had little impact on growing the construction industry. Government still has an inability to spend its infrastructure budgets. No financial Centre for Africa has been established to support the civil construction and supplier industries. The cyclical volatility of the industry remains. The uptake on Innovative Building Technologies has been a fraction of what was envisaged. Some support through the DTI's local content and production programme has been given to industries such as building supplies and steel. However, due to poor implementation practices which fail to take into account the specificities and workings of the construction industry, the impact has fallen far short of what it potentially could be. The promotion of more energy efficient buildings and the use of techniques to reduce demand has had good outcomes. This has in the main been a result of society embracing the issues of sustainability and the

introduction of smart technologies which enable demand to be managed in buildings and realise cost savings.

Greater efficiency in government expenditure on infrastructure has not been achieved. The focus on procedural compliance in infrastructure procurement, which places an excessive burden on weak support functions rather than on value for money, has increased rather than decreased since the publication of the NDP. The overly bureaucratised process with the emphasis on compliance by box-ticking, which makes the system costly, burdensome, ineffective and prone to fraud, has become entrenched as opposed to being dismantled.

Supply-chain management staff continue to displace the involvement of technical and other specialists rather than support them. Generally professional input is not seen as being essential for infrastructure procurement, to mitigate risks relating to long-term lock-ins which require quality decision making. Professional opinion and advice are often questioned and negated when it runs contrary to their perceptions. As a result, improving the quality of spending through better planning, sound procurement systems and greater competition in the economy and robust contracts remains elusive.

The economic rent paid through the procurement system in infrastructure projects to reduce racial patterns of ownership of wealth and income has through poor and inappropriate procurement practices increased rather than reduced and has reinforced higher costs. Mandatory targets for socio economic development and local procurement have been introduced but need refinement in the infrastructure sector in order to improve outcomes (see 5.5.7.5).

National Treasury's SIPDM (see 4.2.3) embraced the five focus areas which the NDP identified in designing a procurement system that is better able to deliver value for money, while minimising the scope for corruption (see 2.5). However, its effective implementation has not been followed through following a change in the leadership of National Treasury.

The foreword to the Toolkit 2004 (see 4.1.2) made reference to a strategy document<sup>94</sup> which was *"included in the toolkit so that stakeholders can understand the context as to why the Toolkit has been developed and how it fits within an overall strategy to improve the delivery of infrastructure by the public sector."* This 2003 document expressed the nature of the problem that was being addressed as *". . . The public sector procurement and delivery system for construction projects and services in South Africa is a remnant of our colonial past and is little changed from that introduced almost 100 years ago. Isolated from its origins and the continuous development brought about through modernisation, our system has delivered increasing levels of adversity and antagonism in the delivery of capital projects. Budget and schedule overruns, disputes and litigation, failures and liquidations, low margins and financial loss, are common features of the construction industry today."*

*Previous delivery systems and institutions were administrative in nature and rule driven in practice. As such, these systems effectively disabled the potential to exercise management prerogative and innovation.*

*The current procurement environment is not conducive to effective and efficient infrastructure provision. Current regulation tends to shift responsibility for decision making from managers with specialist knowledge to central Tender Boards with limited expertise to evaluate complex construction delivery projects.*

*Those responsible for delivery have limited control over the procurement cycle, over the methodology and decision making process. Thus, their ability to perform, and Government's ability to deliver, is severely hamstrung."*



The nature of the problem being dealt with in 2019 is fundamentally the same as that expressed in 2003, except that the Tender Boards have been replaced with a rule based SCM system administered by National Treasury's Office of the Chief Procurement Officer with limited expertise to evaluate complex construction delivery projects, despite the introduction of the implementation of government's Infrastructure Delivery Management System (see 4.1.1 and 4.1.2). Clearly a fundamental overhaul of the SCM system is required if expenditure on infrastructure is going to have the intended impact and to align with the Constitutional imperatives for the efficient, effective and economic use of resources in an accountable manner (see Section 195 of the Constitution).

## **6.2 Course correction**

### **6.2.1 Introduction**

The NDP's identified need for an increase in gross fixed capital formation to realise a sustained impact on growth and household services remains valid. However, the target for public infrastructure investment at 10 percent of gross domestic product (GDP) has been elusive and current expenditure is less than half of this. Given the current fiscal constraints it is most likely in the short to medium term that such a target will remain elusive for some years to come. An increase in the quality and quantum of public infrastructure is nevertheless required to enable the economy to grow faster and become more productive and in so doing promote inclusive growth and job creation and spatial inclusivity.

Accordingly, if capabilities and efficiencies are introduced within the public sector to undertake strategic planning resulting in the business case for a project and to perform delivery management functions (see 5.1) which oversees the conversion of a business case into project outcomes, an increase in the quality and quantum of infrastructure for the money that is available can nevertheless be realised. This needs to be accompanied by what the NDP refers to as *"designing a procurement system that is better able to deliver value for money, while minimising the scope for corruption."* It also needs to address the plethora of subordinate legislation which is confusing and slowing down infrastructure delivery. The system needs to enable clients to successfully deliver infrastructure projects. Auditing should focus on value for money and the obtaining of best possible outcomes for the total cost of ownership rather than administrative compliance with a rigid set of rules which are not well formulated or understood.

There is also a need for creating the necessary conditions to attract and secure private sector investment to increase the quantum of money available for public infrastructure. To date, the main mechanism for achieving this, the regulatory framework for Public Private Partnerships, has proven ineffective at mobilising the required levels of private sector investment in public infrastructure.

### **6.2.2 Procurement and delivery management**

#### **6.2.2.1 Institutional arrangements**

The CIDB has been ineffective in influencing regulatory instruments issued by National Treasury to better accommodate the particular challenges of infrastructure procurement. This is partly due to its founding Act which permits it only to promote the standardisation of the

procurement process with regard to the construction industry within the framework of the procurement policy of Government (see E.7 in Annexure E)<sup>ff</sup>.

The Council of the PICC (see 4.1.3), on the other hand, has a mandate to identify any legislation and other regulatory measures that impede or may impede infrastructure development, and advise the executive authority of the relevant sphere of government. Accordingly, the NDP should in future look to the Council of the PICC to raise policy issues relating to infrastructure procurement and supply chain management with National Treasury. The Board of the CIDB should remain tasked with the provision of strategic leadership in the promotion of policies and the implementation of policies, programmes and projects aimed at infrastructure procurement and delivery management and the provision of information to stakeholders on best practice.

The Office of the Chief Procurement Officer within National Treasury (4.1.4) took over the function of Supply Chain Policy norms and standards following its establishment. However, the main function of the OCPO is to modernise and oversee the South African public procurement system in line with the Constitution and all relevant legislation. Accordingly, the regulatory function of the OCPO should be transferred to another section within National Treasury to maintain separation of duties and, in so doing, remove the observed conflict between the OCPO as a chief procurer and as regulator of the system. The Council of the PICC should engage with this section of National Treasury on any regulatory impediments relating to the effective, efficient and economic delivery of infrastructure. The OCPO should liaise with the CIDB with the effective implementation of the relevant PFMA and MFMA instruments within the construction industry and recruit experienced and knowledgeable built environment professionals to advise on the path to follow regarding its modernisation of infrastructure procurement and delivery management.

The supply chain management system (see Annexure D) for infrastructure, or what is more appropriately described as infrastructure procurement and delivery management, is strategic in nature and as such should not reside under the control of the chief financial officer. This supply chain needs to be delinked from the supply chain for general goods and services. At the same time, the procurement function for infrastructure projects needs to be moved much closer to the primary competences which it supports rather than put aside at a distance. The practice of the handling of infrastructure procurement by a specific purchasing resource or department within an institution needs to change. Infrastructure procurement needs to be a central competency within delivery management to mitigate unforeseen issues developing, leading to time cost and quality over runs. This will improve accountabilities for delivery (see 6.2.2.2). It will also improve the quality of procurement outcomes as infrastructure professionals will be more appropriately engaged in SCM processes. Accordingly, the current SCM regulations issued in terms of the PFMA and MFMA should be adjusted to accommodate this. Alternatively, the National Treasury should approve departures from these regulations should any organ of state apply to relocate the SCM system for infrastructure delivery.

The SCM unit under the CFO should remain responsible for the co-ordination and management of the interface between organs of state and the relevant treasury.

#### **6.2.2.2 Governance and accountabilities**

In many organs of state the people for are accountable for infrastructure delivery do not have the necessary authority, while those who have the authority (e.g, SCM, audit, finance etc. )

---

<sup>ff</sup> The National Treasury Regulations issued in terms of the PFMA require accounting officers or accounting authorities to ensure that *“bid documentation and the general conditions of a contract the prescripts of the Construction Industry Development Board, in the case of a bid relating to the construction industry”*.

are not held accountable for procurement outcomes. This has to change.

The prerequisites for successful infrastructure project outcomes (see 5.3.3) relate to the appointment of an official (a client delivery manager) within an organ of state who has single point accountability for procuring and delivering an infrastructure project or a programme of projects through a supply chain (see A.3 in Annexure A and Annexure D) and is able to exercise CEO level leadership at both a project and programme level in doing so. Leadership is very difficult to be exercised in the absence of strong governance which authorises, directs, empowers, provides oversight and limits the action of management. Governance processes need to ensure that the client organisation takes ownership of infrastructure delivery as an important component of the organisation's business and that infrastructure delivery is managed as an enterprise or a business rather than as an ad-hoc collection of projects.

The accounting authority or accounting officer in organs of state subject to the PFMA and the municipal councils subject to the MFMA need to approve infrastructure management plans (see Annexures B and D) which identify and prioritise projects against a forecasted budget over a period of three to 5 years as they are ultimately responsible and accountable for the long term direction and control of the organisation.<sup>99</sup> This needs to be undertaken with a focus on the attainment of the organisation's core purpose over the long term. Accounting officers and accounting authorities need to oversee implementation and be provided with at least quarterly reports on the progress made in order to do so.

Project governance describes the way in which projects are authorised, conducted and overseen. Project governance is the framework within which project decisions are made. Organs of state need to put in place flexible control or project governance frameworks to manage infrastructure procurement and the delivery of infrastructure projects in accordance with the principles embedded in the SIPDM and its associated model policies. At the same time, clear delegations of authority need to be put in place which support line-function infrastructure procurement and delivery management decisions and organisational accountability.

Accounting officers and accounting authorities need to appoint programme steering committees comprising the executive line managers who are officials within their respective organisations to provide oversight over a programme of infrastructure projects to which the client delivery manager and his or her line function manager report. This committee should enable the organisation in its entirety to own the vision and business case for infrastructure development to support project prioritisation and expenditure and to maintain full accountability for delivery and exercise project and budget control at a programme level. This committee should, depending upon the volume and nature of the infrastructure, meet approximately every quarter or at least 3 times per year, to receive reports from the client delivery manager on progress made, and challenges faced, and advise accordingly.

The client delivery manager needs to be supported by enabling policies which facilitate or do not preclude the application of sound infrastructure procurement practices in order to achieve desired outcomes and value. A client delivery manager needs to ensure that a number of registers are developed and maintained and kept up to date for project governance purposes, which capture information such as that relating to planned procurements, contractual commitments, contracts, payments and purchase orders covering all projects and programmes under their control. This system needs to be linked to the financial management

---

<sup>99</sup> The PFMA assigns the duties of an accounting officer to the head of a department or the chief executive officer of a constitutional institution and that of an accounting authority to the board of a public entity or other controlling body or, if there is no such body, the chief executive officer of a public entity. The MFMA assigns the duties of an accounting officer to the defines the municipal manager or a chief executive officer of a municipal entity.

system under the control of the chief financial officer to enable budget execution to be overseen and expenditure to be accounted for.

It is also necessary for accounting officers and authorities and councils to approve an infrastructure management policy to provide norms and standards for the management of the organisation's infrastructure to inform the infrastructure management plan. Such governance bodies should also ensure that a suitable (see Annexure D) an asset management system is put in place to inform demand management and a planning and budgeting system is put in place to prioritise projects and release funding for projects.

Auditors should be presented with the organisation's policies and the registers which contain information on planned procurements, contractual commitments, contracts, payments and purchase orders for audit purposes. The audits that are conducted need to determine if organisational policies were followed and resources were procured economically and utilised efficiently and effectively.

Care needs to be taken in allocating client functions to different organs of state to avoid duplication of effort and to ensure single point accountability and clarity of authority and responsibility for decision making. It is important that there is one person (the client delivery manager) who is given the authority, delegations and responsibility to act for, and make decisions for, the client. There must be no ambiguity regarding who represents the client in the relationship with the implementing institution's supply chain.

### **6.2.2.3 Design of the infrastructure procurement system**

South Africa's public procurement laws constitute a regulatory framework that is unnecessarily complicated. This has arisen due to a bolt-on approach to regulation in an attempt to correct the unintended consequences or perceived gaps of earlier legislation or regulation. This creates rigidity in the system that is impractical and stifles innovation. However, the complications generally lie at the lower level i.e. in the instructions and implementation guides that are issued. It should be noted in this regard that the SCM Regulations issued in terms of the PFMA and MFMA did not preclude the drafting of the SIPDM to address the NDP principles for procurement in an infrastructure context. As previously indicated, the problem in implementing it lay in the National Treasury Instructions and guidance issued post its publication and interpretations regarding the PPPFA and its associated regulations. The uncertainty in implementing the legislative system for procurement is introduced by the subordinate legislation which is often developed as ad hoc responses to emerging problems of corruption and poor performance.

The procurement system for infrastructure needs to focus on enabling the state to play its intended role in supporting economic and social development. As such it needs to be based on the following four Constitutional principles embedded in sections 8, 195 and 217 of the Constitution:

- 1) adherence to the "good governance" objectives for the public procurement system, namely that the system needs to be fair, equitable, transparent, competitive and cost effective;
- 2) promote objectives additional to those associated with the immediate objective of the procurement itself including preferencing schemes and measures to be taken to protect or advance persons disadvantaged by unfair discrimination.
- 3) use resources efficiently, economically and effectively in an accountable manner; and

- 4) take administrative action that is lawful, reasonable and procedurally fair.

A principles-based, flexible approach to procurement will enable the public procurement system to better tailor its processes to its operational and social policy subject matter. Such an approach recognises that procurement law and procedure is a means towards governmental aims, and not an end in itself.

The principles embodied in the system for the procurement of infrastructure needs to enable and not impede the following:

- 1) the development and implementation of procurement strategy and tactics aimed at achieving value for money;
- 2) delivery models which are characterised by collaboration and an equitable distribution of risk which represent a shift away from a highly transactional supply chain which promotes adversarial behaviours and poor allocation of project risks;
- 3) the engagement of the private sector at an early stage of a project to tap into their intellectual capital to improve procurement outcomes;
- 4) the entering into longer-term relationships in order to take the learnings from one project to another and to improve procurement outcomes;
- 5) the prioritisation of whole life benefits over lowest capital cost;
- 6) a procurement focus on likely outturn costs and not solely on the starting prices of contracts;
- 7) the application of reasoned professional judgement in the evaluation of tenders in order to minimise the outturn costs and to achieve best value procurement outcomes;
- 8) the application of national and international standards which are aligned with the constitutional imperatives for the procurement system;
- 9) the application of standard forms of contract which enable a range of different risk allocations to be applied between the parties to a contract;
- 10) the offering of performance incentives;
- 11) the application of speedy dispute resolution procedures;
- 12) the offering of preference points in the evaluation of tenders to reward tenderers who undertake to subcontract a percentage of the contract to nominated target groups to encourage performance beyond the minimum requirements;
- 13) flexibility in setting a minimum quantum of work to be subcontracted to nominated target groups; and
- 14) the establishment of requirements for local content and production requirements as a contractual requirement which is verified during the performance of the contract as and when the designated goods and services are provided and not at the time when tenders are invited.

Cost and time overruns on infrastructure projects do not appear overnight. Their genesis starts well before they manifest. The infrastructure procurement system in addition needs to provide

real time reporting to mitigate this risk. Key metrics need to be established at the outset of a project and need to be reported on at regular intervals to the client delivery manager and the client delivery manager's line manager.

#### **6.2.2.4 Approach to dealing with corruption**

The approach to dealing with corruption in infrastructure projects, whilst enabling value for money to be realised, should not be based on stricter rules which result in rigidity that simply constrains practitioners with integrity and introduce inefficiencies within the system. Accordingly, the approach should be based on the following principles:

- 1) The design of the system needs to be such that it is capable of being audited. This necessitates that:
  - ) the range of procurement processes, procedures and methods are clearly described and documented; and
  - ) the decision (control) points or gates within the work flow associated with the planning, acquisition and contract management phases are identified and decisions are based on documented information and organisational policies which identify the person(s) who are delegated to make the necessary decisions, based on the information that is provided at such control points.
- 2) Tender documents need to not only include the draft conditions of contract, the basis for remuneration, what is to be provided and requirements relating thereto but also establish what a tenderer is required to do in order to submit a compliant tender and make known the evaluation criteria to tenderers.
- 3) The terms of reference of the three procurement governance committees need to be as follows:
  - a) Documentation review / bid specification committees: approve procurement documents including evaluation criteria.
  - b) Tender / bid evaluation committees: evaluate tenders in strictly in accordance with the provisions of the approved tender documents.
  - c) Tender / bid adjudication committee: consider any residual risks associated with the award of the contract and approve the recommendations of the tender evaluation committee if the report is complete and the reasons for the elimination of tenderers are valid and reasonable.
- 4) All the members of the tender committee (bid adjudication committee) need to be officials of the organ of state which is procuring the required goods or services or any combination thereof as this is an internal governance committee.
- 5) The person delegated to make the award of the contract needs to award the contract after confirming that the report is complete and addresses all considerations necessary to make a recommendation and budgetary provisions are in place.
- 6) The evaluation reports need to:
  - a) contain a list of all the information / documentation that tenderers were requested to provide as well as all the evaluation criteria included in the tender document;

- b) report all the findings of the evaluation committee in relation to the documentation received and the evaluation criteria as well as the reasons for eliminating any tender from further consideration; and
  - c) detail the evaluation process and cite the reasons for recommending the award of a contract to a particular tenderer.
- 7) Organs of state need to disclose key information relating to their procurements through open and transparent mechanisms which as a minimum would include data on tenders received and the contracts that are awarded and completed on their websites.
- 8) A code of ethics needs to be published which deals with the dynamics of the different categories of procurement, particularly those that require interaction between the parties to a contract during the execution of the contract.

### **6.3 Addressing the built environment skills deficit and capacity constraints within the public sector**

The role of the client in the delivery of infrastructure projects is to undertake strategic planning resulting in the business case for a project and thereafter, through delivery management processes, oversees the conversion of a business case into project outcomes (see 5.1). Client delivery managers require built environment professional inputs and strategic advice in order to function as a client. Given that there is limited built environment expertise capable of providing such inputs and advice within many organs of state, the public sector should be able to access credible and experienced specialist know-how from the private sector, typically on a part time basis. Organs of state should be permitted to negotiate professional contracts with credible individuals at market related rates to provide the necessary technical inputs and advice to support their “buying” function. Contracted individuals who function as advisors to the client delivery manager should be prohibited from providing normal built environment professional services associated with the “supply” function on projects where they function as advisors.

Professional associations can play a role in identifying and vetting the credentials of such persons, particularly those in close proximity to organs of state who require their services. Persons who are recently retired or semi-retired are ideally placed to provide such services. Alternatively, organs of state should be able to secure the services of credible and experienced built environment professionals in the employ of other organs of state on an as and when required basis.

The capability of underperforming organs of state needs to be assessed. Underperforming organs of state need to be assisted to develop governance and procurement capabilities. It is a process to achieve this. However, it is critical to the long term development of such organs of state and is preferable to transferring their budgets to other organs of state which have capacity to spend their budgets. Reducing or removing budgets will not serve the aims of the NDP.

The putting in place of regional framework contracts which underperforming organs of state may access to serve their infrastructure needs can be used to overcome capability constraints and the skills deficit in infrastructure procurement.

## 6.4 Funding

Infrastructure networks require huge investment for their establishment, operation and maintenance. The NDP needs to contain a clear plan for funding and financing South Africa's infrastructure. Such a plan will need to be robust in its approach in setting out how the nation is to pay for its infrastructure, now, and in the years to come. It will as such need to address issues such as how to improve investor confidence, making investments in public infrastructure more attractive to investors, and the user pays principle. It will also need to contain policies to bring online a variety of funding and financing mechanisms including that of blended finance.

The current PPP regulatory framework needs to be reviewed. Lessons need to be learnt from the successful REIPP programme. The current demand-based approach to PPPs, in terms of which government bodies propose PPP projects to National Treasury, needs to be supplemented with a supply-based approach in terms of which infrastructure sectors which are appropriate for private sector investment are identified and private sector investment is then proactively facilitated in those sectors. There needs to be more emphasis on infrastructure sectors with non-fiscus revenue streams and real risk transfer to the private sector.

## 6.5 An enabling environment for the private sector to engage with the public sector

There is a lack of trust between the public and private sector. The public sector perceives the private sector to be greedy, opportunistic, dishonest, collusive and untrustworthy. The private sector perceives the public sector to be incompetent, corrupt and unreliable. This is a significant barrier to overcome if value for money is to be delivered in infrastructure projects and if there is to be increased private sector financing and management of public infrastructure.

Private sector confidence in the public sector procurement system for infrastructure can be restored if the public sector can perform its client function more effectively i.e. plan, specify, procure and oversee delivery (see 5.1). This necessitate that projects are:

- ) not based on overly optimistic (distorted) cost estimates or behaviour that deliberately underestimates costs and overestimates benefits for strategic advantage (see 5.3.1);
- ) stakeholders are engaged at an early stage of the project to minimise scope creep and uncontrolled scope changes during implementation;
- ) sensible planning and programming is undertaken ahead of implementation;
- ) procurement documents are formatted and compiled in a standard manner with standard conditions of tender and forms of contract and establish requirements in a clear, unambiguous, comprehensive and understandable manner;
- ) standard forms of contract are used with minimal contract amendments which do not change their intended usage and should only be amended when absolutely necessary to accommodate special needs.
- ) appropriate contracting strategies and procurement tactics aimed at best value procurement outcomes are employed;



- Furthermore, an organ of state's procurement system needs to not only comply with the constitutional imperatives outlined in 6.2.2.3 but also be transparent and predictable. This is necessary to establish trust in the procurement system.

- )] address the unintended consequences of unpredictable and harmful procurement regulatory instruments;
- )] professionalise those responsible for performing client functions; and
- )] establish and publish a pipeline of projects and deliver the pipeline within known timeframes to enable industry to train, equip, mobilise resources etc. to meet the demand.

The client's business case, vision, values and project priorities collectively make up the client's value proposition for a project, i.e. the promise of measurable benefits resulting from the project. Activities associated with the planning, designing, manufacturing / fabrication, construction / installation and commissioning need to translate the client's value proposition into project outcomes which have social, economic and environmental impact and result in a product. Clients can influence project outcomes through:

- All of these practices are within the control of the client.

1) Accounting officers or accounting authorities, line managers to which a client delivery manager reports and chief financial officers are exposed to:

- ## Chapter 6: Gaps, shortcomings and course corrections

- At the same time, built environment professionals in the employ of the state should be encouraged and funded to attend relevant continuous professional development (CPD) events and engage in online training courses accredited by statutory Built Environment Councils. Industry bodies should be encouraged to develop CPD events and on-line courses on topics such as asset management, infrastructure procurement, the delivery of infrastructure projects, contract management and how to address sustainability in infrastructure projects.

## 6.7 Construction industry skills and productivity

The need to maximise local involvement in infrastructure projects of labour, subcontractors, suppliers and service providers needs to be carefully considered as it is self-defeating in terms of growth and continuity. Local resources cannot move to the next project as the same requirement and expectation exists for that project. Unless there is a local viable construction market in the same area, skills and growth is lost. This undermines industry's ability to create a skilled workforce and undermines productivity increases.

Overloading of the infrastructure agenda for a project with too many development outcomes in addition to national B-BBEE and local production and content imperatives such as local enterprise development, local skills development, local industry development programmes, local economic development, labour intensive construction etc. also slows down infrastructure delivery. The Regulation of the infrastructure development agenda needs to be approached cautiously. At the same time, those responsible for delivery should be provided with some

latitude and flexibility in determining what is feasible to be applied in the delivery of their infrastructure projects. Government agencies need to root out the “mafia” approach which enables projects to be held to ransom.

There is also a need to improve the ways in which infrastructure is planned, procured and delivered through the exploitation and integration of new technologies including digital technologies to improve its overall performance and the productivity of the sector.

## 6.8 Sharing lessons learned

Client capacity to deliver infrastructure projects efficiently, effectively and economically can be developed through the sharing of lessons learned from successful and unsuccessful projects. A culture of recording the lessons learned needs to be developed when closing projects out. Such information should be shared on the PICC or CIDB website to make it publicly accessible.

Commissioned research should be undertaken on some of the mega projects which have failed in terms of cost, schedule for completion or performance in use or which failed to satisfy the business case, to determine the root causes of failures and to determine how projects should be planned, managed and procured differently in future. The findings of such research should be made publicly available.<sup>hh</sup>

The National Research Foundation Fund should encourage evidence-based research which enables those engaged in strategic planning and delivery management to make informed choices in the development of a business cases and the procurement and delivery of infrastructure projects, respectively.

---

<sup>hh</sup> Several independent enquiries have been commissioned in the UK over the years to deal with failures in a range of infrastructure projects having very different project values. These document present key findings and recommendations to avoid similar failures on future projects. Examples of these are:

) The Holyrood enquiry. 15 Sep 2004. Scottish Parliament. <http://www.parliament.scot/SPICeResources/HolyroodInquiry.pdf>.  
The Report of the Independent Inquiry into the Construction of Edinburgh Schools. 9 Feb 2017. City of Edinburgh Council. [https://policy.ciob.org/wp-content/uploads/2018/03/Inquiry\\_into\\_Edinburgh\\_Schools\\_February\\_2017\\_FINAL\\_VERSION.pdf](https://policy.ciob.org/wp-content/uploads/2018/03/Inquiry_into_Edinburgh_Schools_February_2017_FINAL_VERSION.pdf)

) Report of the Independent Inquiry into the Construction of the DG One Complex in Dumfries. April 2018. Dumfries and Galloway Council. [https://www.dumgal.gov.uk/media/20076/Report-DG-One-inquiry/pdf/DG\\_One\\_Inquiry\\_Report\\_Bookmarks.pdf?m=636607638701200000](https://www.dumgal.gov.uk/media/20076/Report-DG-One-inquiry/pdf/DG_One_Inquiry_Report_Bookmarks.pdf?m=636607638701200000)

## 7 Action plan to address the identified shortcomings

The action plan for course correction described in Chapter 6 is set out in Table 10.

**Table 10: Action plan to address the identified shortcomings**

Time horizon	Action		Comments
	No	Description	
Short term	1.1	The presidency clarifies roles and responsibilities for the national function of providing policy and regulatory direction related to infrastructure delivery and procurement	<p>Currently roles and responsibilities for the national function of providing policy and regulatory direction related to infrastructure delivery and procurement are scattered across various departments and statutory bodies, including the Presidency, National Treasury, the CIDB and the PICC. There is a need to ensure that roles and responsibilities are clarified, and that policy and regulatory direction is aligned and consistent.</p> <p>Clarity of roles and responsibilities will enable capability and capacity to be developed to effectively and efficiently regulate, oversee, monitor and evaluate the delivery of infrastructure. Duplication of effort will be reduced, conflicting requirements and ineffective burdensome reporting will be removed and capacitation efforts integrated and focussed.</p>
	1.2	Appoint suitable infrastructure procurement and client delivery management capability and capacity in senior management positions to enable those institutions with infrastructure responsibilities to function efficiently and effectively	Infrastructure procurement forms an integral part of the scope of practice of built environment professionals. It is essential that such persons engage in the decision making processes within those institutions with infrastructure responsibilities. This will also re-establish a career path for such professionals in the public sector and as such attract such persons to the public sector.
	1.3	Differentiate infrastructure procurement and delivery management from the SCM system for general goods and services and standardise the requirements for infrastructure procurement and delivery management in a generic and flexible manner	<p>The activities associated with action 1.3 are dependent on action 1.1</p> <p>A standardised and fit for purpose regulatory environment for infrastructure procurement and delivery management is necessary to remove obstacles in the system which hinder the effective, efficient and economic use of resources in the delivery of infrastructure.</p> <p>Standardization, apart from removing technical barriers to engaging with the private sector, enables:</p> <ul style="list-style-type: none"> <li>a) those engaged in procurement and delivery management activities to perform their duties, within the confines of their organization's procurement and delivery management policy, in a uniform and generic manner;</li> <li>b) curricula to be developed to capacitate those engaged in a range of procurement and delivery management activities.</li> </ul> <p>Furthermore, it will allow the state to readily develop an internal procurement and delivery management skills base, which is not lost when members of staff move between different organs of state.</p> <p>The basis for differentiating infrastructure procurement and delivery management from the SCM system for goods and services is well developed. There are many examples of what is required.</p>

Time horizon	Action		Comments
	No	Description	
Short term (continued)	1.4	Develop guidance on client infrastructure delivery management	<p>The activities associated with action 1.3 are dependent on action 1.1 and 1.2.</p> <p>High level guidance, with an orientation focus, should be developed for accounting officers / accounting authorities and chief financial officers to make them aware of what they need to put in place and oversee within their respective institutions in order to facilitate the effective, efficient and economic delivery of infrastructure in an accountable manner. Such guidance should be accompanied by model policies which can be adapted to suit the institution. This will facilitate good practice across the public sector.</p> <p>The guidance material needs to:</p> <ul style="list-style-type: none"> <li>) address institutional governance including appropriate delegations and the establishment of steering committees that may be necessary at a programme or project level;</li> <li>) reinforce the importance of governance in the context of limited capacity – what can be outsourced versus decisions or actions that must remain insourced;</li> <li>) address the roles and responsibilities of the client infrastructure delivery manager and the capabilities of the team required to support the client delivery manager; and</li> <li>) share lessons learned and evidence based research.</li> </ul>
Medium term	2.1	Address fragmentation in legislation in a manner which accommodates the specificity of infrastructure	<p>The law and policy of public procurement in South Africa is contained in a complicated, fragmented, and inconsistent regulatory framework. There exists something like 22 pieces of primary legislation dealing with public procurement in a direct and significant way, with subordinate legislation bringing the total of distinct pieces of regulation to around 85. The Procurement Bill is aimed at addressing this issue. However, any new regulatory framework for procurement needs to accommodate the specificities of infrastructure (See Chapters 5 and 6.)</p> <p>Addressing the specificities of infrastructure has the potential to improve local content and empowerment outcomes.</p>
	2.2	Review Public Private Partnership regulations	The PPP regulations need to be reviewed to facilitate greater involvement of the private sector in the financing and management of public infrastructure.
	2.3	Establish supply driven programmes for private sector participation in the delivery of infrastructure	This would involve identifying infrastructure sectors that are appropriate for private sector financing and management, and actively facilitating increased private sector involvement in these sectors. This may require the development of an appropriate regulatory framework (see 2.2)..
	2.4	Capacitate client delivery managers	Course material needs to be developed to expose client delivery managers to appropriate infrastructure procurement and delivery management practices. A mentoring programme also needs to be put in place to develop capabilities and to share experiences.
	2.5	Develop public sector capabilities of built environment professionals engaged in public sector infrastructure projects	Statutory councils and industry associations need to put in place continuous professional development courses to enable built environment professionals in both the public and private sector to align their practices to effectively support public sector infrastructure procurement and delivery management requirements

Time horizon	Action		Comments
	No	Description	
Time horizon	Action		Comments
	No	Description	
Medium term (continued)	2.6	Develop standard post descriptions and roles and responsibilities for client delivery manager and project administrators (see A.4 of Annexure A)	DPSA and COGTA need to develop standard post descriptions for client infrastructure delivery managers and project administrators to facilitate the appointment of persons to occupy these positions within their organisations.
Long term	3.1	Certify client delivery manager capabilities	Competencies and accredited courses need to be developed to enable the certification of skills in client delivery management as part of the process of professionalisation.

## **Annexure A: Organisational landscape of the construction industry**

### **A.1 Built environment professionals**

There are currently a number of professions that are involved in various aspects of the planning, design and construction of infrastructure as indicated in Table A1. Each of these professions are regulated by a statutory council. The roles of the statutory councils include contributing to the realisation of the Constitutional right to a sustainable environment that is not harmful to health or well-being and ensuring the quality of professional services in the public interest.

The regulation of a profession involves the setting of standards of professional qualifications and practice, the keeping of a register of qualified persons and the award of titles, determining the conduct of registered persons, the investigation of complaints and disciplinary sanctions for professional misconduct. Pieces of legislation such as the National Building Regulations and Building Standards Act of 1977 (Act No. 103 of 1977), the Housing Consumers Protection Measure Act of 1998 (Act No. 95 of 1998) and the Occupational Health and Safety Act of 1993 (Act No. 85 of 1993) link the performing of certain tasks to persons registered in terms of some of the Acts identified in Table A1. This is necessary to address certain public health, safety and financial risks associated with the work undertaken within the construction sector. The built environment needs to be planned, designed and constructed in such a way that people's lives as well as the huge amounts of money invested in infrastructure are not put at risk.

Candidates for professional registration need in the first instance to satisfy the relevant tertiary educational outcomes determined by the respective councils which focuses on knowledge, problem analysis, design / development of solutions, investigation and modern tool usage. Thereafter candidates need to gain suitable workplace experience until such time that they can demonstrate the required level of competence for professional registration as measured against standards and pass any additional examination that the relevant council may require. Work place experience provides an opportunity for graduates to work alongside and with professionally registered practitioners and progress from an assisting role to taking more individual and team work responsibility. The demonstration of the outcomes at the lower levels occurs during the formal education phase whereas the demonstration of outcomes at the higher level occurs only after suitable work place experience and a candidate is able to work independently.

Different categories of professional registration are generally offered to cover the range of skills required in a professional team e.g. the Engineering Council of South Africa registers engineers, technologists and technicians in different categories.

The core business of the architectural, landscape architectural, engineering, construction and project management and quantity surveying professionals is also identified in Table A1. These professionals may be employed in either the public or private sector. Their collective responsibilities are to manage aspects of the delivery of infrastructure projects, to design projects, to manage projects, and to control costs of projects. All of these professions are involved in procurement activities as an integral part of professional practice in delivering infrastructure projects.

**Table A1: Functions of the professions and major disciplines within professions in the delivery of infrastructure projects**

<b>Council and founding Act</b>	<b>Typical function undertaken #</b>
South African Council for the Architectural Profession (SACAP) (Architectural Profession Act of 2000 (Act No. 44 of 2000))	<b>Architecture:</b> the planning and design of buildings 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
South African Council for the Project and Construction Management Professions (SACPCMP) (Project and Construction Management Profession Act of 2000 (Act No. 48 of 2000))	<p><b>Project construction management:</b> the management of construction projects from inception to completion</p> <p><b>Construction management:</b> the management of the physical construction process including the co-ordination, administration, and management of resources</p> <p><b>Health and safety agent:</b> ensures that health and safety (H&amp;S) is managed across the project to limit project risk.</p>
Engineering Council of South Africa (ECSA) (Engineering Profession Act of 2000 (Act No. 46 of 2000))	<p><b>Civil engineering:</b> the planning and design of earthworks, dredging and geotechnical processes, transportation, water supply and treatment, drainage and sewerage systems and sea defences and coastal protection measures.</p> <p><b>Electrical engineering:</b> the planning and design of systems for generating, transmitting, distributing and utilising electrical energy</p> <p><b>Mechanical engineering:</b> the planning and design of plant and systems for lifting, hoisting and materials handling, turbines, pumps and fluid power, heating, cooling, and ventilating and air-conditioning</p> <p><b>Geotechnical engineering:</b> the evaluation of the geotechnical characteristics of a site and the provision of specialist advice on the behaviour and engineering properties of on-site earth materials and the design of earthworks and foundations for structures.</p> <p><b>Structural engineering:</b> the designing of the structures to withstand the loads that they are likely to be subjected to safely and without loss of function</p> <p><b>Fire engineering:</b> the planning and designing of fire protection system to protect people and their environments from the destructive effects of fire and smoke.</p>
South African Council for the Landscape Architectural Profession (SACLAP) (Landscape Architectural Profession Act of 2000 (Act No. 45 of 2000))	<b>Landscape architecture:</b> The planning, designing and reviewing of the construction of outdoor and public spaces to achieve environmental, socio-behavioural or aesthetic outcomes
South African Council for the Quantity Surveying Profession (SACQSP) (Quantity Surveying Profession Act of 2000 (Act No. 49 of 2000)).	<b>Quantity surveying (cost management):</b> the provision of expert, professional services and advice on construction procurement, contracting and costs.
South African Council for Professional and Technical Surveyors (PLATO) (Professional and Technical Surveyor's Act, 1984 (Act 40 of 1984))	<b>Land surveying:</b> the collection, collation, assessment and presentation of geographic information gathered from surveys which are required to enable architectural and engineering designs to be undertaken and construction works to be set out.
South African Council for Natural Scientific Professions (SACNSP) (Natural Scientific Professions Act, 2003 (Act No. 27 of 2003))	<b>Engineering geology:</b> the evaluation of the geotechnical character of a site and the provision of specialist advice on the risks posed by geotechnical site conditions to humans, property and the environment

# Function includes, where relevant, confirming that design intent is met during construction or installation



## A.2 Professional bodies and associations

There are also a number of professional bodies and trade associations that have an interest in the various aspects of construction, examples of which are:

- ) Association of Architectural Aluminium Manufacturers of South Africa (AAAMSA) which promotes commercial and group interests of the architectural aluminium industry, glass, ceiling and partitioning and insulation industries represented by a number of trade specific member associations;
- ) Association of Quantity Surveyors of South Africa (ASAQS) whose objective is to advance and promote the science and practice of quantity surveying as well as construction project management and construction management matters;
- ) Black Business Council in the Built Environment (BBCBE) is the apex organisation of black construction and professional organisations in the country whose main objectives is to engage government and other statutory bodies to influence the drafting and implementation of appropriate legislation in order to create an enabling environment for the black constituency in the building and construction industry.
- ) Concrete Society of Southern Africa (CSSA) which promotes excellence and innovation in the use of concrete and related products and services;
- ) Clay Brick Association of Southern Africa (CBA) whose mission is to develop and grow competitive awareness, knowledge and support of clay masonry and to maintain consistent standards in the use of clay brick and pavers for good value and performance in the construction of buildings and paving surfaces;
- ) Concrete Manufacturer's Association (CMA) which promotes the interests and general advancement of factory produced precast concrete products;
- ) Consulting Engineers South Africa (CESA) which promotes excellence in serving the public in matters connected with technology-based intellectual services and a high standard for the conduct of consulting engineers and allied professionals;
- ) Institution of Municipal Engineering of Southern Africa (IMESA) which promotes excellence in the engineering profession for the benefit of municipalities and their communities;
- ) Institute of Plumbing South Africa (IOPSA) which provides a platform to advise on the practice and principles of the plumbing industry;
- ) Institute of Timber Construction – South Africa (ITC-SA) which provides inspection and certification services for compliance with National Building Regulations;
- ) Master Builders South Africa (MBSA) whose primary role is to promote the viewpoints and interests of the building industry, to promote the highest quality and standards and to engage government and legislative bodies on national policies that affect the industry;
- ) South African Black Technical and Allied Careers Organisation (SABTACO) which seeks a transformed and sustainable built environment by contributing to the formulation, implementation, monitoring and evaluation of relevant legislation and policies that govern the industry;

- ) South African Forum of Civil Engineering Contractors (SAFCEC) whose objectives include the promotion of construction of civil engineering works, the maintenance of a high standard of conduct in the civil engineering construction industry and the participation in regulation of rates of payment, conditions of employment and other measures affecting employees in the civil engineering contracting industry;
- ) South African Institute of Architecture (SAIA) which is committed to maintaining the highest standards of professionalism, integrity and competence in architecture;
- ) South African Institution of Civil Engineering (SAICE) whose objective is the promotion of the science and practice of civil engineering and the advancement of the civil engineering profession; and
- ) Southern African Institute of Steel Construction (SAISC) whose mission is to promote the holistic vigour and prosperity of the people and companies in South Africa that provide steel-related products or services to the building and construction industry.

Some of the aforementioned bodies have codes of conduct or ethics to guide the behavior of their membership in order to improve industry standards and / or business practices. Disciplinary action can be taken against those that breach these codes.

### **A.3 Evolution of the delivery of public sector infrastructure**

The public advertised tendering system for public works was introduced in South Africa soon after the British occupied the Cape in 1806. This system brought in its wake a growing need for specialised administration of contracts. It was also a factor in the emergence of the specialised professional architect and engineer from the general profession of building. It also set in motion the need for a formalised basis of pricing which eventually culminated in the separating out of estimators and quantity surveyors.

Professional services were historically provided in-house by public sector bodies with very little work being undertaken by the private sector. The Public Works Department (PWD), for example, first permitted architects to compete for large projects during the late 1930s and opened engineering to private firms only during the 1950s. However, by the 1980s this department commissioned 90% of its capital works to the private professional sector.<sup>95</sup> The drivers of this outsourcing process included increasing professionalism and specialisation within the built environment in a growing economy, an inability to attract and retain skills within government to tackle complex projects, and inefficiencies caused by the underutilisation of costly in-house resources scattered across different parts of government which could be more efficiently accessed from the private sector on an as and when required basis. Currently, the undertaking of the professional services associated with the design of capital works is very rarely undertaken with in-house resources. To a large extent, the required professional capacity to carry out design work and construction project management functions<sup>ii</sup> for infrastructure projects no longer exists in the public sector.

Public projects were also historically constructed using in-house resources (departmental works). For example, the Department of Water Affairs had their own internal construction units which constructed most of the dam infrastructure in South Africa. In addition, national and provincial roads departments often had internal road construction units. However, similarly to professional services, almost all construction work is now commissioned from the private sector and the public sector has lost almost all its capacity to do construction work in-house.

---

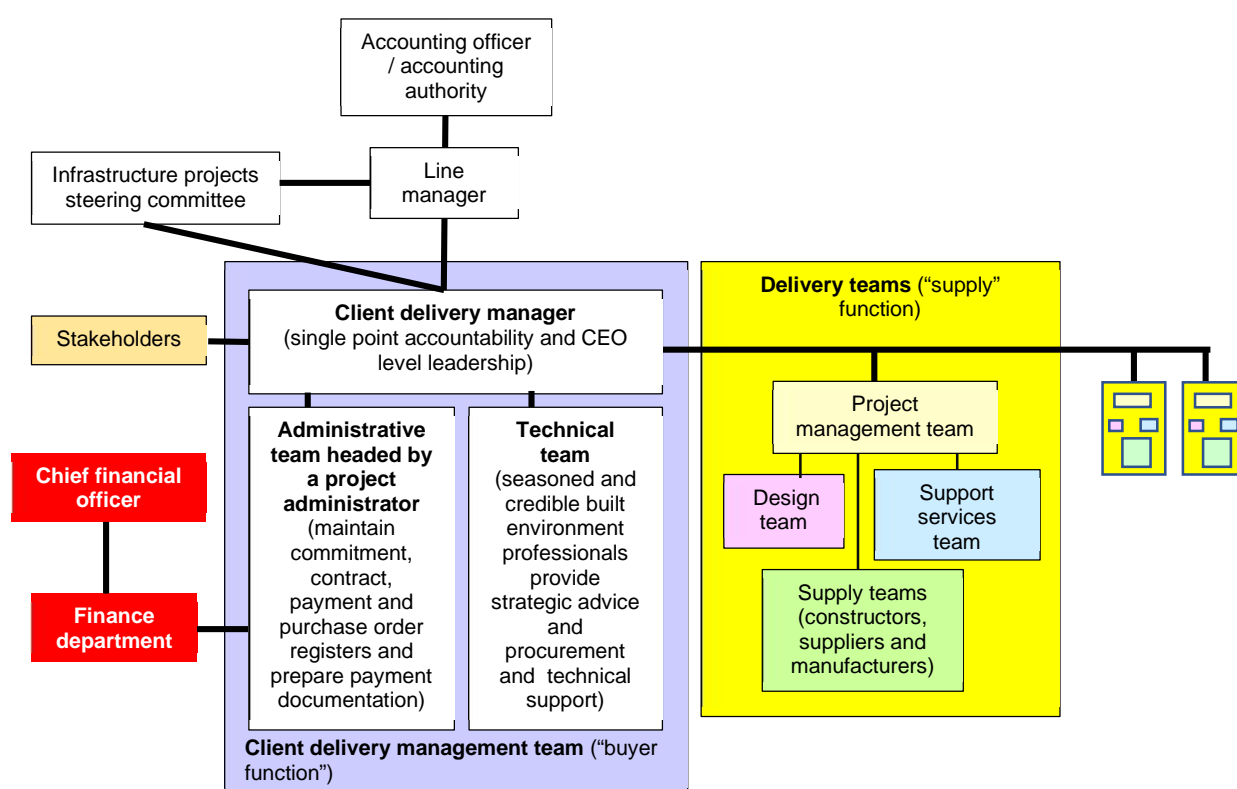
<sup>ii</sup> **Construction project management** is the management of the physical construction process within the built environment from conception to completion, including management of related professional services. The construction project manager is the single point of responsibility in this process. (SACPCMP)

Currently the Department of Water and Sanitation has a Construction Unit which only executes works that do not require specialist contractors. Departmental construction is currently the exception rather than the rule and delivers a very small percentage by value of the construction works required by the public sector.

Thus, the way in which infrastructure projects are delivered by the public sector has changed fundamentally over the last 50 years or so. This process of change accelerated post-1994. The almost complete outsourcing of professional design, construction project management, project management and construction functions has meant that the quality of public sector supply chain management (including procurement and delivery management) has become the determining factor in the success of public sector infrastructure investment.<sup>ii</sup>

## A.4 Role players in the delivery of infrastructure projects

The principal role players in the delivery of infrastructure are the client delivery management team, the delivery team and stakeholders. The client delivery management team owns the business case, procures and pays the resources required to deliver the project, leads the project, manages relationships, oversees aspects of delivery and provides client direction. It provides a “buying” function. The delivery team, on the other hand performs a “supply” function and as such performs project construction management and design functions and professional support services and manufactures, constructs, maintains, installs, provides, rehabilitates, refurbishes or alters construction works. Stakeholders comprise persons, groups or organisations that have interests in, or can affect, be affected by, or perceive themselves to be affected by, any aspect of the project (see Figure A.1)



**Figure A.1: Client lines functions and reporting in the delivery of infrastructure projects**

<sup>ii</sup> ISO 26000:2010 defines a **supply** chain as “the sequence of activities or parties that provides products or services to the organisation.” Supply chain management is concerned with the governance, oversight, co-ordination and monitoring of inputs, outputs and outcomes of the supply chain whereas **procurement** relates to the contracts which are entered into to obtain goods and services.

The principal role of the client is to ensure that the value proposition associated with the business case for an infrastructure project is achieved. The client owns the business case of the project and is accountable for project outcomes. The client 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 or operates the infrastructure that is delivered.

The core purpose of the client delivery manager is to:

- ) lead, manage and oversee the client's infrastructure planning and delivery programme so that the client's strategic goals and activities are supported by relevant and sustainable physical infrastructure; and
- ) lead the planning, specifying, procuring and overseeing of the client's infrastructure programme and to ensure its integration into the university's governance system.

The core purpose of the members of the technical team are to advise the client delivery manager on project related matters relating to infrastructure procurement, technical, statutory, etc.. The core purpose of the project administrator is to underpin the accountable delivery of the university's infrastructure through sound, accurate and live procurement, contract, expenditure and payment records and to integrate such records with the client's financial system.

Two recent enquiries in the UK highlight the consequences of a client which fails to perform their role as client adequately. Between 2002 and 2005, 17 new or refurbished and extended schools in Edinburgh were completed as part of a public private partnership arrangement. After a number of building quality defects emerged including the collapse of a gable end wall, a decision was taken in 2016 to close all 17 schools. This resulted in the relocation of some 8 731 primary and secondary pupils, children with special needs and nursery children. The Report of the Independent Inquiry criticised the public body for not ensuring that due diligence was undertaken at an appropriate level to confirm that the requirements of the PPP contract were actually delivered in accordance with the terms of that contract.<sup>96</sup>

The Dumfries Council in 1998 commenced with the planning of sporting and leisure facilities for the public. The DG One Complex was delivered by a design-and-build contractor ten years later, 30% over budget and 40% longer than anticipated. It remained open to the public for only six years, during which time its effective operation was regularly compromised by failures arising from its poor quality of construction. An investigation was initiated against the contractor to determine the cause of the defects and to produce cost proposals for their remediation in contemplation of litigation. The eventual outturn cost of the project after the deduction of settlement amounts was approximately double that of the contract price. The facility was only reopened in 2019. The independent enquiry acknowledged the fundamental failings relating to the construction of the facility were failings on the part of the design-and-build contractor but found that the majority of the Council's failings related to their lack of expertise as a client and their inability to proactively avoid and effectively identify and respond to the failings of the contractor. The inquiry also found that Council failed to provide effective strategic and executive project and contract management support to the level that would be normally expected of an informed client body.<sup>97</sup>

Government departments' capital or infrastructure requirements were historically budgeted for directly within the vote of the Department of Public Works (DPW) prior to the introduction of the Public Finance Management Act (Act 1 of 1999). This Act changed this practice as it required that expenditure associated with a department's operations or activities be accounted

for directly through that department's vote. This gave rise to the user departments (sponsors, e.g. Department of Health) and implementing agents (such as DPW) to collectively assume the role of the client. This has raised many questions over the ensuing years as to what portions of the delivery management functions need to be performed by the user and cannot be transferred to the implementing agent and what precisely should have been delivered, where and when, by whom, and at what cost.

## **Annexure B: Planning and financing of infrastructure projects**

Infrastructure projects need to be planned and financed. In the first place, projects need to be identified and prioritised. They need to be motivated by considering the benefits of the project and / or consequences of not undertaking the project. Projects which align with organisational objectives are then admitted to a pipeline of projects where they are prepared for implementation. Projects in the pipeline range from simply having been identified to being ready to implement.

Organisations with infrastructure portfolios need to manage their demand for infrastructure through:

- ) service life plans which are aligned to strategic plans, based on an assessment of current infrastructure performance against desired levels of service or functionality and a needs analysis informed by factors such as policies, spatial development plans, norms and standards, and condition assessments, and reflect a cost estimate for the life cycle activities; and
- ) infrastructure management plans which identify and prioritise projects against a forecasted budget over a period of three to 5 years.

Once the project pipeline has been established and prioritised, alignment with broader and strategic planning processes needs to be confirmed and impediments to implementation identified e.g. servitude ownership / acquisition, land usage / zoning and the presence of informal dwellings or graves on the site and environmental and other legislative approvals. Projects that fall within the preliminary selection for an infrastructure management plan need to have more detailed timelines and estimates to ensure that the budget estimates are realistic and the timelines are achievable. This project preparation stage is a critical phase of the planning process as the likelihood of implementing proposed projects within the proposed budgets and schedule put forward in any infrastructure management plans needs to be understood.

The financing of a project can be based on a “buy” or “make” decision. The “buy” decision requires the market to pay for the acquisition incrementally as the client pays only for the completed infrastructure. Under this financing mechanism, the developer typically carries the cost of providing the required construction works and commonly receives payment either in the form of a lump sum or a monthly or annual amount during the operation of the infrastructure for a term or a percentage of the income stream following the completion of the project. The project delivery approach associated with a “buy” decision is commonly referred to as Public Private Partnership, Public Finance Initiative, concession or lease-to-own.

The financing of the project on a “make” basis, on the other hand, requires the client to secure finance and pay service providers and contractors for the goods and services associated with the delivery of the project incrementally as the works proceed. It also requires the client to play an active role in the delivery of the project and to make decisions regarding the allocation of design and interface management responsibilities between the parties to a contract.

## Annexure C: Delivering infrastructure projects

Although many infrastructure projects are similar in nature, each project is unique. This is due to several important project variables employed in delivering the required infrastructure including:

- ) what is delivered, differences between locations where the infrastructure is delivered, the client's value proposition for projects, stakeholder influences and resources employed, constraints, processes and procurement practices; and
- ) different combinations of funders, clients and built environment professionals, site conditions, materials and technologies and general contractors, specialist contractors, skills and workforces.

Infrastructure projects need to be planned, specified and delivered. Once decisions are made on what the project needs to deliver, who will deliver it and how will it be funded and governed, the remaining decisions centre on how it will be managed through to completion. Such management takes place within a project-specific environment which continuously involves the management of risk events, which may be foreseen or unforeseen, and that have the potential to negatively impact on project outcomes during the delivery process.

Risk taking is necessary in the delivery of infrastructure projects. Sources of risk in infrastructure projects include commercial and legal relationships, economic circumstances, human behaviour, natural events, weather, inherent and unforeseeable site conditions, political circumstances, community unrest, technology and technical issues. Risks can also manifest in weak clients who are not capable of making timeous decisions, have difficulty in providing information timeously or paying promptly, as well as in the differences between the actual prices paid in terms of the contract and those estimated at the time of tender and changes to requirements during the execution of projects to enhance quality, performance in use, or the usefulness of outputs or to address shortcomings in design. The parties to a contract face choices on how to deal with the inherent project risks. Risks can be transferred or accepted. Accordingly, a central issue that needs to be dealt with in infrastructure projects is the financial liability related to the uncertainty of information when decisions are made, particularly in the early stages of a project, and future events.

There are a number of commonalities between the procurement of general goods and services for consumption and the procurement of infrastructure projects. There are, for example, six universally applicable principal tasks associated with a procurement process, namely to establish what is to be procured, to decide on a procurement strategy, to solicit tender offers, to evaluate tender offers, to award a contract and to administer a contract. There are also commonalities in a number of methods and procedures and governance structures, such as committees for the approval of procurement documents, the evaluation of tenders and the recommending of the award of a contract. Such commonalities give rise to the notion that the procurement of infrastructure projects can be approached in the same way as that for general goods and services for consumption, possibly with some modifications in the way that construction contracts are administered. This may be true in the application of certain tools and at a procedural level. However, at a strategic and tactical level there are significant differences (see Table C1).

Government as a client needs to plan, specify, procure and oversee the delivery of infrastructure projects (see 5.1) through a supply chain management process which involves "buying" and "supply" responsibilities (see A.4 in Annexure A). The delivery of such projects within this fragmented environment, which is fraught with uncertainty, is held together by the client's vision, leadership and procurement practices.

**Table C1: Significant differences between the procurement of general goods and services for consumption and infrastructure<sup>98</sup>**

Characteristic /consideration	General goods and services for consumption	Infrastructure
<b>Satisfying the business need</b>	The business need is commonly achieved through the production of a specification, which then forms a requisition for goods or services	The business need is frequently satisfied through multiple contracts which need to be procured and managed in such a way that the anticipated benefits are progressively realised
<b>Demand management</b>	The demand is determined and managed through inventory / bin levels or the frequency of the required service	Demand is determined and managed through an assessment of current infrastructure performance against desired levels of service or functionality and a credible forecast of demand for services or requirements for functionality over a period of time. Demand also needs to be proactively managed through the planning, acquisition and contract management phases to prevent scope creep
<b>Risks</b>	Risks are low. They are typically linked to the timeous supply of the required goods / services or to the standard demanded by the client within the tendered amount.	Risks are high due to uncertainties at the start of a contract and during a contract. Risks can also manifest in commercial and legal relationships and weak clients as well as in the difference between estimated quantities at tender stage and final quantities at the completion of the works
<b>Assessment of the ability of a tenderer to perform the contract</b>	The assessment of the ability of a tenderer to perform the contract is relatively straight forward as the deliverables are well defined	The assessment of the ability of a tenderer to perform the contract is complex as the deliverables are dependent on the tenderer's experience and standing, capability and resources
<b>Amount due, budget and purchase order value</b>	Amount due in terms of the contract = budget amount = purchase order value	Most often amount due in terms of the contract budget amount purchase order value due to risks manifesting during the performance of a contract
<b>Conditions of contract</b>	Conditions of contract commonly lack agreed procedures for the administration or management of the contract. Frequently a contract or a service level agreement is negotiated after the evaluation of tenders, based on the tender submission	Conditions of contract provide the agreed procedures for the administration of the contract. A standard form of contract is used which provides fixed terms and conditions which are usually not varied. This is necessary to allocate risks to the parties and enables tenderers to price for such risk
<b>Interdependencies and interfaces between contracts</b>	Interdependencies and interfaces between contracts are rare as the procurement commonly involves off the shelf products or readily available commodities or standard, well defined and scoped services	There are several interfaces and interdependencies between contracts as works (products) are developed or maintained on a site. A supply chain frequently needs to be contracted and mobilised to provide the necessary professional services, manufacture and supply materials, products, components and assemblies, equipment and labour to provide the works
<b>Procurement focus</b>	Focus on: <ul style="list-style-type: none"> <li>} tender award (initial) price</li> <li>} optimising resources within an activity to improve outcomes</li> <li>} choice of goods and productivity of service for a particular transaction</li> </ul>	Focus on <ul style="list-style-type: none"> <li>} outturn cost</li> <li>} on optimising resources across the entire supply chain from inception to completion to improve project outcomes</li> <li>} integration of timing and outputs of the delivery team</li> <li>} management of risk throughout the whole supply chain</li> <li>} trade-offs between options to achieve project outcomes</li> </ul>
<b>Value for money (cost effectiveness)</b>	Reducing the cost of resources, increasing output for a given input or minimising input for a given output while maintaining quality	The optimal use of resources or the effective, efficient, and economic use of resources to achieve intended project outcomes. It speaks to the cost effectiveness of the outputs



Successful delivery of projects requires:

- ) client leadership to achieve delivery value at a programme and project level;
- ) client governance i.e. a system of governance within the client organisation that supports delivery and accountability which is exercised by the entire organisation as owner of the project outcome;
- ) client-led infrastructure procurement practices which support rather than frustrate delivery and enable client's priority goals (value proposition) and effective delivery outcomes to be achieved;
- ) clients to undertake due diligence at an appropriate level to confirm that the requirements of contracts which deliver infrastructure are being executed in accordance with the terms of such contracts; and
- ) clients to ensure that an appropriate level of independent scrutiny is undertaken in relation to all aspects of design and construction or installation that are in effect largely or partly self-certified by those producing them.

There is a direct linkage between the role played by the client and project outcomes regardless of project size, complexity and location.<sup>99</sup>

## Annexure D: Differences in supply chains

### D.1 Introduction

The Policy Strategy to Guide Uniformity in Procurement Reform Processes in Government (2003)<sup>100</sup> which informed the SCM regulations issued in terms of the PFMA and MFMA states that “Supply chain management is an integral part of financial management, which intends to introduce international best practice. It seeks to breach the gap between traditional methods of procuring goods and services and the balance of the supply chain and at the same time addressing procurement related matters that are of strategic importance.”

The elements of government’s supply chain management processes are depicted in the Figure D1, where value is added at each phase of the process (see Table D1).

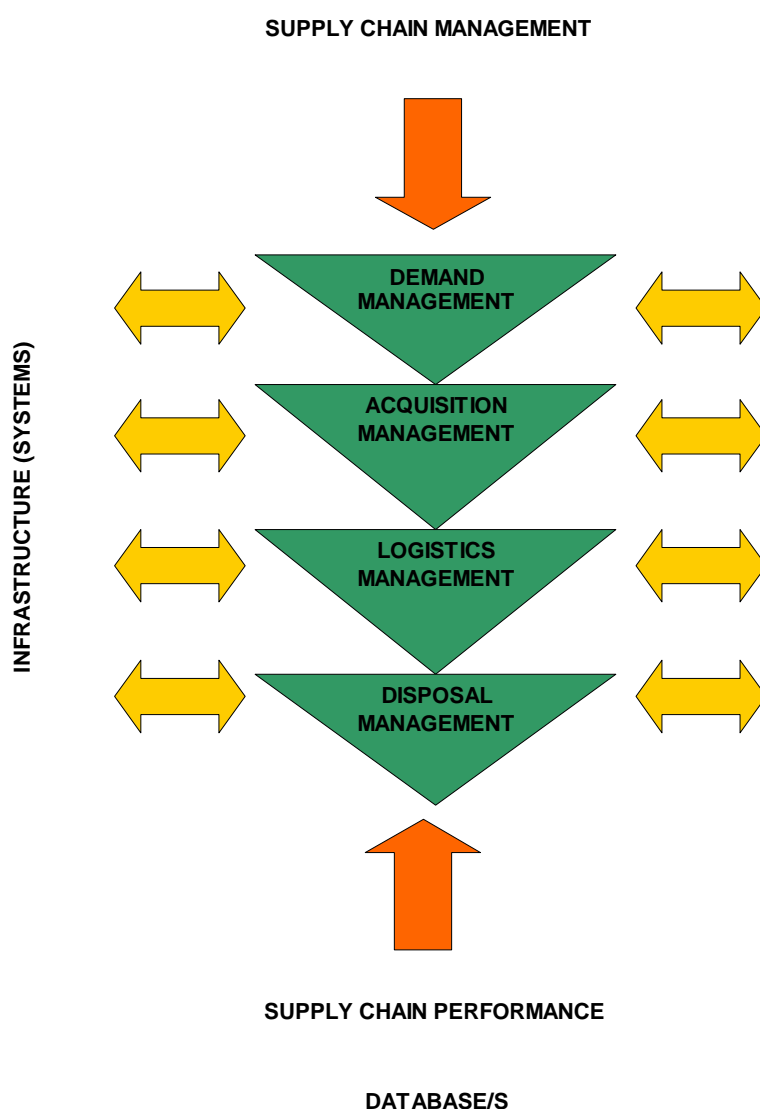


Figure D1: Graphical depiction of the elements of the supply chain

**Table D1: SCM processes (2003)**

Element	Outline of function associated with the element
Demand management	<p>This is the beginning of the supply chain where the following functions should take place: Determining a needs assessment dealing with issues such as:</p> <ul style="list-style-type: none"> <li>✓ Understanding future needs;</li> <li>✓ Identifying critical delivery dates;</li> <li>✓ The frequency of need;</li> <li>✓ Linking the requirement to the budget;</li> <li>✓ Doing an expenditure analysis (based on past expenditures);</li> <li>✓ Determining the specifications;</li> <li>✓ Doing a commodity analysis (checking for alternatives); and</li> <li>✓ Doing an industry analysis.</li> </ul> <p>This is a cross-functional exercise that brings the supply chain practitioner closer to the end user and ensuring that value for money is achieved.</p>
Acquisitioning Management	<p>This is the stage where:</p> <ul style="list-style-type: none"> <li>✓ The preferential procurement policy objectives are identified that could be met through the specific contract;</li> <li>✓ The strategy of how the market is to be approached is determined;</li> <li>✓ Applicable depreciation rates are determined;</li> <li>✓ The total cost of ownership (TCO) principle is being applied e.g.</li> <li>✓ Life cycle cost;</li> <li>✓ Inventory carrying cost;</li> <li>✓ The bid document would be compiled, attaching all necessary required documents and giving conditions etc;</li> <li>✓ The bid evaluation criteria is determined;</li> <li>✓ Bids would be evaluated and recommendations tabled;</li> <li>✓ Contract documents would be compiled and signed;</li> <li>✓ Contract administration is done; and</li> <li>✓ Contract information is used to kick-start the logistics management process.</li> </ul>
Logistics Management	<p>For stock or inventory items the following functions will amongst others be performed:</p> <ul style="list-style-type: none"> <li>✓ Coding of items;</li> <li>✓ Setting of inventory levels;</li> <li>✓ Placing of orders;</li> <li>✓ Receiving and distribution of material;</li> <li>✓ Stores/Warehouse management;</li> <li>✓ Expediting orders;</li> <li>✓ Transport management; and</li> <li>✓ Vendor performance etc.</li> </ul> <p>For fixed capital items (construction and road projects, immovable property) a similar process, mutates mutandis has to be adopted, i.e. appropriate classification, additions to asset and property register, valuation, main use, etc.</p> <p>From this process the financial system is activated to generate payments</p>
Disposal Management	<p>At this stage:</p> <p>Obsolescence planning or depreciation rates per item required to be calculated;</p> <p>A data base of all redundant material is kept;</p> <p>Material is inspected for potential re-use;</p> <p>A strategy is determined of how the items are going to be disposed of; and</p> <p>Executing the physical disposal process.</p> <p>Again a similar set of procedures is applicable to fixed capital stock, i.e. depreciation, maintenance and replacement planning and costing, etc.</p>
Supply Chain Performance	<p>Here a monitoring process takes place, undertaking a retrospective analysis to determine whether the proper process is being followed and whether the desired objectives are achieved.</p> <p>Some of the issues that may be reviewed are:</p> <ul style="list-style-type: none"> <li>✓ Achievement of goals;</li> <li>✓ Compliance to norms and standards;</li> <li>✓ Savings generated;</li> <li>✓ Stores efficiency;</li> <li>✓ Cost variance per item;</li> <li>✓ Contract breach etc;</li> <li>✓ Cost efficiency of procurement process (i.e. the cost of the process itself);</li> <li>✓ Whether supply chain objectives are consistent with government's broader policy focus</li> <li>✓ That the material construction standards become increasingly aligned with those standards that support international best practice;</li> <li>✓ That the principles of co-operative governance as expounded in the Constitution are observed; and</li> </ul> <p>That the reduction of regional economic disparities are promoted.</p>

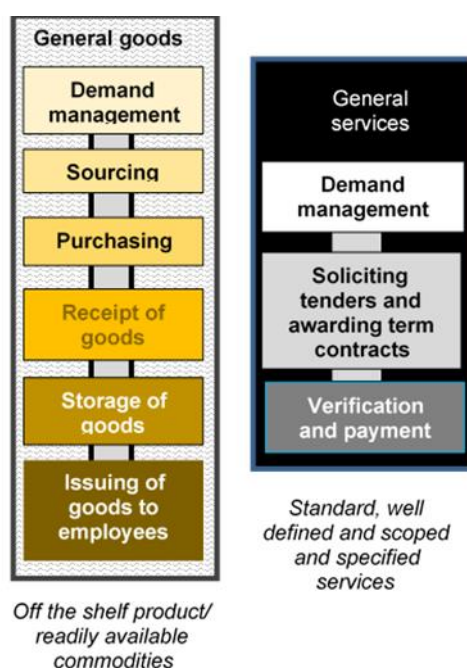
The SCM regulations for supply chain management issued in terms of the PFMA and the MFMA establish the overarching SCM requirements reproduced in Table D2.

**Table D2: Overarching SCM regulations**

Issued in terms of the PFMA	Issued in terms of the MFMA
<p>A supply chain management system must provide for at least the following: –</p> <ul style="list-style-type: none"> <li>(i) demand management;</li> <li>(ii) acquisition management;</li> <li>(iii) logistics management;</li> <li>(iv) disposal management;</li> <li>(v) risk management; and</li> <li>(vi) regular assessment of supply chain performance.</li> </ul> <p>The accounting officer or accounting authority must establish a separate supply chain management unit within the office of that institution's chief financial officer, to implement the institution's supply chain management system.</p>	<p>The supply chain management policy of a municipality or municipal entity must describe in sufficient detail -</p> <ul style="list-style-type: none"> <li>(a) the supply chain management system that is to be implemented by the municipality or municipal entity; and</li> <li>(b) effective systems for - <ul style="list-style-type: none"> <li>(i) demand management;</li> <li>(ii) acquisition management;</li> <li>(iii) logistics management;</li> <li>(iv) disposal management;</li> <li>(v) risk management; and</li> <li>(vi) performance management.</li> </ul> </li> </ul> <p>A supply chain management unit must, where possible, operate under the direct supervision of the chief financial officer or an official to whom this duty has been delegated in terms of section 82 of the Act.</p>

## D.2 The supply chain for general goods and services for consumption

Public procurement that is unrelated to infrastructure delivery typically relates to 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 D2).



**Figure D2: The supply chain for general goods and services for consumption**

Demand management is commonly informed by bin / inventory levels or the frequency of a required service.

### **D.3 The supply chain for infrastructure**

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 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.

Figure D3 indicates the work flow associated with the planning, design and execution of infrastructure projects (the project life cycle) and the manner in which it needs to be managed and controlled by a client. The work flow shown in Figure D3 is broken down into stages (collections of logically related activities in the delivery cycle) that culminates in the completion of a major deliverable. Each of these stages are linked to tasks associated with the supply chain required to deliver infrastructure projects. Decisions need to be taken on the acceptability of each end of stage deliverable.

The stages indicated in Figure D3 are structured in such a manner that the viability of a project may be tested and monitored and controlled by the client delivery management team as it progresses. It generates information which informs decisions at particular points in the process. Procurement takes place whenever resources are required to progress an infrastructure project.

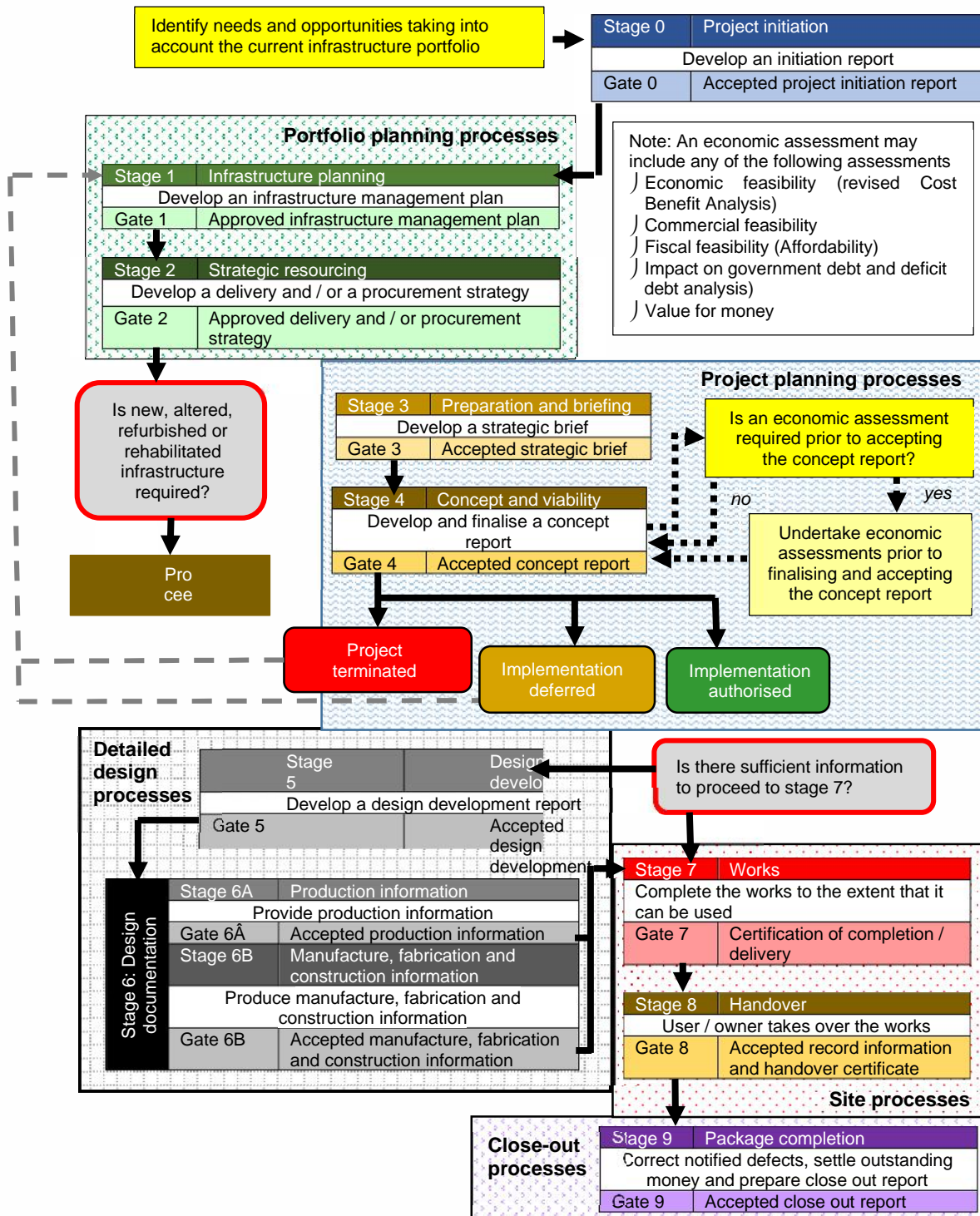
Stage 0 admits projects into the pipeline of projects so that they can be further prepared prior to a decision being taken to implement them. The infrastructure management plan (stage 1) is not a static document as project parameters relating to cost and schedule of a pipeline of projects need to be adjusted as projects unfold and to meet changing business needs. New initiation reports are accepted at stage 0 to the pipeline of projects on an ongoing basis. Such a plan needs to be reviewed and updated regularly, at least once a year to reflect revised information, emerging business needs and changing priorities. This also necessitates revisions to deliverables associated with stage 2 (strategic resourcing).

Stage 3 establishes a strategic brief for the project to enable the professional team to advance the project. Stage 4 (concept and viability) results in a solution for an infrastructure project which satisfies the business case for the project. The design or solution is commonly “frozen” at the end of stage 4.

Stage 4 is the stage where a decision is taken on whether or not the project is likely to yield the desired outcome. The decision taken at the end of stage 4 may authorise implementation, defer implementation or terminate the project. The concept report which is the end deliverable of this stage enables the technical and environmental feasibility of a project to be established. Economic assessments may need to be undertaken at this point to establish or confirm the economic feasibility of the project (see Figure D3).<sup>101</sup>

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 or there is insufficient information to proceed to stage 5. It is necessary, particularly with projects spanning a number of years, to revalidate the parameters which informed decisions to proceed to implementation so that visible and conscious decisions can be made should adjustments be necessary to reflect changes in the project environment in different packages



**Figure D3: Stages associated with planning, design and execution of infrastructure projects**

Detailed design during stage 5 includes the selection of materials and components. At this stage there will often 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 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 or installed, how they are to be maintained and, if relevant, how they are to be commissioned.

The outline specifications developed during stage 5 needs to 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 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.

Production information is developed during stage 6A of the design documentation stage. This information enables manufacture, fabrication and construction information to be produced during stage 6B by or on behalf of the contractor, in response to the production information that is provided.

Stage 7 can also include the design, supply and installation of plant which is incorporated into the works.

There is a difference between achieving completion of the works in accordance with the provisions of the contract (stage 7) and the handing over of the works to the owner, end user or those responsible for the operation and maintenance of the works (stage 8). 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 safeguard the works from the time that the contractor's liabilities cease until the time that the works are handed over.

Record information which is produced during stage 8 needs, as relevant, to provide those tasked with the operation and maintenance of infrastructure with the information necessary to:

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

## D.4 Core systems for the delivery of infrastructure projects

### D.4.1 Introduction

A delivery management system such as that outlined in D3 is commonly linked to an asset management system and a budgeting and planning system, particularly where an organisation owns and maintains a portfolio of construction works. The asset management system informs demand management. The planning and budgeting system prioritises projects and releases funding for projects. There are accordingly forward and backward linkages between these three core systems as indicated in Figure D4.<sup>102</sup>

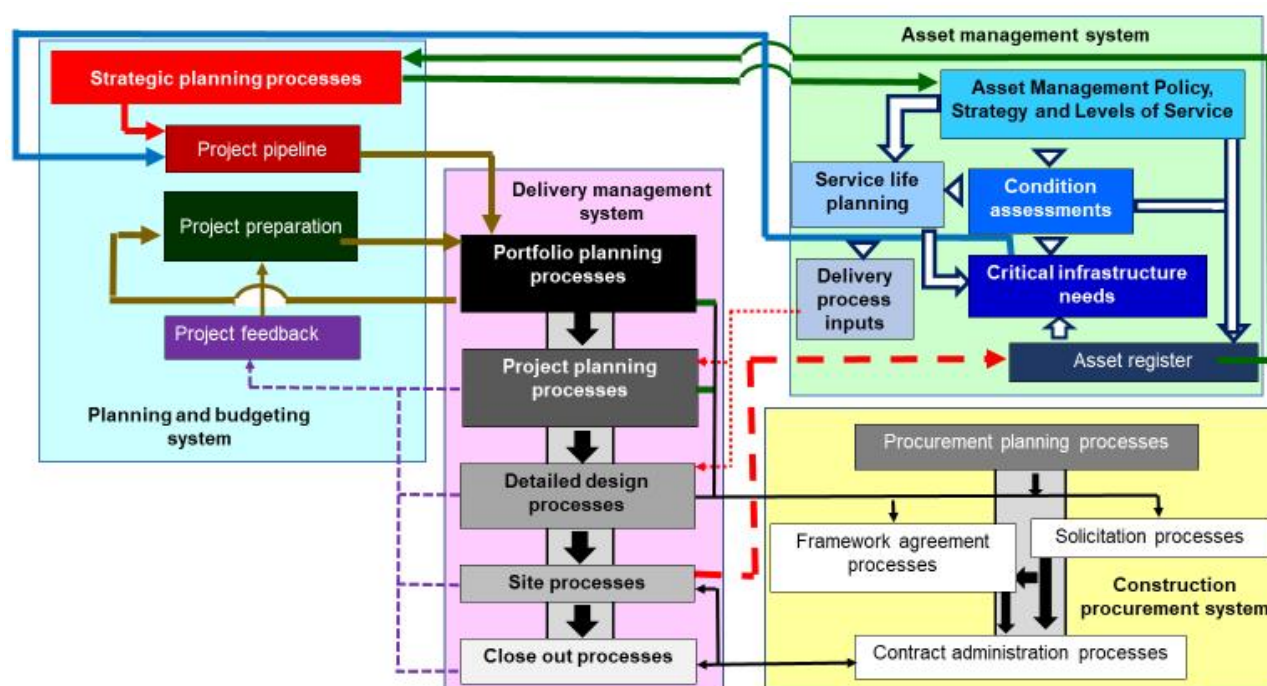


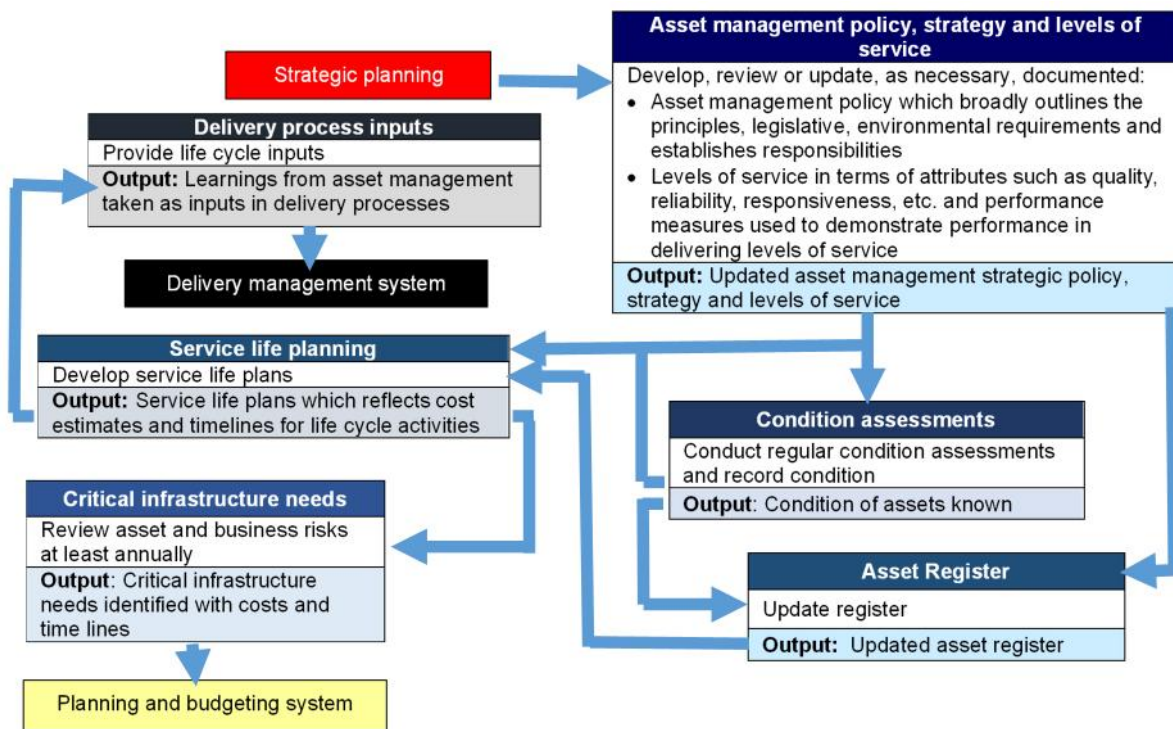
Figure D4: Linkages between core systems

### D.4.2 Linkages with an asset management system

Asset management for construction works considers the entire lifecycle (service life) of the asset and the associated costs, from the identification of a need through to the final decommissioning of the asset. Asset management is not simply a matter of maintaining existing assets. It is a strategic approach to the provision of construction works that provides direction on decision making throughout the planning, delivery, operation and disposal processes. It follows a risk based approach in all asset management decisions in order to achieve a balance between cost, risk and performance.

An asset management system for infrastructure projects, which feeds into the demand management component of a delivery management system, comprises a number of activities which can be grouped together into 6 basic sets of tasks or components, namely asset register, asset management policy and levels of service, condition assessment, service life planning, critical infrastructure needs and delivery process inputs as indicated in Figure D5.





**Figure D5: Interacting elements of an asset management system**

One of the major starting points for asset management is the identification of all existing assets. This can be developed incrementally, based on the level of accuracy needed versus affordability, and can precede finalisation of an asset management policy. In addition to identifying assets, there is a need to determine an acceptable level of service, so that the asset performance can be measured against a set yardstick. Levels of service are informed by a combination of customer needs, legislative requirements and internal business objectives, and need to be sustainable over the service life of the asset.

Knowledge of the condition and remaining useful life of an asset is a key part of understanding the future need for rehabilitation, replacement, or disposal and informs financial decision making. Timely rehabilitation of existing infrastructure can generally extend the useful life of an asset far more cost effectively than replacement. Levels of service and future demand cannot be looked at in isolation from each other. Future demand not only informs what budgets will be required over time, but also gives an indication if the current levels of service are sustainable and is a key input into strategic planning decisions.

Critical and important assets can be identified by considering the consequences of failure in terms of health and safety incidents, additional costs of deferring repairs and maintenance, impact on the business and image of the entity and the effect on the environment. This can be done using a typical risk evaluation matrix based on probability and impact of occurrence. Once identified, prioritisation of any new capital or rehabilitation work needed to ensure critical assets remain operational becomes a governance issue strongly informed by the level of risk. Identified critical work then needs to be fed into the planning and budgeting process to be prioritised together with any proposed new capital work.

There needs to be alignment between those that design and construct infrastructure with those that subsequently occupy, use and manage it. Accordingly, there needs to be open channels of communications between the different role players during many of the supply chain tasks located within the delivery management system which are indicated in Figure D3.

### D.3 Linkages with a budgeting and planning system

A planning and budgeting system for infrastructure projects comprises a number of activities which can be grouped together into 3 basic sets of tasks or components, namely, project pipeline, project preparation and project feedback as indicated in Figure D6.

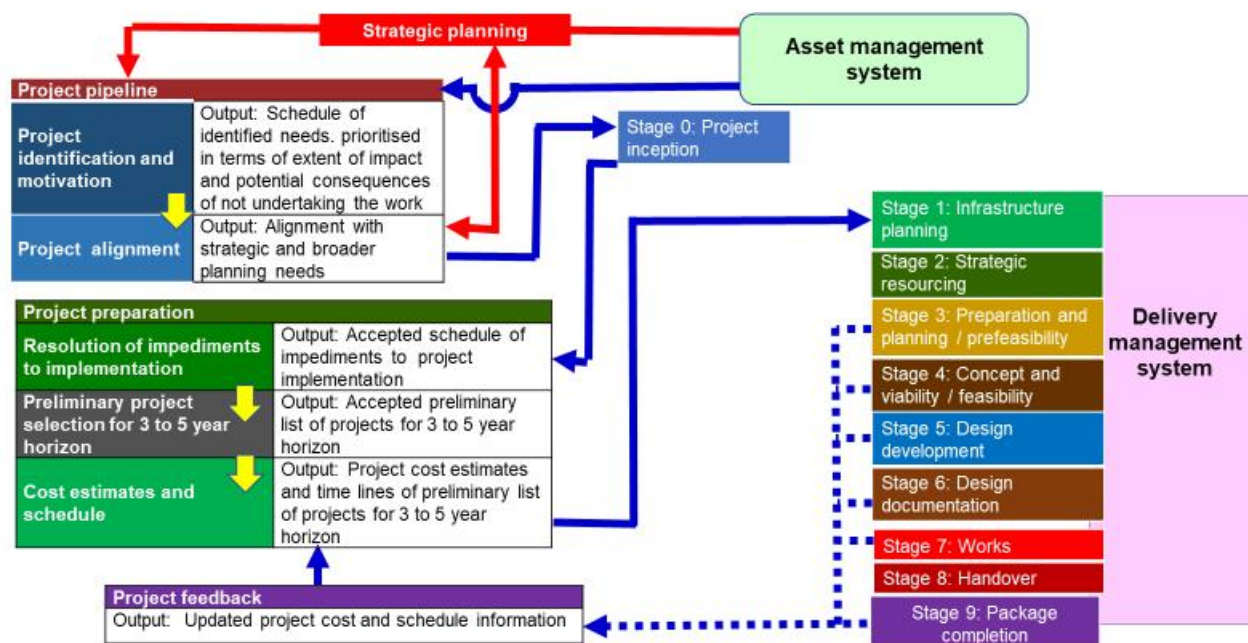


Figure D6 – Interacting elements of a planning and budgeting system

A project pipeline in the context of infrastructure projects means that a need has been identified but not yet met. Such projects range from simply having been identified to being ready to implement.

Projects in the first instance need to be identified. Thereafter projects need to be motivated by considering the benefit of the project and / or consequences of not undertaking the project. Although many of the identified projects are a direct response to specific planning needs, others will be in response to drivers associated with broader and more strategic project needs.

The demand for infrastructure needs to be managed through:

1) service life plans which:

a) are aligned to the organisation's spatial development framework and strategic plans:

b) are based on:

- ) an assessment of current performance against desired levels of service or functionality; and
- ) a needs analysis informed by factors such as policies, norms and standards, condition assessments, functional performance, and current and forecasted levels of optimisation; and

- c) reflect a cost estimate for the life cycle activities comprising acquisition, operations, maintenance, refurbishment, rehabilitation or alteration as relevant, over a minimum period of 5 years; and
- 2) infrastructure management plans which, as a minimum, summarise the service life plans and provide a credible forecast of current and net demand for services or requirements for functionality over a period of 3 to 5 years.

The impediments to implementation and the timelines required to resolve them need to be known. Such impediments may relate to land identification and ownership (e.g. servitude ownership / acquisition, land usage / zoning and the presence of informal dwellings or graves on the site) and environmental and other legislative approvals.

Once the project pipeline has been established and prioritised, alignment with broader and strategic planning processes needs to be confirmed and impediments to implementation identified. Although the project pipeline will contain high level estimates and project timelines, projects that fall within the preliminary selection for an infrastructure management plan need to have more detailed timelines and estimates to ensure that the budget estimates are realistic and the timelines are achievable. This project preparation stage is a critical phase of the planning process as the likelihood of implementing proposed projects within the proposed budgets and schedule put forward in any infrastructure management plans needs to be understood.

Proper feedback on projects ensures that all the role players are fully aware of everything taking place and are in a position to take any corrective action that may be required (see Figure B1). Such information is not only required for performance management but also to inform future decisions and choices, leading to an ongoing improvement in planning and budgeting as well as to improve project estimates in future budgets, particularly where projects straddle a number of financial years.

## **Annexure E: Legislative frameworks applicable to infrastructure procurement and delivery management**

### **E.1 Constitutional imperatives**

Section 217 of the Constitution of the Republic of South Africa establishes:

- “good governance” objectives for the public procurement system, namely that the system needs to be fair, equitable, transparent, competitive and cost effective; and
- establishes South Africa’s preferential procurement policy in that it provides for a preferencing scheme and measures to be taken to protect or advance persons disadvantaged by unfair discrimination.

Section 217 of the Constitution requires that the preferential procurement policy be implemented in accordance with national legislation. The Preferential Procurement Policy Framework Act, 2000 (Act No 5 of 2000) establishes the manner in which preferential procurement policies may be implemented.

### **E.2 Public Finance Management Act**

#### ***E.2.1 General***

The Public Finance Management Act of 1999 (Act No 1 of 1999) (PFMA) requires that accounting officers and accounting authorities put in place an appropriate procurement and provisioning system which is fair, equitable, transparent, competitive and cost-effective and a system for properly evaluating all major capital projects prior to a final decision on the project. The Act permits National Treasury to issue Regulations and Instructions applicable to all organs of state to which the Act applies concerning the determination of a framework for an appropriate procurement and provisioning system. It also empowers National Treasury to approve a departure from a treasury regulation or instruction.

#### ***E.2.2 Supply Chain Management Regulations***

Supply Chain Management Regulations have been issued in terms of the PFMA to establish requirements for a supply chain management system which as a minimum provides for demand management, acquisition management, logistics management, disposal management, risk management; and regular assessment of supply chain performance (see Annexure D). These Regulations also cover the training of SCM officials, procurement of goods and services, disposals and reporting of SCM information. They also require the establishment of a committee system to deal with tendering through a competitive tender process and a separate supply chain management unit within the office of the institution’s chief financial officer to implement the institution’s supply chain management system. These Regulations apply to departments, constitutional institutions and national and public entities (i.e. Schedule 3A and 3C public entities). They do not apply to major public entities and national and provincial business enterprises (i.e. Schedule 2, 3B and 3D public entities). These Regulations which were issued in 2005 have not to date been amended. A confusing plethora of practice notes, instructions and guides have, however, been issued to clarify various aspects of these Regulations.

### **E.2.3 Treasury Instructions issued in terms of the PFMA**

Section 76(4)(c) of the PFMA permits National Treasury to issue instructions regarding the determination of a framework for an appropriate procurement and provisioning system. Instructions that are issued in terms of this section may differentiate between different categories of institutions to which this Act applies.

National Treasury has issued a number of instructions (practice notes) other than those relating to local content and production (see 4.4). The current list (1 October 2019) of these instruction notes appearing on the National Treasury website is reproduced in Table 7. It should be noted in this regard that following the establishment of the Office of the Chief Procurement Officer within National Treasury during 2013 (see 4.1.4) instructions started to be made applicable to organs of state which are subject to the PFMA including major public entities and national and provincial business enterprises (i.e. Schedule 2, 3B and 3D public entities).

**Table E.1: Current treasury SCM instruction notes issued in terms of the PFMA other than those relating to local content and production**

<b>Year</b>	<b>Title<sup>s</sup></b>	<b>Applicability</b>
2003	General Conditions of Contract (GCC) and Standardised Bidding Documents (SBDs)	Departments, constitutional institutions and public entities <sup>#</sup>
	Threshold values for the invitation of price quotations and competitive bids	
	Appointment of consultants	
	Code of conduct for supply chain management practioners	
2004	Checklist for the implementation of Supply Chain Management and monthly reporting of supply chain management	Departments, constitutional institutions and Schedule 3A and 3C public entities
	Tax clearance certificate: contact details of South African Revenue Services (SARS) Official dealing with tax clearance certificate	
	Training of supply chain management officials	
	Strategic sourcing of motor vehicles – requests for estimates	Departments
2005	National Industrial Participation Programme – standard bidding documents (SBD5)	Departments, constitutional institutions and public entities <sup>#</sup>
	Supply chain management: Threshold values for the procurement of goods and services by means of petty cash, verbal / written price quotations and competitive bids	Departments, constitutional institutions and Schedule 3A and 3C public entities
	Projects / services funded by grants in accordance with technical assistance agreements	
	Appointment of transaction advisors to assist with Public Private Partnerships	
2006	Tax clearance certificates	Departments, constitutional institutions and Schedule 3A and 3C public entities
	Prohibition of set asides and the use of cost estimates as benchmarks	
	Measurables attached to specific goals for which preference points are awarded	
	Tax Clearance Certificates for Price Quotations and Competitive Bids	
	Standard Bidding Document: Declaration of Bidder's Past Supply Chain Management Practices (SBD 8)	
	Restriction of suppliers Augmentation of general conditions of contract	
2007	Procurement of Goods and Services by Means other than through the invitation of Competitive Bids	Departments, constitutional institutions and Schedule 3A and 3C public entities
	Supply Chain Management: Threshold Values for the Procurement of Goods, Works and Services by means of Petty Cash, Verbal / Written Price Quotations or Competitive Bids	
2008	Irregular expenditure	Departments, constitutional institutions and Schedule 3A and 3C public entities
	Supply Chain Management: National Industrial Participation Programme: Standard Bidding Document (SBD 5) And Augmentation of the General Conditions of Contract	

Year	Title <sup>s</sup>	Applicability
	Supply Chain Management: Threshold Values for The Procurement of Goods, Works And Services by Means of Petty Cash, Verbal / Written Price Quotations or Competitive Bids	
2009	Procurement through State Information Technology Agency (SITA) and Accountability of Accounting Officers / Authorities	Departments, constitutional institutions and Schedule 3A and 3C public entities
	Supply Chain Management: Declaration of Interest: Amendment and Augmentation of Standard Bidding Document (SBD 4)	Departments, constitutional institutions and Schedule 3A, 3B, 3C and 3D public entities
	Unsolicited Proposals	
2010	National Treasury Instruction Note on the Amended Guidelines in Respect of Bids that Include Functionality as a Criterion for Evaluation	Departments, constitutional institutions and Schedule 3A and 3C public entities
	Prohibition of Restrictive Practices: Certificate of Independent Bid Determination: Standard Bidding Document (SBD 9)	
	Augmentation of General Conditions of Contract	
	Enhancing Compliance Monitoring and Improving Transparency and Accountability in Supply Chain Management	
2011	Note on Enhancing Compliance Monitoring and Improving Transparency and Accountability In Supply Chain Management	Departments, constitutional institutions and Schedule 3A and 3C public entities
2014	Tax compliance measures for persons conducting business with the state	
	Clarification regarding implementation of tax compliance status	
2015	Advertisements of bids and the publication of awards on the eTender publication portal	Departments, constitutional institutions and Schedule 2 and 3 public entities
	Standard for Infrastructure Procurement and Delivery Management	
	Cost Containment Measures Related to Travel and Subsistence	
	Cost control measures for the construction of new primary and secondary schools and the provision of additional buildings at existing schools	Departments responsible for education
2016	Cost Containment Measures	
	Cost Containment Measures Related to Travel and Subsistence	
	National Travel and Accommodation Project Implementation, Appointment of travel management companies and interim arrangements up to 31 March 2017	Departments, constitutional institutions and Schedule 2 and 3 public entities
	Central supplier data base	
	Prevention and combating of abuse in the supply chain management system	
	Procurement plans – submissions and reporting	
	National travel policy framework	Departments, constitutional institutions and Schedule 3A and 3C public entities
2017	Minimum bid specification requirements for travel management services	Departments, constitutional institutions and Schedule 2 and 3 public entities
	Tax compliance verification status	
	Revised cost containment measures related to travel and subsidence	
	National travel policy framework	
	Revised cost containment measures related to travel and subsidence – revised maximum allowable rates for domestic accommodation and meals	Departments, constitutional institutions and Schedule 3A and 3C public entities
2019	Framework for infrastructure delivery and procurement management	Departments, constitutional institutions and Schedule 2 and 3 public entities
	Repeal of National Treasury SCM Instruction No 5 of 2016/2017 dealing with payment due to suppliers / creditors within 30 days	

# The practice instruction is addressed to these entities

\$ Some of these instruction notes may have been withdrawn, notwithstanding their listing on the National Treasury website

## **E.2.4 Public private partnerships**

Regulations were issued in 2005 in terms of the PFMA to cover Public Private Partnerships. These Regulations which do not apply to Major Public Entities defines two types of PPPs:

- ) Type 1: where the private party performs an institutional function
- ) Type 2: where the private party acquires the use of state property for its own commercial purposes.

A PPP may also be a hybrid of these types.

Payment in any scenario involves one of three mechanisms:

- 1) the institution paying the private party for the delivery of the services, or
- 2) the private party collecting fees or charges from users of the service, or
- 3) a combination of 1) and 2).

A PPP may be developed with a range of different characteristics. These all involve transferring risk to the private party for designing, financing, building, and operating infrastructure and services.

### **E.3 Municipal Finance Management Act**

The Local Government: Municipal Finance Management Act, 2003 (Act No 56 of 2003) similarly requires that all municipalities and municipal entities have and implement a SCM policy which gives effect to the provisions of a prescribed legislative 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 the competitive tendering process. The Act also establishes requirements for contracts and contract management. 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 tenders, 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. These Regulations also require that a SCM unit be established which, where possible, must operate under the direct supervision of the chief financial officer or an official to whom this duty has been delegated. These Regulations have not been amended since 2005. Again a confusing plethora of guidelines and circulars have, however, been issued to clarify various aspects of these Regulations.

The MFMA also permits National Treasury to approve a departure from a treasury regulation.

The MFMA Act empowers National Treasury to issue guidelines. However, any guideline issued by National Treasury in terms of the Act is not binding on a municipality or municipal entity unless adopted by its council. A Municipal Supply Chain Management Model Policy was also issued in 2005 as a guideline in terms of these Regulations.

National Treasury has published Supply Chain Management Guides for accounting officers / authorities (2004) and accounting officers of municipalities and municipal entities (2005).

The MFMA requires that a PPP agreement comply with any prescribed regulatory framework for public-private partnerships.

#### **E.4 Preferential Procurement Policy Framework Act**

The Preferential Procurement Policy Framework Act, 2000 (Act No 5 of 2000) establishes the manner in which preferential procurement policies provided for in the Constitution are to be implemented. The Framework contained in the Act establishes a price preference mechanism in the form of a preference points system where points are allocated for specific goals (up to 10 or 20 points depending upon the value of the tender) and points are provided for price up to 90 or 80 depending upon the value of the tender). 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 Preferential Procurement Regulations issued in terms of this Act also regulate aspects of how procurement is to be undertaken in addition to preferential procurement, e.g. the awarding of contracts at market related rates and the evaluation of functionality. The 2011 Regulations introduced requirements for local production and content (see 4.4). The 2017 Regulations introduced set asides and reservations (see 4.2.6).

#### **E.5 Broad-based Black Economic Empowerment Act**

The Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003) establishes a code of good practice to inform the development of qualification criteria for the issuing of licenses or concessions, the sale of state owned enterprises and for entering into partnerships with the private sector and development and implementation of a preferential procurement policy. A Construction Sector scorecard was issued in 2017 in terms of this Act. This scorecard applies to all enterprises which derive more than 50% of their annual revenue from construction related activities. This score card significantly lowers the turnover thresholds for exempted micro enterprises and small qualifying enterprises in the case of built environment professionals.

#### **E.6 Promotion of Administrative Justice Act**

The Promotion of Administrative Justice Act (Act 3 of 2000) establishes fair administrative procedures, permits those affected by unfair administrative action to request reasons for such administrative action within 90 days of, or when they became aware of, such actions and requires administrators to respond within 90 days of receipt of such requests.

#### **E.7 Construction Industry Development Board Act**

The Construction Industry Development Board Act of 2000 established the CIDB to implement an integrated strategy for the reconstruction, growth and development of the construction industry. The Act creates a register of contractors linked to a best practice contractor recognition scheme and a register of projects linked to a best practice project assessment scheme. Both these registers are central to the implementation of the integrated strategy.

The register of contractors is intended to support risk management in the tendering process, reduce the administrative burden associated with the award of contracts and reduce tendering costs to both clients and contractors. The Act prohibits the award of a construction works contract in the public sector to an unregistered contractor. The assessment of the performance of contractors was expected to provide a performance record for contractors and promote minimum standards and best practice.



Regulations issued in terms of the Act established the register of contractors in 2004. These Regulations established a methodology to determine the required CIDB contractor grading designations based on average turnover, largest contract, employable capital and full-time equivalent registered built environment professionals and how the register is to be applied in the procurement process. Tenderers are not permitted to tender above their tender value range based on their CIDB contractor grading designations. The CIDB contractor grading system is intended to be a first-line macro risk management tool to support clients in the procurement of construction works. It explicitly does not absolve clients from performing their own due diligence on the ability of registered contractors to perform a contract. The regulations have amended the grading requirements and associated tender value ranges in 2005, 2008, 2013 and 2019. The 2008 regulations increased the tender value range by 30%, adjusted and relaxed certain grading criteria and dropped the requirements for registered professionals. The 2019 amendments to the Regulations increased the tender value ranges by 50% without adjusting the grading criteria. The CIDB has issued a circular which amends the current values contained in the regulations.

The Act tasked the CIDB, within a reasonable period after the establishment of the register of contractors, to establish a best practice contractor recognition scheme which enables organs of state to manage risk on complex contracting strategies and promotes contractor development in relation to best practice standards and guidelines. The CIDB published in 2015 a Board Notice to the effect that the Board had established this scheme and made reference to four published best practices, namely Competence Standard for Contractors (2015), Construction Management Systems (2015), Specification for a Fraud and Corruption Management System (2015) and a Standard for Contractor Performance Reports (Grades 2 to 9) (2013). No regulations have been issued regarding the manner in which the scheme is to be applied or how the published standards enable risk to be managed.

The intention of the register of projects is to gather information on the nature, value and distribution of public and private sector projects above a threshold to provide the basis for a best practice project assessment scheme to promote the performance of public and private sector clients. Regulations issued in terms of the Act established the register of projects in 2004 in terms of which projects were required to be registered on the i-tender system i.e. advertisement, award of contract and termination or completion. The Act envisaged that a best practice project assessment scheme would be introduced within a reasonable period of time in terms of which projects above a threshold would be assessed for compliance with CIDB best practice standards and guidelines and clients engaging in this scheme would pay to the CIDB prescribed percentage of the contract sum. The CIDB published in 2019 a Board Notice to the effect that the Board had established this scheme and made reference to five published best practices, namely Green Building Certification (2011), Standard for Developing Skills through Infrastructure Contracts (2013), Standard for Indirect Targeting for Enterprise Development through Construction Works Contracts (2013), Standard for Contract Participation Goals for targeted Enterprises and Labour through Construction Works Contracts (2017) and Standard for Minimum Requirements for Engaging Contractors and Subcontractors on Construction Works Contracts (2017). Again, no regulations have been issued which indicate how the assessments are to take place or what the assessment fee percentages are.

The Construction Industry Development Board Act permits the CIDB with respect to procurement to:

- ) promote the standardisation of the procurement process with regard to the construction industry within the framework of the procurement policy of Government;

- ) promote uniform and ethical standards within the construction industry; and
- ) publish a Code of Conduct for all parties engaged in construction procurement.

The SCM Regulations issued in terms of the PFMA requires bid documentation and the general conditions of a contract to be in accordance with the prescripts of the CIDB in the case of a bid relating to the construction industry. The SCM Regulations issued in terms of the MFMA requires that bid documentation take into account the general conditions of contract, any Treasury guidelines on bid documentation and the requirements of the CIDB, in the case of a bid relating to construction, upgrading or refurbishment of buildings or infrastructure.

The CIDB Standard for Uniformity in Construction Procurement, which was first published in 2004, established requirements for procurement within the construction industry which are aimed at bringing about standardisation and uniformity in construction procurement documentation, practices and procedures.<sup>kk</sup> This standard as such addressed requirements relating to the solicitation of tenders, the manner in which quality should be dealt with in procurement documents, the formulation and compilation of procurement documents and the manner in which the CIDB register of contractors needs to be applied through procurement documents in public contracts. This standard required that a suitable form of contract for goods, services, professional services and construction works be selected from a list of standard forms of contract<sup>ll</sup> which enable risks to be allocated between the parties to a contract, and provides a number of standard documents including a tender notice and invitation to tender, form of offer and acceptance, standard conditions of tender and standard conditions for the calling for expressions of interest and a number of returnable schedules.

---

<sup>kk</sup> The Construction Industry Development Regulations issued in terms of the Construction Industry Development Board Act defines **construction procurement** as “procurement in the **construction industry**, including the invitation, award and management of contracts.” The Construction Industry Development Board Act defines **construction industry** as “the broad conglomeration of industries and sectors which add value in the creation and maintenance of fixed assets within the built environment.

<sup>ll</sup> A **standard form of contract** is a standard contract published by an authoritative industry body which provides 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.

## References

- <sup>1</sup> Burkhardt, P, and Cohen, M. (2019), How Medupi and Kusile are sinking South Africa. 9 October, Bloomberg News. <https://www.fin24.com/Budget/how-medupi-and-kusile-are-sinking-south-africa-20191009>
- <sup>2</sup> Watermeyer, R (2018). Client Guide for Improving Infrastructure Project Outcomes. School of Construction Economics and Management, University of the Witwatersrand and Engineers Against Poverty. ISBN 978-0-620-79293-6.
- <sup>3</sup> AECOM (2018). The future of infrastructure—expert opinions from around the world on the challenges and opportunities ahead. AECOM
- <sup>4</sup> McKinsey and Company. (2017). The art of project leadership: Delivering the world's largest projects. McKinsey Capital Projects and Infrastructure Practice. September
- <sup>5</sup> Watermeyer, R (2018). Client Guide for Improving Infrastructure Project Outcomes. School of Construction Economics and Management, University of the Witwatersrand and Engineers Against Poverty. ISBN 978-0-620-79293-6.
- <sup>6</sup> Infrastructure Client Group (2017). From transaction to enterprise: A new approach to delivering high performance infrastructure. Institution of Civil Engineers, May
- <sup>7</sup> Janse van Rensburg, C. PICC - Addendum A: Stimulus: Understanding the effects of declining budgets for infrastructure
- <sup>8</sup> PWC. Highlighting trends in the South African construction industry November 2016. SA construction 4th edition. [www.pwc.co.za/en/assets/pdf/sa-construction-2016.pdf](http://www.pwc.co.za/en/assets/pdf/sa-construction-2016.pdf)
- <sup>9</sup> Moloi, P (2018). An exploratory study on the legitimacy of energy megaproject in South Africa. Research report. School of Construction Economics and Management, University of the Witwatersrand. August
- <sup>10</sup> Parrok, P.(2015). Mega Project Analysis: A Case Study of the Gauteng Freeway Improvement Project. Faculty of Arts and Social Sciences, University of Stellenbosch. March
- <sup>11</sup> Moloi, P (2018). An exploratory study on the legitimacy of energy megaproject in South Africa. Research report. School of Construction Economics and Management, University of the Witwatersrand. August
- <sup>12</sup> Naidoo, B.(2010). New R6,7bn King Shaka airport gets set for takeoff. 19<sup>th</sup> March. Engineering News. <https://www.engineeringnews.co.za/article/new-r67bn-king-shaka-airport-gets-set-for-takeoff-2010-03-19>
- <sup>13</sup> Groenewald, Y (2017). Durban/ Joburg fuel pipeline opens after years of delays, spiralling costs. Fin24. 6 October <https://www.fin24.com/Companies/Industrial/durbanjoburg-fuel-pipeline-opens-after-years-of-delays-spiralling-costs-20171006>
- <sup>14</sup> Gosling, M. (2019). Eskom and the multi-billion mega projects that could have saved SA. Fin24.13 February. [www.fin24.com/Economy/eskom-and-the-multi-billion-rand-mega-projects-that-could-have-saved-sa-20190213](http://www.fin24.com/Economy/eskom-and-the-multi-billion-rand-mega-projects-that-could-have-saved-sa-20190213)
- <sup>15</sup> New Universities Project Management Team (NUPMT) (2018), Close out report of the new universities project management team on the development of new universities in Mpumalanga and the Northern Cape, 1 November 2011–31 July 2017, available at: [www.wits.ac.za/ipdm/guides/close-out-report/](http://www.wits.ac.za/ipdm/guides/close-out-report/)
- <sup>16</sup> Laryea, S and Watermeyer R. (2020). Managing uncertainty in fast track construction projects: case study from South Africa. Paper accepted for publication in Management, Procurement and Law. ICE proceedings.
- <sup>17</sup> Independent Power Producers Procurement Programme (IPPPP). An Overview as at 31 March 2019, available at [www.ipp-projects.co.za/Publications](http://www.ipp-projects.co.za/Publications)
- <sup>18</sup> National Treasury. (1025) Chapter 12 Infrastructure Delivery Management Support. Publication Of The Provincial Budgets And Expenditure Review – 2010/11 To 2016/17, <http://www.treasury.gov.za/publications/igfr/2015/prov/default.aspx>
- <sup>19</sup> Presentation to the Select Committee on Appropriations Progress Report on Misa 29 August 2012 <https://pmg.org.za/files/docs/120829MISA>
- <sup>20</sup> Municipal Infrastructure Support Agency (MISA) Roles and Responsibilities: MISA briefing 10 June 2013 <https://pmg.org.za/committee-meeting/15999/>
- <sup>21</sup> South Africa bids farewell to Cuban engineers [www.sanews.gov.za/south-africa/south-africa-bids-farewell-cuban-engineers](http://www.sanews.gov.za/south-africa/south-africa-bids-farewell-cuban-engineers)
- <sup>22</sup> Regulations in Terms Of The Public Finance Management Act, 1999: Framework for Supply Chain Management as published In Gazette No. 25767 dated 5 December 2003.
- <sup>23</sup> Presidential Infrastructure Coordinating Commission. (2012). A Summary of The South African National Infrastructure Plan.
- <sup>24</sup> See [http://ocpo.treasury.gov.za/About\\_Us/Pages/The-Chief-Procurement-Officer.aspx](http://ocpo.treasury.gov.za/About_Us/Pages/The-Chief-Procurement-Officer.aspx) (accessed October 2019)
- <sup>25</sup> [http://ocpo.treasury.gov.za/About\\_Us/Strategic\\_Areas/Pages/default.aspx](http://ocpo.treasury.gov.za/About_Us/Strategic_Areas/Pages/default.aspx) (accessed October 2019)
- <sup>26</sup> National Treasury. Medium Term Budget Policy Statement 2018. October 2018. [www.treasury.gov.za/documents/mtbps/2018/mtbps/FullMTBPS.pdf](http://www.treasury.gov.za/documents/mtbps/2018/mtbps/FullMTBPS.pdf)
- <sup>27</sup> See <https://vulekamali.gov.za/about>
- <sup>28</sup> Llewellyn van Wyk. Innovative Building Technologies: The Value. [www.asocsa.org/conference2014/resources/Innovative-Building-Technologies-The-Value-Proposition-LlewellynvanWyk.pdf](http://www.asocsa.org/conference2014/resources/Innovative-Building-Technologies-The-Value-Proposition-LlewellynvanWyk.pdf)
- <sup>29</sup> Why alternative building methods aren't yet feasible in SA. Materials & Equipment News South Africa. <http://www.bizcommunity.com/Article/196/493/157859.html>
- <sup>30</sup> Watermeyer, R.B. (1999) Socio-Economic Responsibilities: The Challenge Facing Structural Engineers, The Structural Engineer, vol.77, no.17, pp.22-28.

- <sup>31</sup> Loots, A. (2019). Head: Technical units, Presidential Infrastructure Coordinating Commission (PICC). Personal communication, November.
- <sup>32</sup> See [www.africancentreforcities.net/wp-content/uploads/2017/05/IUDF-2016\\_WEB-min.pdf](http://www.africancentreforcities.net/wp-content/uploads/2017/05/IUDF-2016_WEB-min.pdf)
- <sup>33</sup> See <http://eolstoragewe.blob.core.windows.net/wm-698609-cmsimages/DraftNSDF15June2018compressed.pdf>
- <sup>34</sup> Omarjee, L. January 2020. Water board snubs WBHO, awards 'questionable' rival tender for nearly R1bn more - court papers. [www.fin24.com/Companies/Industrial/water-board-snubs-wbho-awards-questionable-rival-tender-for-nearly-r1bn-more-court-papers-20200110-3](http://www.fin24.com/Companies/Industrial/water-board-snubs-wbho-awards-questionable-rival-tender-for-nearly-r1bn-more-court-papers-20200110-3)
- <sup>35</sup> Watermeyer, R (2018). Client Guide for Improving Infrastructure Project Outcomes. School of Construction Economics and Management, University of the Witwatersrand and Engineers Against Poverty. ISBN 978-0-620-79293-6.
- <sup>36</sup> Kershaw, S and Hutchison, D (ed) (2009). Client Best Practice Guide. Institution of Civil Engineers. Thomas Telford, Limited
- <sup>37</sup> Report of the Independent Inquiry into the Construction of the DG One Complex in Dumfries April 2018. [www.dumgal.gov.uk/article/17432/DG-One-build-inquiry](http://www.dumgal.gov.uk/article/17432/DG-One-build-inquiry)
- <sup>38</sup> Watermeyer, R.B (2019). The critical role played by the client in delivering infrastructure project outcomes. Civil Engineering, January/February
- <sup>39</sup> The APMG PPP Certification Program Guide. 2016. <https://ppp-certification.com/ppp-certification-guide/about-ppp-guide>
- <sup>40</sup> Institution of Civil Engineers. (2019). Enabling better infrastructure. <https://www.ice.org.uk/ICEDevelopmentWebPortal/media/Documents/Media/ice-enabling-better-infrastructure-report.pdf>
- <sup>41</sup> Federation of Canadian Municipalities (2006). Selecting a professional consultant. ISBN 1-897249-08-X. Ottawa. [www.egbc.ca/getmedia/8a8b72a6-ad49-45d0-835a-e7ccf653e8c0/APEGBC-InfraGuide-Selecting-Professional-Consultant.pdf.aspx](http://www.egbc.ca/getmedia/8a8b72a6-ad49-45d0-835a-e7ccf653e8c0/APEGBC-InfraGuide-Selecting-Professional-Consultant.pdf.aspx)
- <sup>42</sup> Institution of Civil Engineers. (2019). Enabling better infrastructure. <https://www.ice.org.uk/ICEDevelopmentWebPortal/media/Documents/Media/ice-enabling-better-infrastructure-report.pdf>
- <sup>43</sup> Macdonald, H (2009). Managing the Secondary Impacts of Project Change. Engineering and Construction Risk Institute. Document number ECRI-CM-005
- <sup>44</sup> See [www.wits.ac.za/ipdm/guides/close-out-report/](http://www.wits.ac.za/ipdm/guides/close-out-report/); [www.ioptions.co.za/node/7#07](http://www.ioptions.co.za/node/7#07) and [www.wits.ac.za/staff/academic-a-z-listing/l/samuellaryeawitsacza/](http://www.wits.ac.za/staff/academic-a-z-listing/l/samuellaryeawitsacza/) plus several post graduate research dissertations
- <sup>45</sup> Watermeyer, R, Laryea, S, Hodgson, R and Phillips S. Reflections on the day. National Treasury University of Pretoria IDMS Executive University of the Witwatersrand: case study on the strategic application of the SIPDM in the delivery of the two new universities (SIPS 14 project) course. Day 4: November 30 2017 and Day 3: 11 April 2018 (unpublished)
- <sup>46</sup> Extracts from research by Prof Sam Laryea, School of Construction Economics and Construction, University of the Witwatersrand. He located 252 articles in Scopus (the largest database of published outputs internationally) with the term "mega projects" in the title and found 426 publications in the electronic database of the American Society of Civil Engineers that contain the term "mega projects".
- <sup>47</sup> Flyvbjerg, B, Bruzelius, N and Rothengatter, W (2003). Megaprojects and risk: an anatomy of ambition. Cambridge University Press.
- <sup>48</sup> Burkhardt, P, and Cohen, M. (2019), How Medupi and Kusile are sinking South Africa. 9 October, Bloomberg News. <https://www.fin24.com/Budget/how-medupi-and-kusile-are-sinking-south-africa-20191009>
- <sup>49</sup> Tshehla, M. (2019) Kusile and Medupi were destined to fail from the start. 1 May. BusinessDay. <https://www.businesslive.co.za/bd/opinion/2019-05-01-kusile-and-medupi-were-destined-to-fail-from-the-start/>
- <sup>50</sup> Report of the Moerane Investigating Team to the Minister of Minerals and Energy on the December 2005 Fuel Shortages. See [http://www.energy.gov.za/files/esources/pdfs/moerane\\_fuel\\_investigation.pdf](http://www.energy.gov.za/files/esources/pdfs/moerane_fuel_investigation.pdf)
- <sup>51</sup> Donnelly, L.(2012) Transnet pipeline review shows 'systemic failings'. Mail and Guardian. 30 November. <https://mg.co.za/article/2012-11-30-transnet-pipeline-review-shows-systemic-failings>
- <sup>52</sup> Groenwald, Y. (2017). Durban/Johannesburg fuel pipeline opens after years of delays, spiralling costs. Fin24, October 2017. <https://www.fin24.com/Companies/Industrial/durbanjoburg-fuel-pipeline-opens-after-years-of-delays-spiralling-costs-20171006>
- <sup>53</sup> Ryan, C (2017) South Africa's great road swindle. March. <http://www.writersroom.co.za/south-africas-great-road-swindle/>
- <sup>54</sup> New Universities Project Management Team. (2018). Close out report of the New Universities Project in Mpumalanga and the Northern Cape, 1 November 2011 to 31 July 2017. University of the Witwatersrand. <https://www.wits.ac.za/ipdm/guides/close-out-report/>
- <sup>55</sup> Laryea, S and Watermeyer R. (2020). Managing uncertainty in fast track construction projects: case study from South Africa. Paper accepted for publication in Management, Procurement and Law. ICE proceedings.
- <sup>56</sup> Kershaw, S and Hutchison, D (ed) (2009). Client Best Practice Guide. Institution of Civil Engineers. Thomas Telford, Limited
- <sup>57</sup> Department of Higher Education and Training. (2019). University Macro-Infrastructure Framework (MIF). Infrastructure Management Guidelines for Universities. Version 2. Annexure 16 - A Client Maturity Model for Delivering Infrastructure Projects. Developed as a benchmarking tool for senior university management.

- <sup>58</sup> Standing Committee on Appropriations. (2018) Office of Chief Procurement Officer: progress report by National Treasury. 24 April. <https://pmg.org.za/committee-meeting/26204/>
- <sup>59</sup> Binnington Copeland Associates. (January 2014). Discussion Document: The Four Forms of Contract Endorsed by the Cidb - Do They Meet South African Industry needs?
- <sup>60</sup> Media release. (21 November 2018). Auditor-general reports an overall deterioration in the audit results of national and provincial government departments and their entities. [www.agsa.co.za/Portals/0/Reports/PFMA/201718/MR/2018%20PFMA%20Media%20Release.pdf](http://www.agsa.co.za/Portals/0/Reports/PFMA/201718/MR/2018%20PFMA%20Media%20Release.pdf)
- <sup>61</sup> Loyiso Sidimba 12 October 2018. Treasury bends own rules, incurs R770m in irregular expenditure: AG <https://www.iol.co.za/news/politics/treasury-bends-own-rules-incurs-r770m-in-irregular-expenditure-ag-17451372>
- <sup>62</sup> Media release (26 June 2019). Auditor-general flags lack of accountability as the major cause of poor local government audit result. [www.agsa.co.za/Portals/0/Reports/MFMA/2019.06.25/2019%20MFMA%20Media%20Release.pdf](http://www.agsa.co.za/Portals/0/Reports/MFMA/2019.06.25/2019%20MFMA%20Media%20Release.pdf)
- <sup>63</sup> Public Affairs Research Institute (2019). Draft Position Paper on Reforming Public Procurement in South Africa v. 2 (20 September 2019) – personal communication with J Klaaren.
- <sup>64</sup> Human Sciences Research Council Report on Scoping Study on the Potential Added Value of the Infrastructure Transparency Initiative (CoST) in South Africa. 1 July 2019. Draft for National Treasury and Final Editing.
- <sup>65</sup> Phillips, S (2018). The ongoing evolution of government infrastructure procurement. Civil Engineering, January / February
- <sup>66</sup> Association for Project Management. (2017). APM Guide to Contracts and Procurement. Apmknowledge. ISBN-13: 978-1-903494-66-0
- <sup>67</sup> Brunette, Klaaren, and Nqaba. (2019). Reform in the Contract State: Embedded Directions in Public Procurement Regulation in South Africa. PARI. <https://pari.org.za/article-reform-in-the-contract-state-embedded-directions-in-public-procurement-regulation-in-south-africa/>
- <sup>68</sup> Department of Higher Education and Training. (2019). University Macro-Infrastructure Framework (MIF). Infrastructure Management Guidelines for Universities. Version 2. Annexure 16 - A Client Maturity Model for Delivering Infrastructure Projects. Developed as a benchmarking tool for senior university management.
- <sup>69</sup> National Treasury Instruction No 3 of 2019/2020. Framework for Infrastructure Delivery and Procurement Management.
- <sup>70</sup> National Treasury Capacity Development. (2016). Preliminary Analysis Report: National Departments - Supply Chain Management Baseline Study Phase 1 and 2. 30 March.
- <sup>71</sup> Lawless, A 2005. *Numbers and Needs: addressing imbalances in the civil engineering profession*. South African Institution of Civil Engineering
- <sup>72</sup> Watermeyer, R and Pillay, M. (2012) Strategies to address the skills shortage in the delivery and maintenance of infrastructure in South Africa: a civil engineering perspective. *Civil engineering June*
- <sup>73</sup> Geo Quinot (2014), "An Institutional Legal Structure for Regulating Public Procurement in South Africa". Research report on the feasibility of specific legislation for the newly established Office of the Chief Procurement Officer. <http://africanprocurementlaw.org/wp-content/uploads/2016/01/OCPO-Final-Report-APPRRU-Web-Secure.pdf>
- <sup>74</sup> Public Audit Amendment Act, 2018 (Act No. 5 of 2018).
- <sup>75</sup> Watermeyer, R (2018). Client Guide for Improving Infrastructure Project Outcomes. School of Construction Economics and Management, University of the Witwatersrand and Engineers Against Poverty. ISBN 978-0-620-79293-6
- <sup>76</sup> Public Affairs Research Institute (2019). Draft Position Paper on Reforming Public Procurement in South Africa v. 2 (20 September 2019) – personal communication with J Klaaren.
- <sup>77</sup> Constructing Excellence (2011). The business case for lowest price tendering? <http://constructingexcellence.org.uk/wp-content/uploads/2015/01/CE-business-case-against-lowest-price-tendering-May-2011.pdf>
- <sup>78</sup> BS 8534:2011, Construction procurement policies, strategies and procedures – Code of practice. British Standards Institute
- <sup>79</sup> World Bank's New Procurement Framework and Regulations for Projects After July 1, 2016
- <sup>80</sup> Construction Clients Group (2013). Clients' commitments Best Practice Guide. Construction Excellence [http://ccg.constructingexcellence.org.uk/wp-content/uploads/sites/3/2014/10/Client-Commitments-Final\\_May-2014.pdf](http://ccg.constructingexcellence.org.uk/wp-content/uploads/sites/3/2014/10/Client-Commitments-Final_May-2014.pdf)
- <sup>81</sup> Module 1 of the Procurement in the UN System of Organisations Fundamentals of Procurement (Lesson 1: Guiding principles, 2018) [https://elearning.un.org/CONT/PROCS/CS/1-01\\_FP\\_Modules/Module\\_01/M01P01S03.html](https://elearning.un.org/CONT/PROCS/CS/1-01_FP_Modules/Module_01/M01P01S03.html)
- <sup>82</sup> Western Cape High Court, Cape Town, in reportable case No 21158/2012. Rainbow Civils CC v Minister of Transport and Public Works, Western Cape and Others
- <sup>83</sup> 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 and Watermeyer, R.B., Gounden, S., Letchmiah, D.R. and Shezi, S. (1998) Targeted Procurement: a means by which Socio-Economic Objectives can be realised through Engineering and Construction Works Contracts, Journal of the South African Institution of Civil Engineering, vol.40, no.4, pp.15-25..
- <sup>84</sup> Ciaran Ryan. Moneyweb. How the construction 'mafia' business model jumped to other sectors.17 September 2009. [www.moneyweb.co.za/news/industry/how-the-construction-mafia-business-model-jumped-the-fence-to-other-sectors/](http://www.moneyweb.co.za/news/industry/how-the-construction-mafia-business-model-jumped-the-fence-to-other-sectors/)

- 
- <sup>85</sup> Siseko Njobeni. Business Day. Aveng Strabag joint venture terminates Mtentu bridge contract. 4 February 2019. <https://www.businesslive.co.za/bd/companies/industrials/2019-02-04-aveng-strabag-joint-venture-terminates-mtentu-bridge-contract/>
- <sup>86</sup> Bert vd Heever Construction mafia derailing projects, causing engineers to flee. 22 March 2019. [www.asaqs.co.za/news/443215/Construction-mafia-derailing-projects-causing-engineers-to-flee.htm](http://www.asaqs.co.za/news/443215/Construction-mafia-derailing-projects-causing-engineers-to-flee.htm)
- <sup>87</sup> SAFCEC in April 2019 reported [www.safcec.org.za/news/447181/Rise-of-the-new-construction-mafia.htm](http://www.safcec.org.za/news/447181/Rise-of-the-new-construction-mafia.htm) that 183 infrastructure and construction projects nationwide, valued at more than R63-billion according to one industry body, have been hindered.
- <sup>88</sup> Human Sciences Research Council Report on Scoping Study on the Potential Added Value of the Infrastructure Transparency Initiative (CoST) in South Africa. 1 July 2019. Draft for National Treasury and Final Editing.
- <sup>89</sup> SAFCEC. News & Press: Industry News. 17 April 2019. Rise of the new construction 'mafia'. [www.safcec.org.za/news/447181/Rise-of-the-new-construction-mafia.htm](http://www.safcec.org.za/news/447181/Rise-of-the-new-construction-mafia.htm)
- <sup>90</sup> Roy Cokayne. Moneyweb. Government owes construction contractors R5.5bn. 19 September 2019. [www.moneyweb.co.za/news/companies-and-deals/government-owes-construction-contractors-r5-5bn/](http://www.moneyweb.co.za/news/companies-and-deals/government-owes-construction-contractors-r5-5bn/)
- <sup>91</sup> Personal discussion with Dr Hylton Macdonald, former group risk manager for Aveng.
- <sup>92</sup> Roy Cokayne. Moneyweb. Construction industry in survival mode. 18 July 2019. [www.moneyweb.co.za/news/industry/construction-industry-in-survival-mode/](http://www.moneyweb.co.za/news/industry/construction-industry-in-survival-mode/)
- <sup>93</sup> Roy Cokayne. Moneyweb. Government owes construction contractors R5.5bn. 19 September 2019. [www.moneyweb.co.za/news/companies-and-deals/government-owes-construction-contractors-r5-5bn/](http://www.moneyweb.co.za/news/companies-and-deals/government-owes-construction-contractors-r5-5bn/)
- <sup>94</sup> CIDB (2003). Strategy to Promote Infrastructure Procurement and Delivery Management within the Public Sector
- <sup>95</sup> Bizzell, J. (2002) Blueprints in black and white. The Built Environment Professions in South Africa – an outline history, Solo Collective, Durban, Department of Public Works, ISBN 0-620-28492-7
- <sup>96</sup> Report of the Independent Inquiry into the Construction of Edinburgh Schools (2017). [www.designingbuildings.co.uk/wiki/Inquiry\\_into\\_the\\_construction\\_of\\_Edinburgh\\_schools\\_view\\_of\\_the\\_RIAS](http://www.designingbuildings.co.uk/wiki/Inquiry_into_the_construction_of_Edinburgh_schools_view_of_the_RIAS)
- <sup>97</sup> Report of the Independent Inquiry into the Construction of the DG One Complex in Dumfries April 2018. [www.dumgal.gov.uk/article/17432/DG-One-build-inquiry](http://www.dumgal.gov.uk/article/17432/DG-One-build-inquiry)
- <sup>98</sup> Watermeyer, R (2018). Client Guide for Improving Infrastructure Project Outcomes. School of Construction Economics and Management, University of the Witwatersrand and Engineers Against Poverty. ISBN 978-0-620-79293-6.
- <sup>99</sup> Kershaw, S and Hutchison, D (ed) (2009). Client Best Practice Guide. Institution of Civil Engineers. Thomas Telford, Limited
- <sup>100</sup> See [www.environment.gov.za/sites/default/files/legislations/procurement\\_process\\_uniformstrategy.pdf](http://www.environment.gov.za/sites/default/files/legislations/procurement_process_uniformstrategy.pdf)
- <sup>101</sup> The APMG Public-Private Partnership (PPP) Certification Guide (2016)
- <sup>102</sup> Watermeyer, R (2018). Client Guide for Improving Infrastructure Project Outcomes. School of Construction Economics and Management, University of the Witwatersrand and Engineers Against Poverty. ISBN 978-0-620-79293-6.