TOOLKIT **EDITION 1** 2018

CITIES' **INFRASTRUCTURE DELIVERY** AND **MANAGEMENT** SYSTEM **CIDMS**

MODULE 11

Infrastructure delivery

national treasury
Department:
National Treasury
REPUBLIC OF SOUTH AFRICA

cITIEs SUPPORT PROGRAMME

IUDF
INTEGRATED URBAN DEVELOPMENT FRAMEWORK

2030 NDP

MODULE PURPOSE

This module describes the infrastructure delivery management framework applicable to municipalities and municipal entities. Specifically, this module:

1. Describes the control framework for infrastructure delivery management, based on the National Treasury Standard for Infrastructure Procurement and Delivery Management (SIPDM); and
2. Provides guidance with respect to the infrastructure delivery management process.

WHY

The infrastructure delivery management system presented in this module ensures:

1. Proper planning and preparation translates into minimal project disruptions and successful outcomes;
2. Constant focus on value creation; and
3. Management of quality.

OUTPUTS OF MODULE 11:

1. A city infrastructure delivery management system.
2. Completed packages in accordance with stated requirements.

KEY RELEVANT NATIONAL REGULATIONS, POLICIES AND STRATEGIES:

1. Broad-Based Black Economic Empowerment Act, No. 53 of 2003
2. Constitution of the Republic of South Africa, No. 108 of 1996
3. Construction Industry Development Board Act, No. 38 of 2000
4. Engineering Profession Act, No. 46 of 2000
5. Landscape Architectural Profession Act, No. 45 of 2000
6. Local Government: Municipal Finance Management Act, No.56 of 2003
7. Municipal Systems Act, No. 32 of 2000
8. National Archives and Record Services of South Africa Act, No. 43 of 1996
9. Occupational Health and Safety Act, No. 85 of 1993
10. Project and Construction Management Professions Act, 2000 (Act No. 48 of 2000
11. Quantity Surveying Profession Act, No. 49 of 2000
12. Standard for Infrastructure Procurement and Delivery Management
13. South African Bureau of Standards, 10845-1, Construction procurement – Part 1: Processes, methods and procedures
14. South African Bureau of Standards, 10845-2, Construction procurement – Part 2: Formatting and compilation of procurement documentation
15. South African Bureau of Standards, 10845-3, Construction procurement – Part 3: Standard conditions of tender
16. South African Bureau of Standards, 10845-4, Construction procurement – Part 4: Standard conditions for the calling for expressions of interest
17. Department of Public Works and the Construction Industry Development Board. National Immovable Asset Maintenance Management Standard. Final Draft. July 2015.

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Tables that appear in this toolkit

11.1 INTRODUCTION

The control framework for infrastructure delivery was defined in **Figure 9.1 in Module 9.** The process commences with project initiation (Stage 0), followed by nine stages culminating in package completion at stage 9. There are a total of nine stage gates, each with a defined end-of-stage deliverable, described in **Table 9.1.**

This module provides guidance on each of the nine stages of the infrastructure delivery management control framework as defined in the National Treasury Standard for Infrastructure Procurement and Delivery Management (SIPDM). Key principles embedded in this control framework are the need for proper infrastructure planning as a requirement for value creation, stage controls to ensure that informed decisions are made and that risks have been considered and addressed as appropriate.

11.2 STAGE 0: PROJECT INITIATION

In Stage 0 (Project initiation) projects, or groups of projects having a similar high-level scope and that address strategic needs, business risks or opportunities that relate to the municipality's legislated or sanctioned mandate, are appraised for acceptance into firstly sectoral asset management plans and then the city's strategic asset management plan. Such projects or programmes can be identified in the process of preparing asset management plans, or such plans can accept project programme proposals previously identified, or a combination of both.

The project or programme proposal will take the form of an initiation report that shall as a minimum:

- **Provide a project description and high-level scope of work**
- **Outline key issues and solution options that were interrogated**
- **Outline options that were evaluated**
- **Indicate the high-level business case**
- **Provide the estimated project cost and indicative high-level schedule**

However a project or programme proposal is included in a sectoral asset management plan, it must be appraised using documented, objective decision criteria. Objective decision criteria can include factors such as city strategic objectives, legislative compliance, national, provincial or regional priorities, risk exposure and reduction, financial justification and level of stakeholder support. Guidance on deciding objective decision criteria is provided in **Module 8.** The decision-making criteria, findings, assumptions and recommendations shall be documented in the initiation report. Stage 0 is completed when the initiation report is accepted.

11.3 STAGE 1: INFRASTRUCTURE PLANNING

Sectoral asset management plans shall present a lifecycle plan for an asset portfolio(s) as defined in the city's asset management strategy, and this lifecycle plan shall present, amongst other items, programmes, projects or packages that require implementation over a 30 year period, with sufficient level of confidence for inclusion in the medium term expenditure framework. Such a lifecycle plan shall, for each programme, project or package:

- **Describe the high-level scope of work**
- **Estimated total project cost, proposed time schedule and annual budget requirement**
- **Geographical location**
- **Any known encumbrances and estimated timeframes for removing such encumbrances**
- **Be aligned with all prescribed planning, budgeting, monitoring and reporting requirements**

Projects and programmes are generally and preferably included in sectoral asset management plans through acceptance of initiation reports and represent the capital and operating requirements of specific services and asset portfolios. The decision to include projects or programmes into the sectoral asset management plans was based on objective decision criteria used to assess the viability of projects and programmes. The totality of needs from various sectors, services and asset portfolios across the municipality may however exceed available budget in the short to medium term. It is also possible that whilst individual projects or programmes at sector level may have merit, they may not support or may even contradict city strategic objectives, requirements or initiatives.

The strategic asset management plan therefore prioritises and optimises the basket of project, programme and package proposals as presented in sectoral asset management plans, within funding limits, considering amongst others city strategic objectives and spatial priorities and by prioritising projects and programmes through corporate objective decision making criteria. The instrument used to prioritise projects and programmes at corporate level is the multi-criteria analysis framework presented in **Module 8.**

Following prioritisation in the strategic asset management plan, sectoral asset management plans are aligned to the strategic asset management plan, and both sets of plans are approved, at which point stage 1 is complete.

11.4 STAGE 2: DECIDE ON PROCUREMENT STRATEGIES

11.4.1 Delivery management strategy

The municipality or municipal entity needs to develop a delivery management strategy that indicates how needs are to be met for each category of spend through delivery mechanisms such a public private partnership, another organ of state on an agency basis, another organ of state's framework agreement, own resources or own procurement system.

The delivery management strategy is informed by a spend and by organisational and market analysis. Note that delivery management strategies can be established at city-level, service or asset portfolio level, project or programme level, or even regional level. At the city level, the delivery management strategy will state high-level preferences, objectives and directives applicable to the range of infrastructure services and asset portfolios under the control of the municipality. Examples of preferences, objectives and directives at the city level can include (this is neither an extensive nor synthesised list, but merely options and examples, elements of which may or may not be relevant in the context of a particular city):

- Increase control over the infrastructure value chain to limit the city's risk exposure to upstream provider shocks, whether in supply capacity, cost or both (e.g. invest in energy generating capacity, or bulk water storage and abstraction).
- Invest in green infrastructure and closed-loop infrastructure value chains to mitigate the impacts of climate change.
- Mechanise all infrastructure works to the extent that such actions will promote employee health and safety, improve operational efficiencies, and enable the city to deliver better services and response times.
- Seek opportunities for labour intensive employment in both capital works and maintenance, in accordance with guidelines published by the CIDB.
- Develop a capable construction industry in the local economy by outsourcing all capital works delivery, as well as the maintenance of all non-core infrastructure. Disinvest from own construction and maintenance capabilities, except maintenance capability of core infrastructure.
- Transfer infrastructure financing risks to the private sector, to the extent possible.
- Minimise stock-holding by establishing suitable contracts and delivery arrangements with the supplier community.
- Optimise the maintenance capabilities of the city by modernising depots, workshops and stores. This includes the lay-out, equipment and functioning of these facilities, as well as investment in staff competence and management systems.
- Actively promote PPPs with the private sector to fund the city's infrastructure delivery programme.

The examples provided above relate to city strategic objectives. They clearly do not relate to one particular project, programme, and service or asset portfolio. Instead, they can be applied to all services, asset portfolios, programmes and projects, albeit to different degrees depending on the nature of each service, asset portfolio or lifecycle delivery intervention. Such directives are articulated in the asset management strategy contained in the strategic asset management plan (see **Module 7**).

LEVEL OF DELIVERY MANAGEMENT STRATEGY	INCLUDED IN...	FOCUS
City-level / corporate level	Strategic asset management plan	• Overall city spending power and spend by category • Political and policy preferences and dictates (e.g. promoting SMMEs and employment creation) • City long term resilience • Key risks and opportunities (e.g. limited number of CIDB Grade 9 & 10 contractors in the local economy, opportunities for economy of scale in consolidating mechanical and electrical work across asset portfolios • Infrastructure investment as a lever to achieve city strategic objectives
		Guidance on key considerations in deciding on service delivery models is provided in **Figure 12.6** of **Module 12.**
Service / sector level	Sectoral asset management plan	• Interprets and supports overarching city strategic objectives • Service delivery model, supply chain and asset portfolio optimisation • Cost-effective and efficient service delivery
Project / programme level	Project / programme business plan	• Delivery mechanism in support of stated project or programme strategic objectives • Satisfying unique requirements (e.g. community preferences for local labour absorption in construction or maintenance works in their area)

TABLE 11.1: *Hierarchy of delivery management strategies*

Sectoral asset management plans both inform and follow the directives of the strategic asset management plan and focus on service delivery model issues in the infrastructure value chain (e.g. for solid waste: waste collection, separation, reclamation/ recycling/composting and incineration or landfill disposal), considering all relevant internal and external factors, risks, opportunities and constraints. With reference to solid waste, examples of key delivery issues to be considered could include **(not an exhaustive list):**

- Regulatory requirements.
- Remaining airspace on existing landfill sites, permitted types of wastes these landfill sites can receive, current and expected waste volumes, the existence of private landfill sites and the availability of suitable land for new landfill site development.
- Opportunities to generate energy from waste.
- Opportunities for recycling, reclamation and composting and the current involvement of the private sector and of individual pickers.
- Current waste collection capability and cost of providing the service versus the service benefits and costs of outsourcing waste collection.

Project-level delivery management strategies, to the extent that they relate to a particular service or asset portfolio, will take guidance from the sector or service level delivery strategy but may be further tailored to serve particular objectives, such as by creating construction employment opportunities for the local community where the project is to be implemented.

11.4.2 Spend analysis

A spend analysis, done correctly, allows the city to identify opportunities to leverage buying power, reduce costs, improve operational performance and provide better management and oversight of suppliers, while improving relationships with internal and external stakeholders.

The following methodology may be used to undertake the spend analysis, based on lifecycle needs presented in the lifecycle plans of sectoral asset management plans:

a. Determine needs at asset group type level (e.g. new landfill site or an electricity substation) for capital works and at asset type level for maintenance works, following a bottom-up analysis approach (from component level upwards) for existing assets, and a top-down approach for new asset requirements.

b. Categorise the clusters into categories of spend, based on their commonality in respect of the following attributes, as relevant and quantify the level of spend per category:
- Type of lifecycle activity (e.g. new asset creation, maintenance, renewal, upgrading or disposal)
- Expenditure classification (capital or operating)
- One-of-a-kind projects or repetitive projects
- Potential for standardisation (e.g. high, medium and low)
- Time schedule urgency (e.g. high, medium, low)
- Organisational and managerial complexity (e.g. high, medium or low)
- Technical complexity or level of innovation (e.g. high, medium or low)

c. Identify spatial locations of needs per category of spend.

d. Identify needs which may occur simultaneously on the same site.

e. List the high-level work activities (scope of work)

11.4.3 Organisational analysis

The organisational analysis determines the city's organisation capacity, capability and appetite to deliver projects and programmes. Cities should consider all relevant factors related to organisational capacity and capability, inclusive of:

a. Cradle-to-grave capabilities to deliver and maintain assets, per service/asset portfolio, to the level of asset group type:

- Prefeasibility studies/feasibility studies
- Design
- Securing necessary approvals or authorisations and removing encumbrances
- Infrastructure procurement
- Construction
- Construction management
- Maintenance
- Decommissioning/disposal of assets

b. Type and level of professionals, artisans, labourers and other occupations required, available and whether the organisation possesses the right/surplus/deficit in capacity, and predicted short to medium shifts in such capacity, e.g. the city's engineers are on average 57 years old and capacity gaps are expected in the near future due to retirement.

c. Fixed productive capacity in the form of:

- Own workshops and depots and their functions and output capacities.
- Stores, inclusive of number, spatial distribution, size, layout and ability to receive, store and dispatch construction materials and equipment in good order (e.g. yards for bulk goods, stores designed for turning circles appropriate for large delivery trucks)
- Production and extraction facilities such as municipal quarries
- Yellow fleet: the extent, composition, spatial availability, and average vehicle availability and utilisation
- Fleet allocated for maintenance crews
- Specialised equipment
- Necessary organisational systems for infrastructure delivery e.g. an organisational health and safety programme tailored to the needs of specific activities and asset types.

d. Organisational funding capacity.

The organisational analysis should also identify the organisation's appetite for issues such as:

Increasing capacity	Putting new capabilities in place	Making use of private finance	Risk appetite: assuming or transferring risk to other parties

More guidance on organisational considerations in selecting appropriate delivery models is provided in **Figure 12.6** of **Module 12.**

11.4.4 Market analysis

The market analysis describes the capabilities and characteristics of the market in relation to the spend needs of the city. Consequently, the market analysis generally mirrors the aspects considered in the spend analysis and includes consideration of similar aspects as identified for the spend analysis (capabilities and capacities).

Additional aspects to consider include:

- The number and grading of local contractors registered on the CIDB register of contractors (limited/adequate/more than sufficient).
- The extent to which the market is already involved in infrastructure delivery, per service/asset portfolio and across the lifecycle. Specifically analyse the following:

The existence of PPPs	**Private facilities owned and operated by external agents, providing municipal services e.g. private landfill sites**	**The extent to which services are already outsourced or provided under agreement (agency or otherwise) by external parties**	**Framework agreements in place but not yet utilised**

- Specific opportunities or risks.
- Needs of the local economy.

11.4.5 Procurement strategy

01 GENERAL

A procurement strategy contains the selected packaging, contracting, pricing and targeting strategy, as well as the procurement procedure for a particular procurement. The procurement strategy must be informed by the spend, organisational and market analysis and include the rationale for selecting a particular option. As with the delivery management strategy, procurement strategies can be developed at various levels (city/corporate, service/asset portfolio or project/programme levels).

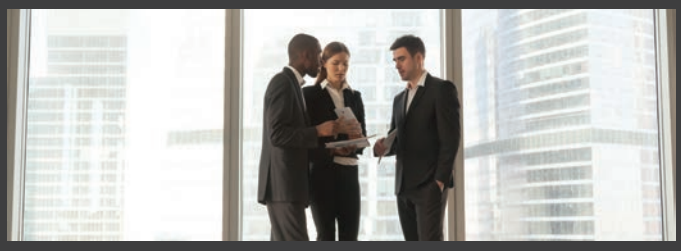
Stage 2 is complete when the delivery and procurement strategy is approved.

02 ESTABLISH OPPORTUNITIES FOR USING PROCUREMENT TO PROMOTE DEVELOPMENTAL PROCUREMENT POLICIES AND TARGETING STRATEGY

The SIPDM requires municipalities and municipal entities to promote broad-based black economic empowerment (BBBEE) in accordance with the provisions of the Broad-Based Black Economic Empowerment Act and to also, where appropriate, promote work opportunities for targeted groups and national development goals. Not less than 50% of points allocated to preference in a points scoring system in the evaluation of tenders shall be allocated to BBBEE goals.

03 CONTRACTING AND PRICING STRATEGY

Municipalities and municipal entities should select appropriate contracting and pricing strategies for each package to be procured. Municipalities and municipal entities may select from the standard forms of contract for the delivery and maintenance of infrastructure listed in **Table 11.2,** as suited for intended use.



FORM OF CONTRACT	CODE	INTENDED USAGE
Construction Industry Development Board (CIDB)		
CIDB Standard Professional Service Contract	SPSC	Professional services
CIDB General Conditions of Purchase	-	An order form type of contract for low-value goods without any incidental work or services on or before a specified date being required.
CIDB Contract for the Supply and Delivery of Goods	-	Simple, regional purchase of readily available materials or commodities which requires almost no management of the buying and delivery process, minimal testing, installation and commissioning on delivery.
CIDB General Conditions of Service	-	An order form type of contract where low-value services on or before a specified date are required.
International Federation of Consulting Engineers (FIDIC)		
FIDIC Short Form of Contract	Green Book	Building or engineering works of relatively small capital value, or for relatively simple or repetitive work, or for work of short duration. Use for design by employer or contractor-designed works.
FIDIC Conditions of Contract for Construction for Building and Engineering Works designed by the Employer	Red Book	Building or engineering works designed by the employer (The works may include some element of contractor-designed works.)
FIDIC Conditions of Contract for plant and design-build for electrical and mechanical plant, and for building and engineering works, designed by the contractor	Yellow Book	The provision of electrical or mechanical plant and the design and construction of building or engineering works.
FIDIC Conditions of Contract for EPC Turnkey Projects	Silver Book	The provision on a design and construct (turnkey) basis of a process or power plant, of a factory or similar facility or an infrastructure project or other type of development.
FIDIC Conditions of Contract for Design, Build and Operate Projects	Gold Book	"Green field" building or engineering works which are delivered in terms of a traditional design, build and operate sequence with a 20-year operation period. (The contractor has no responsibility for the financing of the project/package or its ultimate commercial success.)

FORM OF CONTRACT	CODE	INTENDED USAGE
South African Institution of Civil Engineering (SAICE)		
SAICE General Conditions of Contract for Construction Works	GCC	Engineering and construction, including any level of design responsibility
Joint Building Contracts Committee (JBCC)		
JBCC Principal Building Agreement	PBA	Buildings and related site works designed by the employer.
JBCC Minor Works Agreement	MWA	Buildings and related site works of simple content designed by the employer
Institution of Civil Engineers (ICE)		
NEC3 Engineering and Construction Contract	ECC	Engineering and construction including any level of design responsibility.
NEC3 Engineering and Construction Short Contract	ECSC	Engineering and construction which do not require sophisticated management techniques, comprise straightforward work and impose only low risks on both the employer and contractor.
NEC3 Professional Services Contract	PSC	Professional services, such as engineering, design or consultancy advice.
NEC3 Professional Services Short Contract	PSSC	Professional services which do not require sophisticated management techniques, comprise straightforward work and impose only low risks on both the employer and consultant.
NEC3 Term Service Contract	TSC	Manage and provide a service over a period of time.
NEC3 Term Service Short Contract	TSSC	Manage and provide a service over a period of time, or provide a service which does not require sophisticated management techniques, comprise straightforward work and impose only low risks on both the employer and contractor.
NEC3 Supply Contract	SC	Local and international procurement of high-value goods and related services, including design.
NEC3 Supply Short Contract	SSC	Local and international procurement of goods under a single order or on a batch order basis and is suitable for use with contracts which do not require sophisticated management techniques and impose only low risks on both the purchaser and the supplier.

TABLE 11.2: *Approved forms of contract related to the delivery and maintenance of infrastructure*

Different types of pricing strategies are listed in **Table 11.3** below. These can be broadly categorised in price-based and cost-based strategies. When selecting a strategy, consider amongst others the following:

- The risks related to the delivery of the project, and the optimal allocation of risk between the contracting parties;
- The level of innovation required;
- The extent to which information is complete, and will allow accurate estimation of costs to be incurred in delivering or maintaining the infrastructure;
- The time required to execute the contract;
- Allowing for suitable flexibility to accommodate scope changes at reasonable cost; and
- Overall project complexity.

PRICING STRATEGY	DESCRIPTION	CLIENT'S RISK EXPOSURE TO PRICE INCREASES
Price-based strategies		
Lump sum	Contract in which a contractor is paid a lump sum to perform the works. (Interim payments reflecting the progress made towards the completion of the works may be made.)	None
Bill of quantities	Contract in which a bill of quantities lists the items of work and the estimated/measured quantities and rates associated with each item to allow contractors to be paid, at regular intervals, an amount equal to the agreed rate for the work multiplied by the quantity of work actually completed.	At risk for increases in quantities, and errors and omissions in the bill of quantities
Price list/price schedule	Contract in which a contractor is paid the price for each lump sum item in the price list/schedule that has been completed and, where a quantity is stated in the price list/schedule, an amount calculated by multiplying the quantity which the contractor has completed by the rate.	Risk is limited to increase in quantities
Activity schedule	Contract in which the contractor breaks the scope of work down into activities, which are linked to a programme, method statements and resources and prices each activity as a lump sum, which he is paid on completion of the activity. The total of the activity prices is the lump sum price for the contract work.	None
Cost-based strategies		
Cost reimbursable	Contract in which the contractor is paid for his actual expenditure plus a percentage or fee.	At full risk unless cost is disallowed in the contract
Target cost	Cost reimbursable contract in which a target price is estimated and on completion of the works the difference between the target price and the actual cost is apportioned between the employer and contractor on an agreed basis.	At risk for a portion of the cost as well as the fee in excess of the agreed target price

TABLE 11.3: *Price-based and cost-based pricing strategies*

04 FRAMEWORK AGREEMENTS

A framework agreement is an agreement between an organ of state and one or more contractors that establishes the terms governing orders to be awarded during a given period, in particular with regard to price and, where appropriate, the quantity envisaged. The SIDPM allows municipalities to enter into framework agreements with contractors by:

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

This enables the municipality (as employer) that entered into such an agreement to procure engineering and construction works, goods and services on an instructed or "call-off" basis over a defined term, without any commitment to the quantum of work instructed. This may be achieved by issuing a package (engineering and construction contract), batch (supply contract) or task order (service contract) in terms of a framework contract during the term of that contract. Price in the context of a framework agreement can be a sum of money for which something is purchased, the actual cost of acquiring something calculated according to some specified measure, or an estimate of what the transaction is worth.

Framework agreements therefore contain prices for work to be executed over a term, or cost parameters which enable prices to be determined once the scope of work becomes known, or a combination of prices and cost parameters. Some of the many benefits of framework agreements include:

- They reduce the municipality's need to repeatedly advertise and engage the market for goods, services or works falling within the scope of the agreement over the term of the agreement;
- A municipality entering into a framework agreement gains both assurance that goods, services and works will be available when planned, and flexibility in managing expenditure relating to the delivery and maintenance of infrastructure over the duration of the framework agreement;
- Framework agreements limit the number of supplier relationships to be managed; and
- Improved, collaborative supply chain relations can be developed, allowing contractors to improve their internal systems, deliver better project outcomes and to improve their BBBEE status.

05 PROCUREMENT METHODS AND PROCEDURES

The SIPDM allows certain standard procurement methods and procedures, as provided for in SANS 10845-1, under certain conditions as outlined in **Table 11.4** and **Table 11.5:**

METHOD REFERENCE	DESCRIPTION
Method 1	Financial offer
Method 2	Financial offer and quality
Method 3	Financial offer and preferences
Method 4	Financial offer, quality and preferences

TABLE 11.4: *Methods for evaluating submissions*

PROCEDURE	CONDITIONS WHICH NEED TO BE SATISFIED IN ORDER TO UTILISE THE PROCEDURE	
Competitive selection procedure		
Nominated procedure	Any procurement, the estimated value of which does not exceed a threshold in **Table 11.6.**	
Open procedure	Any procurement, except where the cost of advertising or the evaluation of a large number of tender submissions is disproportionate to the value of the work.	
Qualified procedure	**Any procurement where:** 1. a contract requires for its execution a high degree of specialised input, or requires skills and expertise that are not readily available; 2. a contract requires for its execution exceptional management skills or quality; 3. a tender submission requires significant tenderer inputs in order to respond appropriately to requirements so that a financial offer may be determined; 4. it is desirable, in a large programme or project, to link packages of work to tenderers who have the appropriate capacity and capability to compete against one another; 5. the time and cost required to examine and evaluate a large number of tender offers would be disproportionate to the procurement; 6. for practical reasons, it is necessary to limit the number of tender submissions that are received; or 7. the goods or services are not freely available in the market, or are manufactured solely for the organ of state in accordance with that organ of state's own specifications.	
Quotation procedure	Any procurement where the estimated value does not exceed a threshold stated in **Table 11.6.**	
Proposal procedure using the two-envelope system	Services where tenderers are required to develop and price proposals to satisfy a broad scope of work.	
Proposal procedure using the two-stage system	**Option 1**	Any procurement in which tenderers are required to submit technical proposals and, if required, cost parameters around which a contract may be negotiated
	Option 2	Any procurement in which tenderers are invited to submit technical proposals in the first stage and to submit tender offers based on procurement documents issued during the second stage
Shopping procedure	Procurement which involves readily available goods and does not exceed the threshold value stated in **Table 11.6**	
Restricted competitive negotiations	**As for open competitive negotiations, but where:** 1. a contract requires for its execution a high degree of specialised input, or requires skills and expertise that are not readily available; 2. a contract requires for its execution exceptional management skills or quality; 3. a tender submission requires significant tenderer inputs in order to respond appropriately to requirements so that a financial offer may be determined; 4. the time and cost required to examine and evaluate a large number of tender offers would be disproportionate to the procurement; 5. for practical reasons, it is necessary to limit the number of tender submissions that are received; or 6. a target price is tendered and finalised prior to the award of the contract.	

PROCEDURE	CONDITIONS WHICH NEED TO BE SATISFIED IN ORDER TO UTILISE THE PROCEDURE
Open competitive negotiations	**Any procurement where:** 1. it is not feasible to formulate detailed specifications for the work or to identify the characteristics of goods or works to obtain the most satisfactory solution to procurement needs; 2. there are various possible means of satisfying procurement needs; 3. the technical character of the goods or works, or the nature of the services, warrants the use of competitive negotiations to realise the most satisfactory solution to procurement needs; 4. the purpose of the contract is research, experimentation, study or development; or 5. all of the tenders received in a competitive selection procedure are nonresponsive and the calling for fresh tenders is likely to result in a similar outcome.
Negotiated procedure	
	Any procurement where: 1. a rapid response is required due to the presence of, or the imminent risk of, an extreme or emergency situation arising from: • human injury or death; • human suffering or deprivation of human rights; • serious damage to property or financial loss; • livestock or animal injury, suffering or death; • serious environmental damage or degradation; or • interruption of essential services. 2. the required goods, services or works cannot technically or economically be separated from another contract previously performed by a specific contractor; 3. only one contractor has been identified as possessing the necessary experience and qualifications or product to deliver value for money in relation to a particular need; 4. the services, goods or works do not exceed a threshold value stated in **Table 11.6;** 5. the service or works being procured are largely identical to work previously executed by that contractor and it is not in the interest of the public or the organ of state to solicit other tender offers; 6. a professional service contract does not exceed a threshold value stated in **Table 11.6** and but can be based on time and proven cost; 7. the nature of the works, goods or services, or the risks attached thereto, do not permit prior overall pricing; or 8. only one responsive tender is received.

TABLE 11.5: *Conditions under which procedures provided for in SANS 10845-1 may be utilised*

PROCEDURE (SEE TABLE 11.5 AND SANS 10845-1)	CONDITIONS WHICH NEED TO BE SATISFIED IN ORDER TO UTILISE THE PROGRAM	THRESHOLD FOR A MUNICIPALITY OR A MUNICIPAL ENTITY (RAND INCLUDING VAT)
Negotiated	The services, goods or works have a value not exceeding a threshold	R 75 000
	A professional service contract has a value not exceeding a threshold	R 200 000
Nominated procedure	Any procurement not exceeding a threshold	R 1 500 000
Quotation procedure	Any procurement where the estimated value does not exceed a threshold	R 200 000
Shopping procedure	Supplies contract which involves readily available goods not exceeding a threshold	R 10 000

TABLE 11.6: *Conditions under which procedures provided for in SANS 10845-1 may be utilised*

11.5 STAGE 3: PREFEASIBILITY

11.5.1 From portfolio planning to project planning

Stage 1 (infrastructure planning) and stage 2 (strategic resourcing) focussed on portfolio planning processes. Stage 3 (prefeasibility) and stage 4 (feasibility) are concerned with project planning processes. Stage 3 involves the formulation of a strategic brief that defines needs, project objectives, acceptance criteria, and client priorities and desired outcomes, and that establishes the basis for the development of the concept report for one or more packages.

Prefeasibility and feasibility reports developed during Stages 3 and 4 are required on major capital projects or projects:

- That involve significant capital investment over several years exceeding a threshold value defined in the SIPDM;
- Are not of a process-based, repetitive or fairly standardised nature where the risk of failing to achieve time, cost and quality objectives is relatively high;
- Are not building projects with or without related site works;
- Such reports may furthermore be required when infrastructure has significant staffing and operation costs, and the implications thereof need to be understood before a decision is taken to proceed with an infrastructure project; or when
- The municipality or municipal entity's infrastructure procurement and delivery supply chain management policy requires the production of prefeasibility and feasibility reports during stages 3 and 4 respectively.

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.

11.5.2 Strategic brief

The strategic brief shall as necessary:

a. confirm the scope of the package and identify any constraints, including those relating to occupational health and safety;

b. establish the project criteria, including the performance and reliability requirements, design life, service life of components, function, maintenance and replacement requirements, mix of uses, scale, location, quality, value, time, safety, health, environment and sustainability;

c. identify procedures, organisational structure, key constraints, statutory permissions (e.g. environmental, heritage, social, planning, building control), and utility approvals, policies (e.g. environmental, developmental, social, maintenance or facilities management) and strategies to take the package forward;

d. Identify risks that need to be mitigated;

e. identify interfaces between packages as necessary; and

f. establish the control budget for the package, ownership costs and schedule for the package or series of packages.

The prefeasibility study shall as necessary:

Document the owner or user requirements specification	**Shortlist the options that were considered**	**Provide a preliminary design for study options**	**Provide preliminary capital estimate and the proposed schedule**	**Present the study outcomes**

Section 9.6.4 describes the most common statutory permissions and authorisations required for infrastructure projects. Section 5.3 provides guidance on responding to demand, whilst Section 8.2.3 offers guidance on identifying potential asset and non-asset solutions, to be considered in the formulation and evaluation of options

Stage 3 is complete when the prefeasibility report or the strategic brief, as required, is accepted.

11.6 STAGE 4: FEASIBILITY

Stage 4 builds on the work done in stage 3, and develops a concept report which establishes the detailed brief, scope, scale, form and control budget and that describes the integrated concept for one or more packages. The concept report shall as necessary:

a. document the initial design criteria and design options or the methods and procedures required to maintain the condition of infrastructure for the package;

b. establish the detailed brief, scope, scale, form and cost plan for the package;

c. provide an indicative schedule for documentation and construction or maintenance services associated with the package;

d. contain a site development plan or other suitable schematic layouts of the works;

e. describe the statutory permissions, funding approvals or utility approvals required to proceed with the works associated with the package;

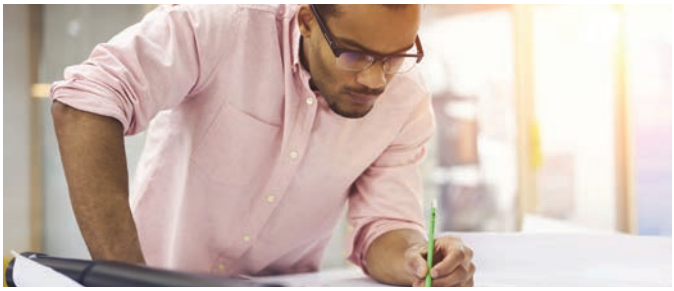
f. include a baseline risk assessment for the package, and a health and safety plan which is required in terms of the requirements of the Construction Regulations issued in terms of the Occupational Health and Safety Act;

g. contain a risk report linked to the need for further surveys, tests, other investigations and consents and approvals, if any, during subsequent stages and identified health, safety and environmental risk;

h. contain an operations and maintenance support plan which establishes the organisational structure required for the operation and maintenance of the works resulting from the package or series of packages over its service life, and the office, stores, furniture, equipment, Information and Communications Technology (ICT), engineering infrastructure and staff training requirements;

i. confirm the financial sustainability of the project; and

j. establish the feasibility of satisfying the strategic brief for the package or series of packages within the control budget established during stage 3 and, if not, motivate a revised control budget.



A feasibility report shall as a minimum provide the following:

a. Details regarding the preparatory work covering:
- a needs and demand analysis with output specifications; and
- an options analysis;

b. A viability evaluation covering:
- a financial analysis; and
- an economic analysis, if necessary;

c. A risk assessment and sensitivity analysis;

d. A professional analysis covering:
- a technology options assessment;
- an environmental impact assessment; and
- a regulatory due diligence;

e. Implementation readiness assessment covering:
- institutional capacity; and
- a procurement plan

Stage 4 is complete when the feasibility report or the concept report, as required, is accepted.

11.7 STAGE 5: DESIGN DEVELOPMENT

11.7.1 From project planning to detailed design

Stage 5, design development, and stage 6, design documentation, comprise detailed design processes during which the solution is developed to such a point that site processes can be actioned thereafter. Detailed design during Stage 5 involves the selection of materials and components. This is often an iterative process of suggesting a component, examining its predicted performance against the brief, and modifying selections if required.

Wherever practical and feasible, designs should consider asset maintainability as appropriate given current technologies, costs and relevant legislation, standards and codes of practice. With respect to asset maintainability, the draft National Immovable Asset Maintenance Management Standard requires that entities:

- require of its professional design staff or of professional service providers (e.g. consulting engineers or architects) to design with maintainability in mind; and
- solicit functional requirements and recommendations from maintenance personnel for consideration and inclusion of asset design specifications as appropriate.

The output of stage 5 is a design development report that develops in detail the approved concept to finalise the design and definition criteria, sets out the integrated developed design, and contains the cost plan and schedule for one or more packages. The design development report translates the concept report into a document that describes what is to be delivered. The report must describe how structures, services or buildings and related site works, systems, subsystems, assemblies and components are to be safely constructed, commissioned, function and maintained.

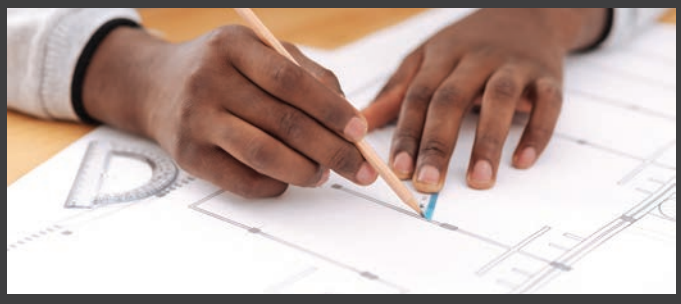
Outline specifications should be prepared to sufficient detail to understand the operation and maintenance implications of the design and compatibility with existing systems, plant and equipment. The design should fit the budget parameters established. To meet the brief, adjustment of either the budget or the service life requirements may be necessary. Where a specification is adjusted to meet cost constraints, the maintenance and operation implications should also be considered.

Record information describes what has been delivered. Record information is therefore an after-the-fact updated version of the design development report.

11.7.2 Design development report

The design development report shall as necessary:

- develop in detail the accepted concept to finalise the design and definition criteria;
- establish the detailed form, character, function and costings;
- define all components in terms of overall size, typical detail, performance and outline specification;
- describe how infrastructure, or elements or components thereof, are to function, how they are to be safely constructed, how they are to be maintained and how they are to be commissioned; and
- confirm that the package or series of packages can be completed within the control budget or propose a revision to the control budget.



Outline specifications shall 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. Stage 5 is complete when the design development report is accepted.

11.8 STAGE 6: DESIGN DOCUMENTATION

Stage 6, design documentation, comprises two sub-phases as follows:

11.8.1 Stage 6A: Production information

Production information is developed during stage 6A of the design documentation stage. This includes the detailing, performance definition, specification, sizing and positioning of all systems and components, enabling either construction where the contractor is able to build directly from the information prepared or the production of manufacturing and installation information for construction.

11.8.2 Stage 6B: Manufacture, fabrication and construction information

The information generated in stage 6A enables manufacture, fabrication and construction information to be produced during stage 6B by or on behalf of the contractor, based on the production that is information-provided. This information enables manufacture, fabrication or construction to take place.

Stage 6 is complete when the manufacture, fabrication and construction information is accepted as being in accordance with the production information.

“This information enables manufacture fabrication or construction to take place”

11.9 STAGE 7: WORKS

11.9.1 From detailed design processes to site processes

Stage 7 signifies the move from detailed design processes through to site processes. Site processes commence with stage 7: works and end with stage 8: asset handover.

11.9.2 Typical works' activities

The objective of the works process is to construct or deliver and install the works as per the approved production information (e.g. specifications, etc.). The "start" and "finish" milestones for this stage are usually contractually defined and therefore subject to the form of contract prescribed in the tender documentation. There are three basic milestones commonly associated with constructions works, namely:

Giving access to the site by the client so that the contractor can commence with the works

Completing the works so that the client or intended operator can occupy or use the works

Correcting all defects before the end of the defects liability period.

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

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

The contract entered into regulates the responsibilities and behaviour of the parties to the contract, and the person responsible for the administration of the contract on behalf of the municipality or municipal entity shall act as stated in such contract. See **Section 10.5.2** in **Module 10** for requirements related to contract management.

11.9.3 Works completion

Stage 7 is complete when:

a. completion of the works is certified in accordance with the provisions of the contract; or

b. the goods and associated services are certified as being delivered in accordance with the provisions of the contract.

11.10 STAGE 8: HANDOVER

11.10.1 Commissioning

Commissioning is a collaborative process for planning, delivering and operating works that function as intended. Where the assets created, installed, renewed, upgraded or reconfigured form part of a larger system or network of assets, commissioning procedures need to be scheduled in relation to other services, processes or construction activities. This requires that interdependency requirements are identified and considered as early in the project as possible, as they need to be included in the designer's outputs. Integrated commissioning along the following lines is recommended:

Precommissioning checklist

Identify all commissionable systems

Establish the commissioning hierarchy, i.e. the priorities and the interrelationships between systems

Compile commissioning documentation, making reference to statutory requirements where applicable

Plan the commissioning and ensure adequate time allocation.

Commissioning checklist

Ensure that construction is complete and that identified defects have been dealt with

Ensure that all commissionable systems are operational, e.g. that pipelines have been cleaned and infrastructure services connected

Operate the works that are to be commissioned at the identified loading and simulate all eventualities to ensure proper operation

11.10.2 Training

The handover stage shall include, as appropriate, the training of staff responsible for the operation of the delivered infrastructure. The draft National Immovable Asset Maintenance Management Standard also requires that entities (such as municipalities and municipal entities), require suppliers and contractors to provide maintenance manuals and training, as appropriate, on the maintenance of new immovable assets.

11.10.3 Safeguarding of works

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

11.10.4 Record information

The objectives of record information include the following:

1. Provide those responsible for the operation, maintenance and management of the asset(s) with sufficient information to effectively understand, budget, operate, care for, maintain and monitor the performance of the asset. More specifically, to:
   - understand how the designers intended the works, systems, subsystems, assemblies and components to function;
   - effectively operate, care for and maintain the works, systems, subsystems, assemblies and components to function;
   - check, test or replace systems, subsystems, assemblies or components to ensure the satisfactory performance of works, systems, subsystems, assemblies and components over time;
   - develop routine and scheduled maintenance plans;
   - determine stock levels for components and assemblies that need to be regularly replaced; and
   - budget for the operation and maintenance of the works, systems, subsystems and components over time.
2. Provide information pertaining to the planning and design of the works to inform refurbishments, alterations, modifications, renovations and additions that may be required from time to time.
3. To accurately locate the asset(s), measure its extent and value, and capture associated information such as asset attribute information in the asset register (see **Module 3** for asset data requirements).

The record information shall as relevant:

- accurately document the condition of the completed works associated with a package;
- accurately document the works as constructed or completed;
- contain information on the care and servicing requirements for the works or a portion thereof;
- contain information or instructions on the use of plant and equipment;
- confirm the performance requirements of the design development report and production information;
- contain certificates confirming compliance with legislation, statutory permissions and the like; and
- contain guarantees that extend beyond the defects liability period provided for in the package.

11.10.5 Updating of the asset register

It is the project manager's responsibility to provide the finance department with all necessary information, data and supporting documentation to update the asset register. It should include all details relating to the completed works as required by the city's approved asset management policy and procedures. Depending on internal arrangements, the project manager may also need to provide asset documentation and data to asset custodian departments, e.g. water treatment works as-built drawings and O&M manuals are handed to the water and sanitation department.

GRAP 17: Property, Plant and Equipment, requires that assets must be recognised (taken up in the asset register) when they become available for use. In practice, assets or parts of the works may become available for use prior to completion of stage 9 (close out). Whenever this happens, whether the asset(s) is used or not, those responsible for the maintenance and updating of the asset register should be notified.

11.10.6 Completion of stage 8

Stage 8 is completed when the owner or end user accepts liability for the works.

11.11 STAGE 9: CLOSE OUT

11.11.1 Close out report

The close out report for the package shall outline what was achieved in terms of at least the following:

The performance parameters outlined in Section 12 of the SIPDM (Assessment of supply chain management performance)	**Unit costs of completed work or major components thereof**	**Key performance indicators relating to developmental objectives**

The close out report shall make suggestions for improvements on future packages of a similar nature. Such a report should also comment on the performance of the contractor and, if relevant, include building tuning or similar reports.

11.11.2 Completion of stage 9

Stage 9 is complete when, as relevant, defects certificates or certificates of final completion are issued in terms of the contract, the final amount due to the contractor in terms of the contract is certified and the close out report is accepted.

11.1 STAGE 9: CONCLUSION

The SIPDM provides a logical framework for infrastructure delivery management. This framework provides both a "roadmap" for infrastructure delivery as a high-level process, and a control framework to ensure that value for money is delivered in a timely manner. The process commences with project initiation (stage 0) and terminates at conclusion of stage 9 (package completion and close out). These stages are sequentially grouped into portfolio planning processes, project planning processes, detailed design processes, site processes and close out processes. Specific steps and activities within these processes and stages may depend on the nature of the project itself and the form of contract selected.

Processes within infrastructure delivery may, depending on the nature, complexity and availability of information, be iterative in nature. There are also strong linkages with the asset management system (e.g. asset management plans as part of portfolio planning in stage 0 and 1, and updating of the asset register in stage 8), the infrastructure procurement framework and the municipality or municipal entity's financial system.

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