University of Zululand

Standard scope of professional services associated with the delivery of a package

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Introduction

The delivery of construction works needs to be managed and controlled in a logical, methodical and auditable manner. The starting point in the development of any delivery management system is to identify the information which needs to be developed and accepted by the client at a particular point in the delivery process to enable a project to be advanced i.e. at a gate (control point). The stages in the delivery of construction works can then be defined as the activities that need to take place between such points. These stages enable the work flow (sequence of connected activities) toward the attainment of an end of stage deliverable to be developed and culminate in gates (control points) which can be used to provide assurance that the proposed works:

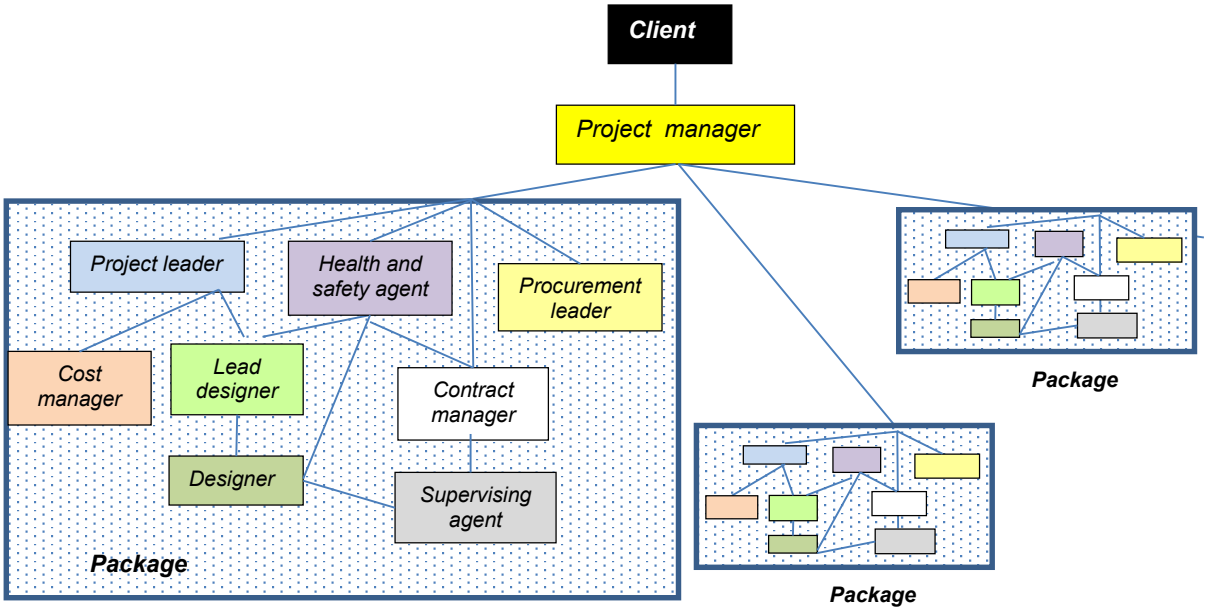
- remains within agreed mandates;
- aligns with the purpose for which it was conceived, and
- can progress successfully from one stage to the next.

The control framework for the planning, designing and execution of infrastructure projects as set out in Annex A establishes processes, procedures and methods for the implementation of infrastructure projects in a staged, systematic, disciplined, uniform, integrated and auditable manner. It describes the stages within which new infrastructure or the refurbishment, rehabilitation or alteration of existing infrastructure is carried out and provides a comprehensive control framework which requires decisions to be made at control points. Professional services need to be provided within this control framework.

This document establishes requirements for those persons providing professional services in the implementation of one or more of the stages decribed in Annex A, namely to do whatever is necessary to develop an end of stage deliverable. Such services may be applied to a single project comprising one or more packages (works which have been grouped together for delivery under a single contract or a package order) or a programme of projects. This document as such provides a scope of work for the following functional roles:

- project manager;
- procurement leader;
- project leader;
- contract manager;
- lead designer;
- designer;
- cost manager;
- supervising agent; and
- health and safety agent

The basic lines of reporting and assigned responsibilities for each of these functional roles for each package associated with an infrastructure project are as follows:



Designation	Primary actions
Client	Initiates, commissions and pays for the project, owns the business case and leads the project
Project manager	Manages the development and implementation of an infrastructure project and administers professional service contracts on behalf of the client
Project leader	Leads and directs the design team in a non-technical role including the monitoring and integration of the activities, development and maintenance of a schedule, monitoring of progress and facilitation of the client acceptance of an end of stage deliverable
Lead designer	Establishes and refines the design approach or solution so that it achieves the brief as it is progressively developed and is co-ordinated within the project team
Designer	Provide design or condition assessment services
Cost manager	Provides independent and impartial estimation of cost, value management, budget, control and validation of cost of constructing, rehabilitating refurbishing and altering infrastructure
Procurement leader	Oversees the development of the procurement documents and manages the procurement process
Contract manager	Administers a package on behalf of the client in accordance with the provisions of the contract
Supervising agent	Confirm that the works are proceeding in accordance with the provisions of the contract
Health and safety agent	Assumes statutory responsibilities imposed by the Construction Regulations and other pieces of health and safety legislation and leads health and safety risk compliance processes

NOTE: The environmental compliance monitoring agent is excluded from the above. Where such a person is required their primary action is to independently monitor environmental requirements during construction in accordance with legislative requirements and to monitor, review and audit the on-site implementation of a contractor's environmental management plan.

There are many options available to a client in assigning functional responsibilities to particular persons (own staff or consultant and within professions which overlap). This ensures flexibility. For example, in some projects different persons will be assigned functional responsibilities for each of the identified roles. In other projects it may be desirable to combine functional roles and responsibilities e.g. the project leader can also be the procurement leader or the same person can be appointed to function as project leader, lead designer, designer and cost manager or the contract manager and supervising agent.

This document can be referenced in the scope of work of professional service contracts and construction contracts where contractors have design responsibilities for the works (see Annex G).

Standard scope of professional services associated with the delivery of a package

1 Scope

1.1 This document establishes a generic scope of work for professional services for the provisions of new infrastructure and the rehabilitation, refurbishment and alteration of existing infrastructure. It establishes the standard scope of services associated with stages 3 to 9 identified in Table 1 in respect of the following functional roles:

a) project manager;

b) procurement leader;

c) project leader;

d) contract manager;

e) lead designer;

f) designer;

g) cost manager;

h) supervising agent; and

i) health and safety agent.

Table 1: Key deliverables and activities associated with the control framework for the planning, design and execution of infrastructure projects

Activities	**Stage** (see Annex A for the full description of the stage)		**Key deliverable (see Annex A)**
	No	**Description**	
Project conceptualisation	0	Project initiation	Client accepted initiation report
Planning at a portfolio level	1	Infrastructure planning	Client approved infrastructure plan
	2	Strategic resourcing	Client accepted procurement strategy for implementing the infrastructure plan in the medium term
Planning at a project level	3	Preparation and briefing	Client accepted strategic brief
	4	Concept and viability	Client accepted concept report including where necessary, a logistic support plan
Detailed design	5	Design development	Client accepted design development report
	6a	Design documentation (Production information)	Completed and client accepted production information
	6b	Design documentation (Manufacture, fabrication and construction information)	Client accepted manufacture, fabrication and construction information
Site	7	Works	Completed works which are capable of being occupied or used and accepted by the client.
	8	Hand over	Works which have been taken over by the user complete with record information
Close out	9	Package completion	Completed contract or package order

NOTE The control framework for the planning, design and execution of infrastructure projects contained in Annex A establishes the work flow and services for the delivery of infrastructure projects. It identifies the location of the gates, key deliverables and principal actions associated with the various stages of this system. This document establishes general requirements for professional services and identifies the typical tasks for the execution of the stages associated with a package.

1.2 This document does not cover stages 3 (prefeasibility) and 4 (feasilbility) of the control framework for planning, design and execution of infrastructure projects described in Annex A.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced standard (including any amendments) applies.

Construction Industry Development Board, Code of Conduct for all Parties enagegd in Construction Procurement, Board Notice 127 of 2003, Government Gazette No 25656 of 31 October 2003

University of Zululand, *Occupational Health and Safety Specification for Construction Works Contracts*

SANS 10400-T, *The Application of the National Building Regulations – Part T: Fire Protection*

SANS 10845-2, *Construction procurement — Part 2: Formatting and compilation of procurement documentation*

SANS 10845-3, *Construction procurement — Part 3: Standard conditions of tender*

SANS 10845-4, *Construction procurement — Part 4: Standard conditions for the calling for expressions of interest*

3 Terms and definitions

For the purposes of this document, the following definitions and terms apply:

baseline risk assessment: a risk assessment which results in a broad risk profile or set of risk profiles for a package, a series of interrelated packages or a project which indicates the types and size of potential sources of or exposure to anything which may cause injury or damage to persons or property on a proposed site

commissioning: a quality-oriented process for achieving, verifying, and documenting that the performance of facilities, systems, and assemblies meets defined objectives and criteria

control budget: the amount of money which is allocated or made available to deliver or maintain infrastructure associated with a project, including professional fees, equipment, VAT, risk allowances (contingencies) and provision for price adjustment for inflation

construction monitoring: the provision of independent verification consistent with the level of monitoring nominated by the client, that the works are being completed in accordance with the requirements of the construction contract, that appropriate construction techniques are being utilised, and designs are being correctly interpreted

constructor: person contracted to provide new infrastructure or rehabilitate, refurbish or alter existing infrastructure

contract manager: person responsible for applying the terms and conditions of the contract, including the agreed procedures for the administration thereof

cost manager: person who provides independent and impartial estimation of cost, value management, budget, control and validation of cost of constructing, rehabilitating refurbishing and altering infrastructure

cost plan: the document progressively developed by estimating the total cost of the package including any construction, refurbishment, extension and professional service costs, service and planning charges and applicable taxes

definition services: services which develop the deliverable associated with an end of a stage

designer: person who is responsible for providing design or conditional assessment services

framework agreement: an agreement, 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

health and safety agent: person responsible for assuming the responsibilities imposed upon the client as the "client" in terms of the Construction Regulations issued in terms of the Occupational Health and Safety Act, 1993, performing specific duties in terms of established procedures and leading health and safety risk management compliance processes

infrastructure plan: a plan which identifies long term needs and links prioritised needs to a forecasted budget for the next few years

lead designer: person who is responsible for establishing and refining the design approach or solution so that the design or solution achieves the required quality, health and safety and other required standards and is co-ordinated within the project team

manufacture, fabrication and construction information: information produced by or on behalf of the contractor, based on the production information provided for a package which enables manufacture, fabrication or construction to take place

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

package: work which is grouped together for delivery under a single contract or an order

package information: information at a point in time, following the identification of a package which is contained in one or more of the following documents:

a) the brief which is progressively developed from time to time;

b) the design documentation including specifications, data schedules and drawings;

c) the schedule which identifies key dates and time periods for the performance of the works and services associated with the package, and

d) cost plan

packaging strategy: organization of work packages into contracts

procurement leader: person who is responsible for overseeing the development of the procurement documents and managing the procurement process from the advertisement of tenders to the award of the contract as a single point of responsibility including the conducting of clarification meetings

production information: 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

project manager: person responsible for managing the development and implementation of an identified project or group of infrastructure projects in accordance with client requirements

project leader: person who has a non-design role to lead and direct the project team and whose basic responsibilities with respect of a stage for which services are required include:

a) the establishment of the overall strategy for the development and delivery of the deliverable;

b) the monitoring and integration of the activities of the project team;

c) the development and maintenance of a schedule and the monitoring of progress towards the attainment of the deliverable; and

d) the briefing of, the reporting to and the obtaining of decisions and acceptance of a deliverable from the client

record information: information that:

a) accurately documents the condition of the completed works associated with a package;

b) accurately documents the works as constructed or completed;

c) contains information on the care and servicing requirements for the works or a portion thereof;

d) contain information or instructions on the use of plant and equipment;

e) confirms the performance requirements of the design development report and production information;

f) contains certificates confirming compliance with legislation, statutory permissions and the like; and

g) contains guarantees for products or components that extend beyond the defects liability period provided for in the package.

NOTE Record information includes drawings, specifications, design and service life parameters and maintenance and operation manuals

review services: services which review the definition service of a stage undertaken by others for general conformity with the scope of work selected for a particular contracting strategy

risk: effect of uncertainty on objectives

risk assessment: the process of risk identification, risk analysis and risk evaluation

risk report: report intended to inform particular internal or external stakeholders by providing information regarding the current state of risks and its management

scope of work: document that 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 is to be performed

schedule: the planned dates for performing activities and the planned dates for achieving major milestone

specification: document that prescribes requirements to be fulfilled by a product, process or service

stakeholder: person, group or organization that has interests in, or can affect, be affected by, or perceive itself to be affected by, any aspect of the project

strategic brief: a document defining project objectives, needs, acceptance criteria and client priorities and aspirations and setting out the basis for the development of the concept definition for one or more packages

NOTE The strategic brief is the client's specification of requirements for a project. It confirms key requirements and constraints.

supervising agent: person appointed by the client to confirm that the works are proceeding in accordance with the provisions of the contract and to notify the contract manager of any non-conformance on the part of a contractor to requirements

user requirements: statement of need to be fulfilled

utility: a company, municipality or municipal entity which provides services such as water or electricity

works: all temporary works of every kind required on site for the execution and completion of the temporary works, the permanent works and the remedying of any defects

4 General requirements

4.1 Persons providing services shall:

a) observe all relevant statutes, by-laws and associated regulations, standards of professional conduct and industry norms established in relevant South African national standards published in terms of the Standards Act of 2008 or standards recommended by relevant professional associations;

b) do so using the skill and care normally used by professionals providing services similar to the required services;

c) adhere to the provisions of the CIDB Code of Conduct for all Parties engaged in Construction Procurement and the ethical standards established in the client's policies for infrastructure procurement and delivery management.

4.2 Persons providing services relating to the performance of the functional role described in 1.1 shall do so in accordance with the relevant provisions of 5, 6, 7, 8, 9 or 10.

5 Services provided by the project manager

Project managers shall as required:

a) manage the planning and implementation of packages and projects in a manner that enables the client to achieve their objectives and in such a manner that:

    1) all projects are developed and managed in terms of a common procedural approach and integrated with the client's administrative processes;

    2) the various elements of the projects are properly co-ordinated;

    3) the projects include all the work required, and only the work required, to complete the project successfully;

    4) the timely completion of the projects is facilitated;

    5) projects are completed within the control budget that is agreed from time to time with the client for each package and, if applicable, the control budget associated with expenditure on all projects for which the project manager is responsible for within a financial year;

    6) the project satisfies the needs for which it was undertaken;

    7) effective use of the people and resources involved with projects is made;

    8) timely and appropriate generation, collection, dissemination, storage, and ultimate disposition of project and package information occurs; and

9) the systematic identification, analysis, and response to project risk occurs.

b) develop and regularly update implementation plans which comply with the provisions of Annex E for all projects for which they are responsible for, update such a plan at least once a quarter and issue the client with copies of each revision;

c) assist the client in the procurement of the necessary and appropriate consultants to perform functional responsibilities;

d) act as the client's agent in all professional service contracts with consultants;

e) manage the assigned project leaders, procurement leaders and contract managers;

f) interface as necessary with and facilitate the client's inputs into the development and finalisation of end of stage deliverables and the acceptance thereof;

g) obtain the client's requirements for commissioning and handover, if any, and communicate them to those responsible for compiling procurement documents and the contract managers;

h) implement any requirements regarding social facilitation and establish the necessary project steering committees, appoint the community liaison officers, recruit and select local labour, manage community related risks, deal with issues related to labour unrest or disputes during the execution of the works, etc;

i) brief the contract manager of the client's monitoring and reporting requirements for stage 7 (Works);

j) communicate to the client the contractual provisions for the taking over of the works and make the necessary hand over arrangements;

k) establish requirements for close out reports, communicate such requirements to contract managers and receive reports;

l) receive Prohibition Notices issued by the health and safety agent;

p) establish and maintain risk registers and issue regular risk reports to the client; and

o) give appropriate understanding and attention to stakeholders' needs and expectations, resolve stakeholder issues, and where necessary to escalate the issues to the client.

6 Services provided by the procurement leader

The procurement leader shall:

a) manage the development of the procurement documents and the procurement process from the advertisement of tenders to the award of the contract as a single point of responsibility including the conducting of clarification meetings in accordance with the relevant provisions of SANS 10845-2, SANS 10845-3 and SANS 10845-4 and the client's policies for Infrastructure procurement and delivery management;

b) develop a procurement plan which satisfies the requrements stated in Annex E and co-ordinate and monitor the preparation of procurement documentation;

c) ensure that the necessary persons have been appointed to perform procurement documentation reviews, to evaluate quality in tender offers and to prepare procurement documents as required by the client's policies for Infrastructure Procurement and Delivery Management;

d) ensure that the necessary health and safety and environmental management information is issued to those responsible for the compiling of procurement documents so that such information is included in the documentation that is prepared;

e) notify the health and safety agent of the award of a contract to a consultant who provides construction related services for a package and each principal contractor appointed to execute a package;

f) provide those responsible for developing procurement documents with the relevant templates; and

g) ensure that the necessary approvals, acceptances, confirmations or ratifications, as required, are obtained at the relevant procurement and framework agreement gates (see Annex F) and are retained for record purposes.

7 Services provided by the project leader, lead designer, designer and cost manager

7.1 General

7.1.1 Professional services associated with the roles of project leader, lead designer, designer and cost manager shall as necessary be provided in support of the activities identified for stages 3 to 9 in the control framework for the planning, design and execution of infrastructure projects contained in Annex A in accordance with the requirements of 7.3.

NOTE 1 Professional services are required as inputs into most of the activities associated with a stage in order to produce a deliverable. Such services can be provided by suitably qualified employees, contracted individuals or professional service providers appointed by either the client or a contractor.

NOTE 2 Annex A outlines the typical activities associated with the production of an end of stage deliverables.

7.1.2 Persons providing services shall as necessary:

a) plan, design and review the works, installation or system, as relevant, taking into account pragmatic elements such as cost, construction limitations and technology and adjust their designs where the cost of the package or project exceeds the control budget, unless the client agrees to an increase in the control budget;

b) develop the deliverables associated with the end of a stage in sufficient detail so that it can be used to form the basis of the scope of work for taking the package or project forward in terms of the selected contracting strategy as shown in Table 2;

c) maintain in full force and effect all relevant consents and approvals and implement all required actions;

d) provide advice relating to the works or portions thereof for which they are responsible for during the evaluation of tender offers;

e) provide the necessary inputs into the client's occupational health and safety specification for incorporation into the scope of works associated with a construction works contract; and

f) provide copies of all certifications associated with the provision of services relating to the project required in terms of legislation.

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

Contracting strategy		**Key deliverable which forms the basis of the scope of work associated with a contract**	
Strategy	**Description**	**Stage associated with the deliverable**	**Deliverable**
Design and construct	The client assigns design responsibility to the contractor in which case the contractor designs the works based on a brief provided by the client and constructs it	3 Preparation and briefing or 4 Concept and viability	Client accepted strategic brief or concept report
Develop and construct	The client assigns design responsibility to the contractor in which case the contractor completes the production information based on a scheme design provided by the client and constructs it	5 Design development	Client accepted design development report
Design by client	A client retains design responsibility in which case the contractor undertakes construction on the basis of production information issued by the client	6a Design documentation (Production information)	Completed and client accepted key production information

NOTE: The client can in respect of a package, separately appoint a project leader, a lead designer, designers and a cost manager. Alternatively, the client may appoint a person to perform more than one role or all the roles. Where works involve a single discipline, e.g. civil engineering works, a single person is usually appointed to perform all the roles.

7.1.3 Where the client appoints a designer to perform a discipline specific service (e.g. according to those described in Table 3 for building works), the designer, shall provide the service in relation to the identified discipline, subject to the person appointed as the designer for architectural design services relating to a building ensuring that the planning and design of buildings, spaces and structures and associated site works:

a) is properly co-ordinated between the different design disciplines as relevant; and

b) satisfies the relevant prescriptive and functional requirements of the National Building Regulations published in terms of the National Building Regulations and Standards Act of 1977 (Act 103 of 1977) in relation to structural design, dimensions, public safety, site operations, excavations, foundations, floors, walls, roofs, stairways, glazing, lighting and ventilation, drainage, non-water-borne means of sanitary disposal, stormwater disposal, facilities for disabled persons, fire protection, space heating, fire installation and energy usage.

NOTE Regulation A2(1)(g) of the National Building Regulations requires that the plans and particulars that are submitted to the local authority include a declaration by a person registered in a professional category of registration in terms of the one of the councils for the professions identified in the Council for the Built Environment Act, 2000 as to how the applicable functional regulations shall be satisfied. 7.1.3b) is aligned with this requirement.

7.1.4 The responsibilities for definition services (i.e. develop the deliverable associated with a stage) and review services (i.e. confirm that the deliverable satisfies the package information) for each stage in terms of different contracting strategies are as stated in Table 4.

7.1.5 Persons providing services shall establish the need for specialist advice, studies, tests and surveys relevant to design input, including the necessity of appointing a specialist to design a component of the fire protection component of buildings described in Table 5 and advise the client accordingly. They shall thereafter, as necessary, brief the specialist, co-ordinate the advice, studies, tests and surveys, advise the client on payments due, collate outputs of specialist study surveys, advise on implications of findings, report to the client and obtain further instructions.

7.1.6 Persons providing services after stage 4, relating to buildings shall prepare documentation as soon as possible which is sufficient for local authority approval in terms of the National Building Regulations and Standards Act of 1977. They shall also provide all the necessary documentation to enable an occupancy certificate to be issued by the local authority.

Table 3: Design services relating to buildings

Service	Principal activities
Architectural design	Plan, design and review the construction, extension or refurbishment of buildings, spaces, structures and associated site works for the use of people by the creative organization of materials and components with consideration to mass, space, form, volume, texture, structure, light, shadow, materials and the project brief.
Civil engineering	Plan, design and review the construction of site works comprising a structure such as a road, pipeline or sewerage system or the results of operations such as earthworks or geotechnical processes.
Electrical engineering	Plan, design and review the installation of the electrical and electronic systems for and in a building or structure
Fire safety	Plan, design and review the fire protection system to protect people and their environments from the destructive effects of fire and smoke.
Landscape architectural design	Plan, design and review the construction of outdoor and public spaces to achieve environmental, socio-behavioural, or aesthetic outcomes or any combination thereof
Mechanical engineering	Plan, design and review the construction, as relevant, of the gas installation, compressed air installations, thermal and environmental control systems, materials handling systems or mechanical equipment for and in a building
Structural engineering	Plan, design and review the construction of buildings and structures or any component thereof to ensure structural safety and structural serviceability performance during their working life in the environment in which they are located when subject to their intended use in terms of one or more of the following: i) external and internal environmental agents; ii) maintenance schedule and specified component design life; or iii) changes in form or properties
Wet services	Plan, design and review the construction, within buildings or from a point of drainage installations intended for the reception, conveyance, storage or treatment of sewage, water installations which conveys water for the purpose of fire-fighting or consumption and roof drainage arrangements within a building.

Table 4: Allocation of responsibilities for review and definition services in the different contracting strategies

Contracting strategy (see Table 2)	Stage (See Table 1)	Client's responsibilities	Contractor's responsibilities
Design and construct*	4	Definition services	None
	5 and 6A	Review services	Definition services
Develop and construct	4 and 5	Definition services	None
	6A	Review services	Definition services
Design by client	4, 5 and 6A	Definition services	None

*In some projects, the contractor may assume Stage 4 responsibilities, in which case the client will be responsible for review services and the contractor for definition services for this stage.

Table 5: Specialist fire design services

Description of design services
Design, install and maintain automatic sprinkler system in accordance with the requirements of SANS 10400-T
Design and install a lightening protection system in accordance with the requirements of SANS 10400-T
Design, install, test and maintain the pressurization of emergency routes and components in accordance with the requirements of SANS 10400-T
Design, install and maintain a fire detection and alarm system in accordance with the requirements of SANS 10400-T
Design, install and maintain a fixed automatic fire-fighting system that is in accordance with the requirements of SANS 10400-T
Perform a rational assessment of building materials and components to determine their fire resistance in accordance with the requirements of SANS 10400-T.

NOTE Some of the specialist fire design services can be undertaken by specialist subcontractors of the contractor

7.1.7 The project leader shall:

a) until such time that a contractor is appointed to implement the package or project, promptly provide package information to the project manager whenever a stage is completed;

b) maintain a risk register for each package or project for which they are responsible for;

c) oversee the development of a maintenance plan if required; and

d) ensure that the necessary approvals or acceptances are obtained at gates 3 to 6 in the control framework for the planning, design and execution of infrastructure projects (see Annex A) and are retained for record purposes.

NOTE A contract manager is only appointed when a package is awarded. This can take place between the end of stage 3 (package planning) and when most of the production information (design documentation) is completed, depending upon the contracting strategy that is adopted. The role of the project leader also diminishes where the contractor takes on management and design responsibilities.

7.1.8 Designers shall, when called upon to do so:

a) engage with the health and safety agent; and

b) provide inputs into procurement documents to enable the scope of work and other documents to be finalised.

7.1.9 Designers shall prompt notify the health and safety agent of any significant changes to the design that are made after the acceptance of the design development report and take into account any advice provided by the health and safety agent in effecting such changes.

7.2 Drawings

7.2.1 Those providing services shall:

a) maintain a register of all drawings and other production information issued for construction purposes.

b) provide record drawings indicating all deviations from the construction drawings.

7.2.2 The drawings shall, unless otherwise specified, clearly indicate the following:

a) the project title;

b) the drawing title;

c) the drawing number and date;

d) the revision number and date; and

e) the drawing status i.e. for acceptance, for tender / pricing, for construction or for fabrication/manufacture.

7.2.3 The structural drawings shall contain the following information:

a) the design standards;

b) the loads which the structure is designed to withstand;

c) the key geotechnical parameters used in the design;

d) the basic engineering properties of the construction materials; and

e) the construction standards.

7.3 Services provided in respect of a stage

7.3.1 Stage 3 (Preparation and briefing) services

The project leader, lead designer, designer and cost manager shall provide as necessary, the services set out in Table 6, to develop the end of stage deliverable in accordance with the relevant provisions of Annex A.

7.3.2 Stage 4 (Concept and viability) services

7.3.2.1 The project leader, lead designer, designer and cost manager shall provide, as necessary, the services set out in Table 7 to develop the end of stage deliverable in accordance with the relevant provisions of Annex A.

7.3.2.2 Where others develop the concept report (e.g. in terms of a design and construct contracting strategy), professionals appointed by the client shall review the concept report for general conformity with the scope of work in their respective areas of expertise.

7.3.3 Stage 5 (Design development) services

7.3.3.1 The project leader, lead designer, designer and cost manager shall provide, as necessary, the services set out in Table 8 to develop the end of stage deliverable in accordance with the relevant provisions of Annex A.

7.3.3.2 Where others develop the design development report (e.g. in terms of a design and construct contracting strategy), professionals appointed by the client shall review the design development report for general conformity with the scope of work in their respective areas of expertise i.e. perform review services.

7.3.3.3 Designers shall sign the declaration contained in Annex B before the conclusion of the design development stage. The Project Leader shall ensure that this declaration is attached to the design development report.

7.3.4 Stage 6 (Design documentation) services

The project leader, lead designer, designer and cost manager shall provide, as necessary, the services set out in Table 9 and 10 to develop the end of stage deliverable in accordance with the relevant provisions of the Annex A.

7.3.5 Stage 7 (Works), Stage 8 (Handover) and Stage 9 (Close out) services

7.3.5.1 The project leader, lead designer, designer and cost manager shall provide, as necessary, the services set out in Table 11 to develop the end of stage deliverables in accordance with the relevant provisions of Annex A.

7.3.5.2 The lead designer, designer or supervisor shall not issue to the contractor a change in the scope of work during stage 7 which increases the total of the prices of the package without the prior knowledge and acceptance of the cost manager and, if appointed, the project manager.

Table 6: Stage 3 (Preparation and briefing) services

Project leader	Lead designer	Designer and cost manager	Health and safety agent
1) Obtain outline statement from the client setting out the client's requirements and objectives including cost and schedule for the package. 2) Prepare, co-ordinate and monitor a project initiation programme. 3) Establish the need for specialist advice and studies and procure or facilitate the procurement of such advice and studies. 4) Assist the client with the procurement of the services of suitable qualified persons to provide discipline specific services. 5) Identify and document constraints to the development of design proposals or solutions. 6) Identify stakeholders and facilitate the necessary consultations in consultation with the client. 7) Facilitate the development and finalization of the strategic brief. 8) Document findings, assumptions and recommendations on studies and work undertaken in developing the strategic brief in a brief report. 9) Obtain the client's acceptance of the strategic brief. 10) Prepare baseline risk assessment for the package	In addition to providing services as set out for the designer, co-ordinate the advice and input of designers and cost managers	1) Provide discipline specific advice, data or input into the need for specialist advice and studies, liaison with stakeholders and the development of the strategic brief. 2) Carry out, where instructed by the project leader, discipline specific preliminary studies and information gathering to assist in establishing the strategic brief. 3) Advise on the need for surveys, analyses, tests or investigations which will be required in stage 4 to refine the production information and assumptions made during stage 3 and the availability and location of related infrastructure and services. 4) Collaborate and assist with the preparation and finalisation of the strategic brief. 5) Assist with the assessment of the risks, value, cost planning and the like.	1) Provide health and safety input into strategic brief as necessary 2) Advise on health and safety matters, regulations or guidelines with which the project must comply and comment on implications for the project

Table 7: Stage 4 (Concept and viability) services

Project leader	Lead designer	Designer	Cost manager	Health and safety agent
1) Obtain instructions from client on allocation of design responsibilities within project team. 2) Brief the client and the project team on procedures to complete stage 4 to meet project objectives. 3) Assist the client with the procurement of the services of suitable qualified persons to provide discipline specific services. 4) Initiate, obtain agreement and direct implementation of management and reporting procedures for stage 4. 5) Receive advice on constraints that may affect the accepted strategic brief including environmental constraints, obtain instructions on how the client wishes to proceed and incorporate any agreed amendments and adjustments in the concept report or revised procurement strategy. 6) Prepare and co-ordinate an indicative project documentation and delivery programme. 7) Receive and consider inputs from the project team and take any necessary actions. 8) Facilitate the development and finalization of the concept report including the obtaining of any approvals or in principle acceptances of elements within the concept report. 9) Obtain the client's acceptance of the concept report	In addition to providing services as set out for the designer: 1) Establish the design approach or solution so that the design or solution achieves the required quality, health and safety and other required standards and is co-ordinated within the project team. 2) Advise on allocation of responsibilities within the project team and resolve potential ambiguities. 3) Co-ordinate: a) the designers' and cost manager's activities, inputs and outputs. b) the establishment of the primary design, rehabilitation or maintenance criteria including durability, projected maintenance, design or service life and environmental policy. c) the carrying out of specialist studies and surveys relevant to design input or solutions. d) the periodic reviews of the development of the design concept or solution for conformity with the strategic brief and the control budget. e) the scope of consultations with statutory authorities, funders and utilities. 4) Give design direction to the preparation of design options or solutions and inputs into the concept report and the establishment of preferred design option or solution.	1) Implement the established management and reporting procedures to complete the concept report in response to the strategic brief. 2) Visit the site, carry out initial appraisal and advise on physical restrictions that might affect the package information and the control budget. 3) Collaborate with the project team and provide discipline specific advice, data or input into the need for specialist advice and studies, liaison with stakeholders, consultations with and documents required by statutory bodies, funders and utility providers and the development and finalisation of the concept report. 4) Collaborate with the health and safety agent in the development of the site health and safety specification and take account of such specification in their design proposals. 5) Advise on further surveys, analyses, tests and investigations which may be required and advise on payments due to specialists for specialist investigations, tests and studies. 5) Establish regulatory authority's requirements and incorporate into the design. 6) Develop the design or maintenance approach with the project team so that the design achieves the required quality, health and safety and environmental standards, satisfies all regulatory requirements and consents and is integrated within the project team and with the requirements of utility providers and interfaces with related projects of existing infrastructure. 7) Advise and comment on matters, regulations or guidelines with which the project must comply and comment on implications on package information. 8) Establish design options or solutions and motivate preferred options or solutions. 9) Provide information for or establish cost and life cycle cost estimates of components or elements of the package. 10) Establish access, utilities, services and connections required for the design. 11) Prepare preliminary or process design information or repair and maintenance information in the form of sketches, design notes, drawings or any combination thereof and outline performance specifications sufficient to describe the scope, scale, form and character of works for concept report and to develop a realistic cost plan. 12) Assemble concept design information and narrative describing developed brief and evolving design or maintenance intent for inclusion in concept report.	5) Provide cost advice to support the development of design approach or solutions so that the selected design or solution achieves the required quality and health and safety standards within the control budget and values 6) Receive details of options and preliminary design information or solutions and prepare cost plan for the concept report based on preliminary and elemental or equivalent cost estimates. 7) Advise on the effect of market conditions on cost plan and, when required, options based on life cycle costing. 8) Perform value management exercise with stakeholders / client 9) Assemble the cost plan and related reports for inclusion in the concept report and motivate or propose cost reduction measures where the cost plan exceeds the control budget.	1) Prepare a baseline risk assessment for the package. 2) Review and evaluate design concepts and advise on health and safety impacts on the delivery and maintenance of the proposed package. 3) Advise designers of their health and safety legal liabilities and responsibilities for constructability, maintainability and operationability of structures. 4) Comment on health and safety matters. affecting design options 5) Prepare and finalise a suitable, sufficiently documented and coherent site health and safety specification. 6) Prepare health and safety information for the concept report.

Table 8: Stage 5 (Design development) services

Project leader	Lead designer	Designer	Cost manager	Health and safety agent
1) Direct a) project team considerations and investigations of alternative design solutions that comply with the package information. b) risk management process, allocate to project team risk mitigation actions, and assess impact on package information. c) value management process, allocate to project team proposals for value management, and assess impact on package information. 2) Receive reports/proposals and obtain instructions from client. 3) Prepare and co-ordinate a detailed design and documentation programme, based on the indicative programme for delivery. 4) Monitor the cost control measures put in place by the cost manager to verify progressive design compliance with the control budget including design reviews to achieve budget compliance. 5) Monitor a) progress of consultations with utility providers. b) finalization of design criteria. c) provision of principal elements to assist in establishing cost plan. 6) Refine, obtain agreement and direct implementation of management procedures and reporting procedures. 7) Receive inputs from project team, assess impact on package information and, as necessary, submit to client and obtain instructions or agreement. 8) Manage and monitor liaison and consultations with statutory authorities to agree submission requirements, report to client and arrange payment of fees. 9) Prepare and assemble design development report and submit to client for acceptance.	1) Refine design approach so that the design achieves the required quality, is co-ordinated within the project team and is in conformity with package information. 2) Co-ordinate work of discipline specific design consultants and cost manager. 3) Give design direction to consideration of design options. 4) Give design direction and co-ordinate a) provision of briefing information to specialists, and suppliers. b) integration of the design and requirements of project team. c) integration of the design and requirements of specialists and suppliers. 5) Lead and co-ordinate liaison and consultations with statutory authorities to agree submission requirements. 6) Integrate cost advice into the design process	1) Advise on updating design schedule. 2) As the design develops, review compliance with client and authorities' requirements and advise on any implications. 3) Collaborate and assist in preparing the design development report. 4) Collaborate with the health and safety agent in the implementation of the site health and safety specification. 5) Receive and with project team discuss client comments on or amendments to design development report, advise on impact of any amendments or additional requirements and changes. 6) With project team, develop design approach and periodically review so that the design achieves required quality, is co-ordinated and is in conformity with package information. 7) Prepare design options for elements of works and test options with project team against package information and agree preferred option. 8) Develop strategy for use, cleaning, maintenance and subsequent deconstruction. 9) Advise where elements of works are most appropriately designed (wholly or in part) by specialists/suppliers, provide briefing information. 10) Receive and advise on outputs of specialist studies and surveys and incorporate into the design. 11) Liaise with utility providers as necessary and incorporate into the design their requirements. 12) Prepare calculations in sufficient detail to facilitate and verify design development. 13) Finalise design criteria for works. 14) Develop actions for risk mitigation and assess with project team impact on package information. 15) Contribute to value management process and assess impact on package information.	6) Provide cost advice for development of design approach so that the design achieves required quality, is co-ordinated within project team and in conformity with package information. 7) Contribute to periodic reviews of development of the design for conformity with project team, assess need for changes, advise on impact on package information and incorporate agreed changes. 8) Update cost plan and advise on budget. 9) Prepare cash flow forecasts and monitor expenditure against cost plan and report. 10) Advise on effect of market conditions including forecast of construction cost. 11) Prepare cost studies to assist project team in testing options. Including where required, life cycle costing. 12) Consider cost aspect of strategy for use, cleaning and maintenance and subsequent construction. 13) Receive and advise on outputs of specialist studies and surveys and incorporate into the cost plan. 14) Provide cost information for liaison with utility providers. 15) Support development of actions for risk mitigation and assess impact on package information with project team.	1) Issue the site health and safety specification to the project leader, lead designer, designer, procurement leader, cost manager, contract manager, supervising agent and contract, as relevant and appropriate. 2) Provide health and safety briefing to designers and cost manager. 3) Advise on health and safety impact of compliance with regulations. 4) Collaborate in finalising implications of health and safety requirements on the design. 5) Receive and review designer's design proposals for general conformance with relevant health and safety regulations. 6) Support designer's integration of health and safety requirements into the design development report. 7) Review design development report before it is finalised for compliance with the requirements of the site health and safety specification.

Table 8 (concluded)

Project leader	Lead designer	Designer	Cost manager	Health and safety agent
10) Obtain client comments on or amendments to design development report, discuss with project team, advise on impact of any amendments or additional requirements, agree changes and resubmit design development report to the client for acceptance. 11) Manage and monitor the timeous submission by the designers of documentation to obtain the necessary approvals. 12) Obtain statutory permissions that are required. 13) Obtain the client's acceptance of the design development report.		16) Provide information on principal elements to assist in establishing cost plan. 17) Establish critical construction details, tolerances, performance tolerances and anticipated movements, defining critical co-ordination clearances. 18) Advise on scope of performance and prescriptive specifications, and procurement implications. 19) Liaise with project team and contribute to consultations with statutory authorities to agree submission requirements. 20) Prepare design development drawings defining detailed form, function and character of works with the primary components being defined in terms of overall size and typical detail, including general arrangement plans, sections, elevations and details in sufficient detail to show design intent. 21) Prepare outline specifications for components of works defining performance and quality. 22) Assemble design development drawings, outline specifications and agreed visualizations for inclusion in design development report.	16) Contribute to value management process and assess impact on package information with the project team. 17) Receive information on principal elements to establish approximate quantities. and define specifications 18) Receive details of design development and prepare cost details for inclusion in the design development report. 19) Assemble cost plan and reports for inclusion in design development report.	

Table 9: Stage 6A (Production information) services

<table>
<tr><th>Project leader</th><th>Lead designer</th><th colspan="2">Designer</th><th>Cost manager</th><th>Health and safety agent</th></tr>
<tr><td rowspan="2">1) Refine or initiate, obtain agreement and direct implementation of refined management procedures and reporting procedures.
2) Receive:
a) project team advice on scope, content, assembly, packaging and sequencing of production information, and updating of design schedule and report to client and obtain instructions.
b) results of periodic review of the development of the design for conformity with package information and advise on need for change, advise on impact, submit to client and obtain instructions.
3) Monitor and manage development of production information in conformity with package information.
4) Direct work of project team, allocate actions, assess impact on package information, report to client and obtain instructions.
5) Contribute to strategy for construction, use, cleaning and subsequent maintenance, and report to client and obtain agreement.
6) Manage and monitor project team liaison and submissions to statutory authorities and report to client.
7) Receive production information drawings and schedules of work sufficient for construction and assemble works information and undertake package review.
8) Obtain any outstanding statutory permissions.</td><td rowspan="2">1) Co-ordinate work of discipline specific design consultants and cost manager.
2) Co-ordinate advice on scope, content, assembly, packaging and sequencing of production information and implementation of clients instructions.
3) Give direction to development of production information in conformity with package information.
4) Give design direction and co-ordinate integration of the design requirements of project team and specialist and suppliers into package information.
5) Lead and co-ordinate project team liaison and making of submissions to statutory authorities.</td><td colspan="2">1) Advise on scope, content, assembly, packaging and sequencing of production information and implement instructions.
2) Advise on updating design schedule.
3) Take into account the requirements of the site health and safety specification
4) Collaborate with the health and safety agent in the implementation of the site health and safety specification</td><td rowspan="2">1) Identify portions of production information that need to be reviewed for compliance with the requirements of site health and safety specification and request such information from the designers, as relevant.
2) Receive and review health and safety aspects of production information for designer's compliance with health and safety duties.
3) Receive reports on health and safety from designers so that pertinent information can be included in the scope of work of the contractor's contract.</td></tr>
<tr><td>5) Prepare a report which satisfies the provisions of Regulation 6(1)(c) of the Construction Regulations 2014
6) Develop production information in conformity with package information.
7) Periodically review development of the design for conformity with package information, assess with project team need for changes and advise on impact on package information.
8) Incorporate non-material changes to the design.
9) Confirm strategy for construction, use, cleaning and subsequent maintenance.
10) Develop actions for risk mitigation and assess with project team impact on package information.
11) Contribute to value management process, develop proposals for value management and assess with project team impact on package information.
12) Integrate the design and requirements of project team into package information.
13) Integrate the design and requirements of specialists and suppliers into package information.
14) Prepare drawings and integrate information from specialists and suppliers.
15) Liaise with project team and contribute to submissions to statutory authorities.
16) Prepare production information drawings and schedules of works sufficient for construction or preparation of manufacturing and installation drawings and production information by other project team members.
17) Receive confirmation of setting out information and dimension drawings.
18) Prepare detailed specifications for components of works for inclusion in scope of work, defining performance, quality, operating and maintenance requirements.
19) Incorporate appropriate facilities for commissioning within the system design.</td><td>5) Support development of production information in conformity with the package information.
6) Contribute to the periodic review of the development of the design for conformity with package information, advise on conformity with the package information, assess with project team need for changes and advise on impact on package information.
7) Contribute to confirmation of strategy for use, cleaning and maintenance and subsequent construction.
8) Advise on effect of market conditions including forecast of construction cost.
9) Support development of proposals for risk mitigation and assess with project team impact on package information.
10) Contribute to value management process, support development of proposals for value management and assess with project team impact on package information.
11) Review integration of the design and requirements of specialists and suppliers into package information for conformity with cost plan.
12) Receive production information drawings and schedules of work sufficient for construction or preparation of manufacturing and installation drawings and undertake cost check exercise, monitor cost and update cash flow projections.</td></tr>
</table>

Table 10: Stage 6B (Manufacture, fabrication and construction information) services

Design lead	Discipline specific designer	Health and safety agent
Professionals appointed by client (review service)		
Coordinate work of discipline specific design consultants:	1) Advise on need for instructions relating to manufacture, fabrication and construction information (MF&C) information. 2) Review schedule for submission of MF&C information to meet needs of procurement pre-installation testing, and construction schedule. 3) Provide information required to clarify production information drawings and specifications. 4) Receive and review MF&C information for general conformity with scope of work and consider need for amendments and resubmissions for further review and issue comments. 5) Advise on need to amend production information or design included in scope of work and assess impact on changes on package information with project team. 6) Advise on contractor's proposals relating to elements of the works to be designed by contractor. 7) Receive and review samples of materials, components and assemblies for general conformity with scope of work and consider the need for amendments and resubmission for further review and issue comments. 8) Comment on contractor's method statements in so far as they reflect on design intent of the works. 9) Monitor progress with completion of MF&C information. 10) Review operation and maintenance manuals for components and systems, record drawings and schedules of design criteria of works as constructed, for general conformity with scope of work information and completeness. 11) Update production information, general arrangement drawings and schedules, incorporating changes instructed during construction.	1) Receive and review health and safety of aspects of manufacture, fabrication and construction information for designer's compliance with health and safety duties. 2) Advise on need for designers to consider further health and safety aspects of the design included in production information.
Professional appointed by the contractor		
Coordinate work of discipline specific design consultants:	1) Consider production information and advise on issues requiring supplementary information or clarification. 2) Advise on design schedule that meets needs of procurement, pre-installation testing, construction works contract and construction schedule. 3) Regularly review design schedule for receipt and issue of information, submissions for approval, and testing and commissioning during construction. Issue schedule of drawings and other information to be provided. 4) Develop actions for risk mitigation and assess impact with construction contract team/project team. 5) Contribute to value management process. Develop proposals for value management. With Construction Contract team/project team assess impact on construction works contract. 6) Request and obtain information required to clarify production information drawings and specifications. 7) Prepare co-ordinated manufacture and installation drawings of elements and/or components and relevant testing and commissioning information, based on production information. Integrate with construction, manufacture and installation drawings. 8) Periodically review development of the design for conformity with production information. With construction contract team/project team assess need for changes and advise on impact on construction works contract. 9) Obtain reviews and approvals for MF&C information. Provide, for review and approval, technical submissions detailing quality and performance of materials and equipment to demonstrate compliance with production information. 10) Provide clarification of MF&C information as required. 11) Update drawings and schedules to reflect changes in components and installations as construction progresses. 12) Assess impact of variations on production information and advise. 13) Define quality control and testing procedures to demonstrate compliance with construction works contract. Receive results of performance demonstration tests, adjust MF&C information as required and re-test. Obtain reviews for results of tests. 14) Advise on need for special inspections or tests during construction. 15) Assist with preparation of maintenance manuals for components and systems, record drawings and schedules of design criteria of works as constructed.	

Table 11: Stage 7 (Works), Stage 8 (Handover) and Stage 9 (close out) services

<table>
<tr><th>Project leader</th><th>Lead designer</th><th>Designer</th><th>Cost manager</th><th>Health and safety agent</th></tr>
<tr><td rowspan="2">1) Deal with any outstanding issues.
2) Monitor
- review of record information and issue to client.
- liaise with project users in use of systems.
- respond to queries about use, cleaning, maintenance and subsequent operation
- obtain outstanding statutory permissions.
3) Lead post-project review.
4) Assemble records and archive originals and copies as appropriate.</td><td rowspan="2">In addition to performing discipline specific Design Consultant tasks co-ordinate
- review of record information.
- liaison with project users in use of systems.
- assistance with queries about use, cleaning, maintenance and subsequent operation.
- the obtaining of any outstanding statutory permissions.</td><td colspan="2">1) Deal with any outstanding issues.
2) Contribute to post-project review.
3) Assemble records and archive originals and copies as appropriate.</td><td rowspan="2">1) Monitor health and safety risks and compliance with health and safety requirements.
2) Submit to authorities and facilitate permits.
3) Liaise with project users of the systems.
4) Assist with queries about use, cleaning, maintenance and subsequent construction.</td></tr>
<tr><td>4) Complete inputs into record information.
5) Liaise with Project users in use of systems.
6) Assist with queries about use, cleaning, maintenance and subsequent construction.
7) Assist with obtaining of any outstanding statutory permissions.</td><td>4) If required to do so, measure the works for payment purposes, compile payment certificates, deal with all events which impact upon cost
5) If required to do so, provide cash flow projections and cash reports clearly indicating actual to planned progress</td></tr>
</table>

NOTE: Designers are invariably appointed to act as supervising agents to ensure that design intent is met / verify that the construction is being carried out in accordance with the design in order to fulfil requirements of the National Building Regulations and the Construction Regulations 2014.

7.4 Procurement services

The project leader, lead designer, designer and cost manager shall, where required by the project manager or the procurement leader:

a) develop procurement documents (calls for expressions of interest, tender documents and contracts) in accordance with the provisions of SANS 10845-1 and the client's policies for infrastructure procurement and delivery management; and

b) **e**valuate, where required by the client, calls for expressions of interest and tenders and develop evaluation reports in accordance with the provisions of the SANS 10845-4 and SANS 10845-3, respectively, and the client's policies for infrastructure procurement and delivery management.

8 Services provided by the contract manager

8.1 The contract manager shall:

a) act as stated in the contract as the employer's agent, the employer's delegate, the employer's representative, the engineer, the principal agent, project manager, services manager or supply manager, depending upon the form of contract that is specified by the client, subject to any constraints that may be imposed by the client in terms of the client's policies for infrastructure procurement and delivery management; and

b) timeously obtain approvals at procurement gates 8 a) to f) (see Annex F) for taking actions when administering contract so that the works are not disrupted while approvals are being sought.

NOTE: The contract manager may delegate duties imposed by the contract to a cost manager.

8.2 The contract manager shall:

a) promptly provide the client and, if appointed, the project manager with all information for a contract or order required to populate and maintain registers for governance purposes including:

1) the agreed time for completion or delivery at the start of the contract or order and any changes to such times made in accordance with the provisions of the contract;

2) an initial and a revised cash flow forecast;

3) the agreed and forecasted total of prices;

4) where applicable, the estimated price adjustment for inflation; and

5) final delay damages and retention amounts;

b) make an assessment of the amount due to the contractor where required in terms of the contract, or review the contractor's assessment of the amount due and timeously certify payment;

c) revise as necessary the estimates for price adjustment for inflation where provided for and forecast the total of the prices for the contract or order and the completion or delivery date for the contract or order and include this information in the payment certificate;

d) update the cash flow for the remainder of the contract based on the contractor's schedule on a monthly basis;

e) manage, if relevant, the interface between the contractor and those responsible for providing client inputs where a management, design and construct or develop and construct contracting strategy is utilised;

f) retain on a contract file, copies of certificates of insurances, bonds and the like;

g) develop and maintain a contract risk register; and

h) provide a monthly report on events which, in terms of the contract, cause the total of prices to increase or the contract completion date to be changed.

8.3 The contract manager shall:

a) ensure that the client's requirements for monitoring, reporting and record keeping are adhered to;

b) report on specific key performance indicators required by a client, funder or in terms of legislation on monthly basis;

c) immediately notify the client and, if appointed, the project manager, of the receipt of a Prohibition Notice issued by a health and safety agent;

c) promptly report to the client and, if appointed, the project manager, all insurance claims made within one week of the claim being lodged and any dispute for referral to an adjudicator that is notified by a contractor;

d) prepare a motivation setting out any dissatisfaction with an adjudicator's decision for consideration by client, and, if appointed, the project manager, for referral to a tribunal.

e) provide the client, and, if appointed, the project manager, with adequate notice of the anticipated date of completion of a part or the whole of the works so that the necessary handover arrangements with the client or end user may be made; and

f) make inputs to the close out report in stage 9, including those relating to cost norms, contractor performance and the attainment, or not, of projective objectives and prepare the close out report.

8.4 The contract manager shall in terms of a target contract adjust the total of prices for inflation in accordance with the requirements of the contract at the specified intervals and submit a monthly report to the client, and, if appointed, the project manager, which contains the following information:

a) the contractor's latest forecast of total defined cost together with an explanation of any changes made since the last forecast;

b) the amount due before the deduction of any retention monies;

c) the total of prices with and without any adjustments for inflation, if relevant;

d) the forecasted total adjustment to the total of prices for inflation;

e) the total forecasted defined cost plus the fees for the payment due;

f) the actual defined cost plus the fees covering the previous payment certificate;

g) interest due to the contractor or client for corrections between forecasted and actual defined cost plus the fee for the previous month;

h) the contractor's planned value, based on the estimated amount that should have been earned at the assessment date in terms of the programme for completed and partially completed activities, where the prices in the activity schedule for partially completed activities are calculated on a pro rata basis; and

i) the contractor's earned value based on the estimated amount that would have been earned at the assessment date for completed and partially completed activities, where the prices in the activity schedule for partially completed activities are calculated on a pro rata basis.

8.6 Key performance indicators relating to cost norms shall be compiled by the contract manager in terms of requirements established by the client and, if appointed, by the project manager, and included in the close out report.

NOTE Key performance indicators such as the cost of a road per km or a certain type of building per square metre can provide useful planning information and enable comparisons with other projects of a similar nature to be made.

9 Services provided by the supervising agent

9.1 The supervising agent shall:

a) act in accordance with the provisions of the contract entered into with the contractor; and

b) perform level 2 construction monitoring services as described in Table 12, unless otherwise instructed.

9.2 The supervising agent shall notify the contract manager of any non-conformance on the part of a contractor to the scope of work or instructions issued (defects) prior to completion or any other matter which is likely to significantly increase the costs, delay completion or impair the performance of the works in use.

9.3 The supervising agent shall record in a book which shall be kept on site in the same place as the health and safety file required in terms of the Occupational Health and Safety Specification for Construction Works Contracts, all site visits and any notifications or instructions to the contractor regarding defects and the rectification thereof which occur prior to completion of the works.

9.4 The supervising agent shall complete the relevant certificate in Annex D for inclusion in the record information prior to the completion of the handover stage. Copies of such certifications shall be issued to the contractor.

Table 12: Levels of construction monitoring (stage 7)

Level	Description
1	• Monitor the outputs from another party's quality assurance schedule against the requirements of the plans and specifications. • Visit the works at least once every two weeks on average over the duration of the works to review important materials, critical work procedures and/or completed elements or components. • Review random samples of materials and work procedures that coincide with normal frequency visits for conformity to requirements of the contract. • Be available to advise the contractor on the technical interpretation of the plans and specifications.
2	• Review, preferably at the earliest opportunity, a sample of each important: a) work procedure; and b) construction material for compliance with the requirements of the contract and review representative samples of important completed work prior to enclosure at a higher frequency than that required for level 1. • Regularly visit the site works at frequency which may vary over the duration of the works from daily to weekly to review important materials, critical work procedures and/or completed elements or components for conformity to requirements of the contract. • Be available to advise the contractor on the technical interpretation of the plans and specifications
3	• Maintain a part-time presence on site to review random samples and review important completed work prior to enclosure, or on completion, as appropriate. • Be available to advise the contractor on the technical interpretation of the plans and specifications
4	• Maintain a full time presence on site to constantly review : a) work procedures b) construction materials for compliance with the requirements of the contract and review completed work prior to enclosure or on completion as appropriate. Be available to advise the contractor on the technical interpretation of the plans and specifications

NOTE 1 The Contractor is responsible for providing the works in accordance with the provisions of the contract. Construction monitoring provides an independent verification, to the level required by the client, that the works are being completed in accordance with the requirements of the contract, that the designs are being correctly interpreted and that appropriate techniques are being utilised. Construction monitoring creates no contractual relationship between those providing the monitoring services and the contractor outside the contract that is entered into between the client and the contractor.

NOTE 2 The level enables requirements for site staff to be determined.

10 Services provided by the health and safety agent

10.1 The health and safety agent shall:

a) assume the responsibilities imposed upon the client as a “client” in terms of Regulation 4(5) of the Construction Regulations 2014 issued in terms of the Occupational Health and Safety Act of 1993 in respect of each and every package;

b) provide services in relation to each of the stages as set out in Tables 6 to 11;

c) obtain all the necessary documentation to support an application for a construction work permit required in terms of the Construction Regulations 2014 issued in terms of the Occupational Health and Safety Act of 1993.

d) ensure that an application for a construction work permit to perform construction work required in terms of the Construction Regulations 2014 is completed on the prescribed form and submitted to the provincial director at least 30 days before the construction work is carried out together with:

1) the baseline risk assessment;

2) the health and safety specification;

3) a copy of the health and safety agent's contract with the client;

4) documented proof of the contractor's registration and good standing with the compensation fund or with a licensed compensation insurer as contemplated in the Compensation for Occupational Injuries and Diseases Act, 1993 (Act No. 130 of 1993);

5) a fully completed designer's occupational health and safety declaration (see Annex B);

6) a fully completed health and safety agent's declaration (see Annex C); and

7) the principal contractor's health and safety plan;

e) ensure that a contractor who carries out construction work for which a construction work permit is not required, but which in terms of the Construction Regulations 2014 requires that the provincial director be notified, does so at least before the that work is carried out;

f) issue the contractor with the site specific number for the required work permit;

g) provide the necessary health and safety inputs into the procurement documents;

h) act as the contract manager's or supervising agent's representative, depending upon the NEC3 form of contract that is used, in terms of contracts falling within the scope of the Construction Regulations 2014;

i) provide services which are consistent with duties assigned to a health and safety agent as set out in the Occupational Health and Safety Specification for Construction Works Contracts;

a) conduct initial site safety inductions for each professional service provider contracted by the client to provide construction related services for a package and each principal contractor appointed to execute a package;

k) handover to the contract manager upon completion of a package a copy of the principal contractor's health and safety file together with a brief report on the health and safety performance of the contractor;

l) attend site meetings when specifically requested to do so by the contract manager; and

m) appoint a suitably qualified safety practitioner to visit the sites at suitable intervals to conduct site inspections for compliance with the requirements of the Occupational Health and Safety Specification for Construction Works Contracts and submit management reports, detailing inspection results and any remedial action required by the principal and / or subcontractors.

NOTE 1 The Occupational Health and Safety Specification for Construction Works Contracts provides the generic overarching framework within which the contractor is required to demonstrate compliance with certain requirements for occupation health and safety established by the Occupational Health and Safety Act of 1993, establishes the manner in which the contractor is to manage the risk of health and safety incidents in the execution of the contract and establishes the manner in which the client's health and safety agent will interact with the contractor. The contractor is required to develop, implement and maintain package specific health and safety plans i.e. a documented plan which addresses identified hazards and includes safe work procedures to mitigate, reduce or control the hazards identified. The client is required to provide certain package specific information to the contractor to enable such plans to be formulated. Accordingly, this generic specification on its own cannot ensure compliance with requirements of the aforementioned Act.

NOTE 2 The health and safety agent may in terms of the Occupational Health and Safety Specification for Construction Works Contracts issue Improvement Notifications, Contravention Notices and Prohibition Notices, to the contractor concerned and forwarded copies to the contract manager. Such notices require corrective remedial action by the contractor. In the event that a "life threatening" situation develops on the site, due to negligence, or the lack of preparations, the contractor is required to terminate the activity with immediate effect.

NOTE 3 It is a requirement of the client for all contractors to execute construction works in accordance with the provisions of the Occupational Health and Safety Specification for Construction Works Contracts

NOTE 4 Following the initial induction, it is responsibility of the principal contractor to conduct all other on-site inductions.

Annex A: Control framework for planning, design and execution of infrastructure projects

A.1 Controlling work flows

Workflow may be regarded as the sequence of activities with explicit start and end points to describe a task. An activity as a series of operations (sequential, parallel, mixed) is punctuated by decisions as illustrated in Figure A1.

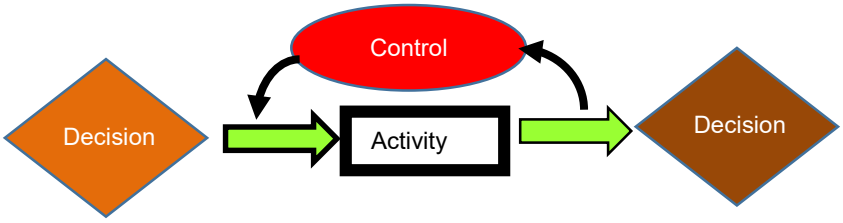

Figure A1: The context of project activity

In order for an infrastructure project to progress meaningfully, its objectives and their achievement need to be closely allied to the decision structure. Decisions give purpose to activity. A project begins and ends with decision points.

Decision points (controls or decision gates) form the major boundaries to activities. Decision gates provide an opportunity to:

- authorise the proceeding with an activity within a process, or the commencing of the next process;
- confirm conformity with requirements before completing processes; or
- provide information which creates an opportunity for corrective action to be taken.

Control systems are necessary to regulate work in relation to its context which may from time to time change in order to match performance against objectives. Such systems are also the mechanism that deals with the boundary between project context and project activity as indicated in Figure A2.

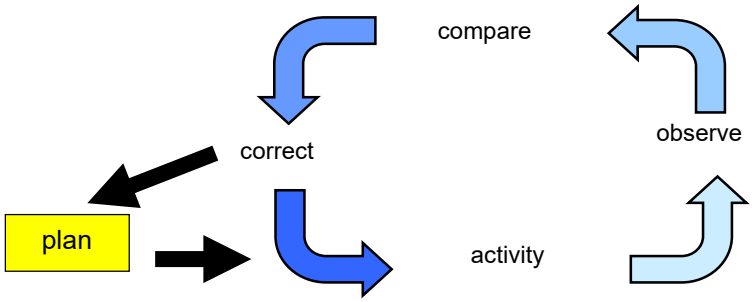

Figure A2: Control system

Control systems accordingly involve the comparing of progress against requirements, objectives or targets and where necessary taking some corrective action such as:

- 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.

A.2 Controlling workflows in infrastructure projects

A stage is a collection of logically related activities in the delivery cycle of infrastructure projects that culminates in the completion of a major deliverable. The workflow for the delivery of infrastructure projects comprises the applicable stages indicated in Figure A3. Each of these stages are linked to tasks mapped out in the supply chain indicated in Figure A3. The key deliverables associated with each task informs the decisions which are made at each decision gate are described in Table A1.

The control framework shown in Figure A3 deals with the generic work flow associated with the planning, design and execution of infrastructure projects i.e. the project life cycle for the delivery of infrastructure projects. It is 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. The framework is independent of the procurement strategy that is pursued to appoint infrastructure contractors.

A.3 Outline of stages

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 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 (see Figure A3).

Stages 3 (preparation and briefing) and 4 (concept and viability) need to be repeated for each package if the acceptance at stage 4 (feasibility) 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 in a feasibility report so that visible and conscious decisions can be made should adjustments be necessary to reflect changes in the project environment in different packages. Stage 4 (concept and viability) results in a solution for an infrastructure project. The design or solution is accordingly “frozen” at the end of stage 4.

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 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.

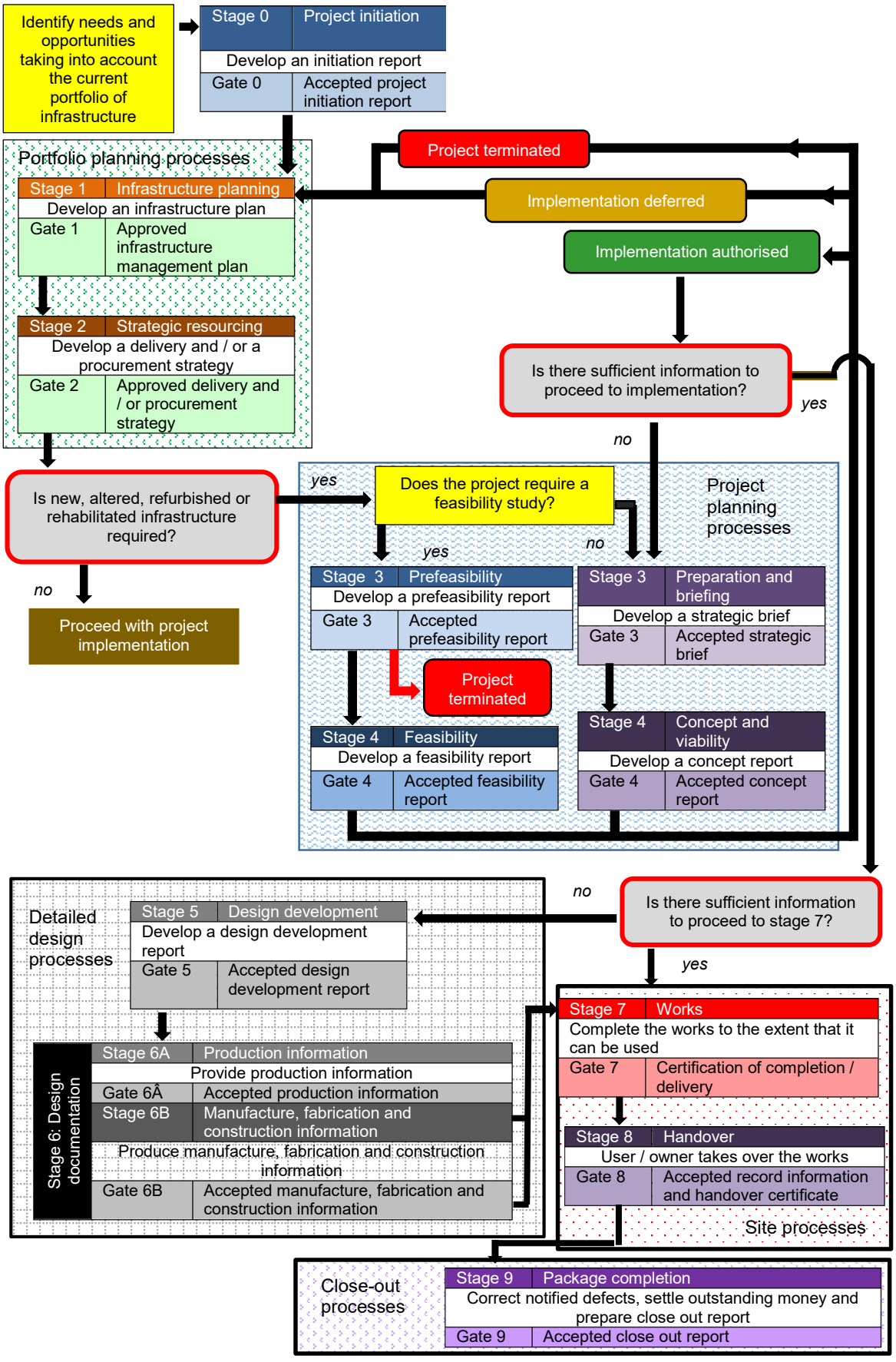

Figure A3: The control framework for the planning, design and execution of infrastructure projects

Table A1: End-of-stage deliverables

Stage		End-of-stage deliverable	
No	**Name**	**Description**	**Considerations**
0	Project initiation	An initiation report which outlines the high-level business case together with the estimated project cost and proposed schedule for a single project or a group of projects having a similar high-level scope	The initiation report for a project should as a minimum: • provide a project description and high-level scope of work; • outline key issues and solution options that were interrogated and the options that were evaluated; • indicate the high-level business case; and • provide the estimated project cost and indicative high-level time schedule The decision-making criteria, findings, assumptions and recommendations should be documented
1	Infrastructure planning	An infrastructure management plan which identifies and prioritises projects and packages against a forecasted budget over a period of at least three years but generally not more than 5 years	The infrastructure management plan, which should be described by the high-level scope of work for each project, the proposed time schedule, the estimated total project cost and annual budget requirement, the geographical location, any known encumbrances and estimated timeframes for removing these encumbrances, should: • identify the infrastructure requirements to meet the University's strategic objectives within available resources; • cover the University's whole infrastructure portfolio for all types of infrastructure, including new infrastructure, as well as plans for operation, maintenance, refurbishment and rehabilitation of existing infrastructure, and disposal of infrastructure which is no longer required to meet the University's objectives; • include short and medium-term plans as well as longer-term plans where required for alignment to the University's long-term strategic objectives and for life-cycle asset management considerations; and • be informed by life-cycle infrastructure asset management planning This medium-term infrastructure management plan should be aligned to the University's long-term and five-year strategic plans and, if relevant, annual performance plan and the University's infrastructure management policy
2	Strategic resourcing	A procurement strategy for each project and package in at least the first year of the infrastructure management plan together with the structure and composition of the client delivery management team to oversee the implementation of such strategy	The procurement strategy should: • describe the primary and secondary procurement objectives; • outline the outcomes of any spend, market, organisational and stakeholder analysis; • identify the project delivery route (see Annex D), as necessary; and • indicate the packaging, contracting and targeting strategy and selection method for a procurement The manner in which the client delivery management team fulfils the necessary client functions should be described as well as how resources which are required are to be sourced
3	Prefeasibility	A prefeasibility report which determines whether or not it is worthwhile to proceed to the feasibility stage	The following activities, as necessary, should be undertaken, if a feasibility report is required or warranted: • document the owner or user requirements specification; • shortlist the options that were considered; • provide a preliminary design for study options, provide preliminary capital estimates and the proposed schedule; and • present the study outcomes
	Preparation and briefing	A strategic brief which defines project objectives, needs, acceptance criteria and client priorities and aspirations, and which sets out the basis for the development of the concept report for one or more packages	The following activities, as necessary, should be undertaken: • confirm the scope of the package and identify any constraints; • 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 as well as the control budget and schedule for the package or series of packages; and • identify statutory permissions, utility approvals, applicable policies and strategies to take the package forward, risks that need to be mitigated as well as interfaces between packages

Stage		End-of-stage deliverable	
No	**Name**	**Description**	**Considerations**
4	Feasibility	A feasibility report which presents sufficient information to determine whether the project should be implemented	The feasibility report should, as necessary and if a feasibility report is required or warranted, include: • details regarding the preparatory work covering a needs and demand analysis with output specifications and an options analysis; • a viability evaluation covering a financial analysis and an economic analysis; • a risk assessment and sensitivity analysis; • a professional analysis covering a technology options assessment, an environmental impact assessment and regulatory due diligence; and • implementation readiness assessment covering institutional capacity and a procurement plan
	Concept and viability	A concept report which establishes the detailed brief, scope, scale, form and control budget, and sets out the integrated concept for one or more packages	The following activities, as necessary, should be undertaken: • document the initial design criteria and design options or the methods and procedures required to maintain the condition of infrastructure; • establish the detailed brief, scope, scale, form and cost plan; • develop an indicative schedule for documentation and required services; • develop a site development plan or other suitable schematic layouts of the works; • identify the statutory permissions, funding approvals or utility approvals required to proceed with the works; • develop a baseline risk assessment and a health and safety plan required in terms of legislative requirements; • develop a risk report linked to the need for further surveys, tests, other investigations and consents and approvals, if any, during subsequent stages and indicates how identified health, safety and environmental risk are to be mitigated; • develop an operations and maintenance support plan; • confirm the financial sustainability of the project; and • establish the feasibility of satisfying the strategic brief within the control budget established during stage 3 and, if not, motivate a revised control budget
5	Design development	A design development report which develops in detail the approved concept to finalise the design and definition criteria, sets out the integrated developed design, and contains the cost plan and schedule for one or more packages	The following activities, as necessary, should be undertaken: • 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 works can be completed within the control budget or propose a revision to the control budget
6	Design documentation	Production information and manufacture, fabrication and construction information	6A Production information Provide production information which provides the detailing, performance definition, specification, sizing and positioning of all systems and components enabling either construction (where the constructor is able to build directly from the information prepared) or the production of further information for construction
			6B Manufacture, fabrication and construction information Provide manufacture, fabrication and construction information produced by or on behalf of the constructor, based on the production information provided for a package, which enables manufacture, fabrication or construction to take place

Stage		End-of-stage deliverable	
No	**Name**	**Description**	**Considerations**
7	Works	Completed works which are capable of being occupied or used	Undertake, as necessary, activities in relation to the works such as the provision of temporary and permanent works, manage risks associated with health, safety and the environment on the site, confirm that design intent is met and correct notified defects which prevented the client or end user from using the works and others from doing their work Certify completion of the works or that the goods and associated services as delivered are in accordance with the provisions of the contract
8	Handover	Works which have been taken over by the user or owner complete with record information	Finalise and assemble record information which accurately reflects the infrastructure that is acquired, rehabilitated, refurbished or maintained and hand over the works and record information to the user or owner and, if necessary, train end user's or owner's staff in the operation of the works Issue the handover certificate Note: The record information should, as relevant: • accurately document the condition of the completed works or the works as constructed or completed; • contain information on the care and servicing requirements for the works or a portion thereof 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 Arrangements should be put in place to secure and safeguard the works from the time that the contractor's liabilities for damage to the construction works end until such time that the works are handed over to the end user or owner who accept such liabilities
9	Package completion	Works with notified defects corrected, final account settled and the close out report issued	The following activities, as necessary, should be undertaken: • correct all defects that are detected during the defects liability period; • complete the contract by finalising all outstanding contractual obligations, including the finalisation and payment of amounts due after the expiry of the defects correction period, and the issuing of certificates required in terms of the contract; • evaluate package outcomes; and • compile a completion report for the package making suggestions for improvements and outlining what was achieved in at least the following: - the performance parameters specified by the University or success factors outlined in the strategic brief; - unit costs of completed work or major components thereof; and - the value of key performance indicators relating to the objectives of a secondary procurement policy that were achieved

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.

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.

NOTES

Stage 4: (Concept and viability)

1 Stage 4 is where sufficient design concepts or solutions are developed for the client to establish the feasibility of the works associated with the package or project or to select a particular conceptual approach to pursue. It is the last stage of the planning activities. It brings to a close the information required to make informed decisions concerning the implementation of the project. This stage as such needs to resolve any outstanding project related risks and gather sufficient information to enable such decisions to be made.

2 Site studies can include site evaluations, topographical surveys, surveys of existing structures, geotechnical investigations and environmental, social or heritage assessments.

3 Resolution of details that do not impact upon the key elements are generally left to stage 5.

4 The design or solution at the end of stage 4 is "frozen". The concept report as such contains as relevant, the preliminary analysis, key assumptions, the evaluation of alternatives, preliminary sizes of primary or key elements, a description or outline of secondary elements, the preliminary review of the utility supply capacity, indicative specifications or schedules of finishes and preliminary layout drawings.

5 The following activities should, where required, be undertaken to produce the operations and maintenance support plan:

a) Client: identify additional organisational structure required for operation and maintenance over life span, and office, stores, furniture, equipment, information technology and staff training requirements to run operation and maintenance facilities as well as engineering infrastructure
b) Professional**:**
   1) establish logistic requirements in respect of facilities and/or engineering infrastructure;
   2) specify requirements, if any, for the contractor to provide a servicing and maintenance plan for all facilities and engineering infrastructure

6 An operations and maintenance support plan is a plan which establishes the organisational structure required for operation and maintenance of the asset resulting from the package over life span, and office, stores, furniture, equipment, ICT and staff training requirements to run operation and maintenance facilities as well as engineering infrastructure

7 Support requirements typically relate:

a) in engineering infrastructure to the strategic management of the operation and maintenance of water supply, sanitation, telecommunication, electricity supply, electronic, transportation, and stormwater drainage systems, taking full cognizance of their design or forecasted behaviour under specific operating conditions in a manner that does not compromise their intended functioning or the health and safety of workers and users or harm property or the environment
b) in buildings and related site works to facilities management i.e., an interdisciplinary field primarily devoted to the day to day operations, maintenance and care of buildings e.g. the care of air conditioning, electric power, plumbing and lighting systems, cleaning, decoration, grounds keeping and security.

Stage 5: Design development

1 Detailed design includes the selection of materials and components. At this stage there will frequently be an iterative process of proposing a component, checking its predicted performance against the brief, and amending selections if required.

2 The design development report translates the concept report into a document which paints a picture of what is to be delivered in terms of the package. The report needs as such to describe how structures, services or buildings and related site works, systems, subsystems, assemblies and components are to function, how they are to be safely constructed, how they are to be maintained and, if relevant, how they are to be commissioned. (The design development report relates to what is to be delivered. Record information relates to what has been delivered. Accordingly, the record information is an updated version of the design development report).

3 Outline specifications should be in sufficient detail to enable a view to be taken on the operation and maintenance implications of the design and the compatibility with existing plant and equipment. Reference to applicable specifications and key data associated therewith may be sufficient e.g. reference to applicable SANS 2001 *Construction standards* and critical specification data.

4 As part of service life planning, components should be assessed for compliance with performance requirements. Performance will deteriorate at a rate depending on the local environment, including the reactions at interfaces between materials and/or components, the design of the works, the component and installation detailing, the materials, the skill and quality of site work, maintenance and usage.

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

6 Commissioning is often misinterpreted to focus solely on testing during the end of the construction phase. Commissioning is actually a collaborative process for planning, delivering, and operating works that function as intended. Commissioning is a holistic process that spans from pre-design planning to post-construction operation and can be thought of as a checks-and-balances system.

Stage 6: Design documentation

1 The scope of work for a package specifies not only the works that are left behind but also the constraints in performing the works. The production information focusses on what is left behind.

2 Quality in contracts is frequently considered to be "conformance to stated requirements." Defects on the other hand are parts of the works which are not in accordance with stated requirements. This necessitates that requirements are objectively and comprehensively expressed in the scope of work in such a manner that compliance is capable of objective assessment i.e. the contractor can verify compliance without reference to the designer or representative of the employer.

3 Those responsible for drafting or providing inputs to the scope of work need to:

a) consider the inclusion of requirements for a quality management system or a quality management plan;
b) state, as necessary, the nature of the tests and inspections that are to be conducted, the timing of specified tests/ inspections, where and when the tests are to be performed, who is responsible for performing the tests, requirements for witnessing of tests, who is responsible for providing materials, facilities and samples for tests/inspections, the objectives of the tests/inspections, the testing procedures to be applied and the standards to be satisfied; and
c) express quality standards in such a manner that compliance is capable of being objectively assessed.

4 This stage includes selecting appropriate component specifications and installation details, and may extend into selecting the optimum specifications, using techniques such as value engineering or life cycle costing.

5 Commissioning procedures need to be scheduled in relation to other services or construction activities. Since the commissioning process is dependent on the progress of systems, structures and building fabric, the scheduling of commissioning activities needs to be carefully planned in relation to those activities. Accordingly, the interdependency problems need to be identified and considered as early in the project as possible as they need to be included in the designer's specification.

6 Standard forms of contract contain generic requirements which facilitate the acceptance of manufacture, fabrication and construction information. Contract specific requirements should be included in the scope of work.

Stage 7: Works

1 Contract data in a contract identifies the applicable conditions of contract which contain terms that collectively describe the rights and obligations of contracting parties and the agreed procedures for the administration of their contract.

2 High level procedures relating to the completion and correction of defects are contained in the conditions of contract. A well formulated contract should contain, where relevant, comprehensive commissioning requirements in the scope of work.

Stage 8: Handover

1 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. A well formulated contract should contain, where relevant, testing and commissioning requirements ahead of completion to facilitate a smooth hand over.

2 A handover needs to be planned. Prior warning of the expected handover dates needs to be given to those who are going to use, operate or maintain works. The successful completion of packages which incorporate plant (machinery and heavy equipment installed for the operation of a servicer) is usually dependent on there being a properly conducted commissioning procedure prior to or integrated with the hand over.

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

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

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

Stage 9: Package completion

The standard forms of contract that form the basis of the contract between the client and a contractor establish requirements for bringing a contract to conclusion.

A4 Applying the control framework

Stages 5 and 6 may be omitted if sufficient information to proceed to stage 7 is contained in the stage 4 deliverable.

Stage 3 (preparation and briefing) and 4 (concept and viability) may have to be undertaken following the acceptance of a feasibility report where there is insufficient information to proceed to implementation or such acceptance is for a project comprising a number of packages which are to be delivered over time.

Decisions to proceed to the next stage at each gate are based on the acceptability or approval of the end-of-stage deliverable as indicated in Figure A3. A stage is only complete when the deliverable at the end of a task is approved or accepted. Activities associated with stages 5 to 9 may be undertaken in parallel or in series, provided that each stage is completed in sequence.

The level of detail contained in a deliverable associated with the end of each stage should be sufficient to enable informed decisions to be made to proceed to the next stage. In the case of stages 3 to 6, such detail should, in addition, be sufficient to form the basis of the scope of work for taking the package forward in terms of the selected contracting strategy.

A5 Gateway reviews

Gateway reviews at the end of stage 4 provide an effective means for moderating the projected project outcomes and identifying gaps and shortcomings in the information upon which a decision is made to proceed to implementation. Gateway reviews deliver a team review in which independent practitioners, from outside of the project, examine the likelihood of the successful delivery and the soundness of a project, through a series of interviews and documentation reviews. Review teams can also provide valuable additional perspectives on issues facing the project team and are able to challenge the robustness or validity of the end of stage deliverable. The gateway review process provides clients with the confidence that an appropriate level of discipline is being applied in the delivery process and the best options to meet needs are being selected. Alternatively, they can be used to review the quality of the end of stage deliverables that were developed.

A gateway review of the end-of-stage 4 deliverable, prior to the acceptance of such deliverable needs to focus in the first instance on the quality of the documentation, and thereafter on:

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

b) affordability (the extent to which the level of expenditure and financial risk involved in a project can be taken up on, given the University's overall financial position, both singly and in the light of its other current and projected commitments); and

c) value for money.

A gateway review team needs to comprise not less than three persons who are not involved in the project associated with the works covered by the end of the stage 4 deliverable, and who are familiar with various aspects of the subject matter of the deliverable at the end of the stage under review. Such a team needs to be led by a person who has at least six years post-graduate experience in the planning of infrastructure projects and is registered either as a professional engineer in terms of the Engineering Profession Act, a professional quantity surveyor in terms of the Quantity Surveying Profession Act or a professional architect in terms of the Architectural Profession Act. The members of the team need, as

relevant, to have expertise in key technical areas, cost estimating, scheduling and implementation of similar projects.

The gateway review team needs to base its findings primarily on:

a) the information contained in the end-of-stage deliverables;

b) supplementary documentation, if any, provided by key staff obtained during an interview process; and

c) interviews with key staff members and stakeholders.

The gateway review team needs to issue a report at the conclusion of a gateway review which indicates the team's assessment of the information at the end of a stage and provides findings or recommendations on areas where further work may be undertaken to improve such information.

Aspects in the report needs to be flagged as being:

a) code red: team considers the aspect to pose a significant risk to the project or package;

b) code amber: team considers the aspects which indicate a minor risk to the project or package; or

c) code green: team considers the aspect to have been given adequate consideration to the extent that it is unlikely to jeopardise the success of progressing to the next stage, or minor adjustments may be required before proceeding.

Annex B: Designer's occupational health and safety declaration in terms of the Construction Regulations 2014

Description of the works *(briefly describe the works)*: . . . . . .

I, having the design responsibility as stated below, hereby declare with respect to the abovementioned works that:

a) I have received a copy of the health and safety specification from the client;

b) I have taken the prepared health and safety specification into consideration in my designs; and

c) I have complied with the requirements of regulation 6 in the execution of my duties as a designer in relation to the development and documentation of the my designs;

Name of designer and professional registration number	Design responsibility	Company	Postal address and telephone number	Signature
	Architectural design			
	Acoustic design			
	Civil engineering			
	Electrical engineering			
	Facade engineering			
	Fire safety			
	Landscape architectural design			
	Mechanical engineering			
	Structural engineering			
	Wet services			

(delete what is not applicable / amend as necessary)

Annex C: Health and safety agent's declaration

Name of client: . . . . . .

Postal address: . . . . . .

Telephone number: . . . . . .

Description of the works *(briefly describe the works)*: . . . . . .

Contract no: . . . . . .

Physical address of the construction site and office: . . . . . .

Nature of construction work: . . . . . .

Expected commencement date: . . . . . .

Expected completion date: . . . . . .

Estimated maximum number of persons on the construction site; . . . . . .

N**ame of health and safety agent:** . . . . . .

Identity number / passport number: . . . . . .

SACPMP registration number: . . . . . .

Telephone no: . . . . . .

Cell No: . . . . . .

Postal address: . . . . . .

Name of principal contractor: . . . . . .

Postal address: . . . . . .

Telephone number: . . . . . .

Name of construction manager:

Postal address: . . . . . .

Telephone number: . . . . . .

Name of construction health and safety manager: . . . . . .

Postal address: . . . . . .

Telephone number: . . . . . .

Name of health and safety officer: . . . . . .

Postal address: . . . . . .

Telephone number: . . . . . .

Contractors accountable to the principal contractor

Planned number: . . . . . .

Names of contractors appointed:

. . . . . .

I . . . . . (name). . . . . (postal address),. . . . . (telephone no) being the appointed health and safety agent hereby confirm that:

1) confirm that:

   a) the health and safety specification was included in the procurement documents issued to tenderers / contractor (delete that which does not apply);

   b) the principal contractor has been appointed in terms of a written contract:

   c) the principal contractor is registered and in good standing with the compensation fund / with a licensed compensation insurer as contemplated in the Compensation for Occupational Injuries and Diseases Act, 1993 (Act No. 130 of 1993) (delete that which does not apply);

   d) principal contractor's health and safety plan is approved for implementation;

   e) am appointed to:

      - ensure that during construction the principal contractor makes copies of the health and safety plan available on request to employees, inspectors or contractors,
      - take reasonable steps to ensure that each principal contractor's and each contractors' health and safety plan is implemented and maintained;
      - conduct periodic health and safety audits and document verification at intervals not exceeding one month and provide copies of an audit report to the principal contractor within 7 days of such audit;
      - stop any contractor executing a construction activity which is not in accordance with the health and safety specification and the principal contractor's health and safety plan;
      - ensure that the scope of work is amended to reflect additional health and safety information arising from a change to the design or construction work; and
      - ensure that the principal contractor keeps and maintains a health and safety file.

2) am reasonably satisfied that:

   a) the designers took into account the health and safety specification in their designs; and

   b) the principal contractor has made adequate provision for the cost of health and safety measures in his tender and has the necessary competencies and resources to carry out the construction works safely.

3) I confirm that.

Signed ---------- Date ----------

Name ----------

Annex D: Completion certificates

Certificate	Title	Service
D1	Means by which Regulation AZ.4 of the National Building Regulations has been satisfied In respect of the Permanent Works	Architectural design
D2	Civil engineering works	Civil engineering
D3	Electrical works	Electrical engineering
D4	Fire protection system	Fire safety
D5	Landscaping architectural works	Landscape architectural design
D6A	Energy usage in buildings	Mechanical engineering
	Mechanical works	
	Ventilation system	
D7A	Structural system subject to the National Building Regulations	Structural engineering
D7B	Structural system not subject to the National building regulations	
D8A	Fire installation	Wet services
D8B	Drainage installation / non-water borne sanitation disposal system / stormwater disposal system certificate	
DBC	Water installation	

Certificate D1

Means by which Regulation AZ.4 of the National Building Regulations has been satisfied In respect of the Permanent Works

Project title

Project number

Buildings and associated siteworks covered by certificate

Occupancy / Building classification(s) (see Regulation A20)

Part 1: General requirements

1			2	3
Applicability to application (tick column 2 or 3)			**Means of satisfying requirements of functional regulations** (tick relevant boxes in columns 4 or 5)	
Regulation	**yes**	**no**	**Deemed to satisfy provisions contained in relevant parts of SANS 10400**	**Regulation AZ4(1)(b)(ii)**
B: Structural Design			The structural system of the building: □ complies with the requirements of parts H, J, K, L, M or N of SANS 10400 or in the case of timber buildings with the provisions of SANS 10082; □ is the subject of a rational design or a rational assessment □ is the subject of an Agrément certificate; or The following competent persons were appointed: □ competent person (structures) to design and inspect the structures □ competent person (civil engineering) to design and inspect the services in dolomite land □ competent person (dolomite land) to categorise dolomite land	□
C: Dimensions			□ The dimensions of any room or space are in accordance with the detailed requirements of SANS 10400-C	□
D: Public safety			□ A change in level, the design of ramps and driveways, or access to swimming pools and swimming baths is in accordance with the detailed requirements of SANS 10400-D	□
F: Site operations			□ The protection against subterranean termites is in accordance with the detailed requirements of SANS 10400-F	□
H: Foundations			A geotechnical investigation was carried out	-
			The foundations for the building are in accordance with: □ the requirements of SANS 10400-B □ the detailed requirements of SANS 10400-H	□
			□ The foundations to the extension / addition to an existing building are the same as the existing which have performed satisfactorily	□
			A competent persons undertook responsibility for □ deep footings, soil rafts, compaction of in-situ soil or sub-surface drainage □ geotechnical solutions or soil improvement that were required	□
J: Floors			□ Floors in any laundry, kitchen, shower-room, bathroom or room containing a WC pan or urinal are in accordance with the detailed requirements of SANS 10400-J	□
			Suspended floors are in accordance with: □ the requirements of SANS 10400-B and SANS 10400-T □ the requirements of SANS 10082 □ the detailed requirements of SANS 10400-J	□
			Slabs supported on the ground are in accordance with: □ SANS 10400-B □ SANS 10400-H □ the detailed requirements of SANS 10400-J	□
K: Walls			The structural strength and stability of a wall is in accordance with: □ SANS 10400-B and SANS 10400-T □ the detailed requirements of SANS 10400-K	□
			The roof fixing is in accordance with: □ SANS 10400-B □ the detailed requirements of SANS 10400-K	□
			□ The water penetration through a wall is in accordance with the detailed requirements of SANS 10400-K	□

1			2	3
Regulation	**yes**	**no**	**Deemed to satisfy provisions contained in relevant parts of SANS 10400**	**Regulation AZ4(1)(b)(ii)**
L: Roofs			□ Roof coverings and waterproofing systems are in accordance with the detailed requirements of SANS 10400-L	□
			Flat roofs or related gutters are: □ in accordance with the detailed requirements of SANS 10400-L; or □ the subject of a rational design or rational assessment (or both)	□
			The roof assembly and any ceiling assembly, in addition to complying with the requirements of SANS 10400-C, are: □ in accordance with the requirements of the detailed requirements of SANS 10400-L and the roof assembly is supported on walls that comply with the requirements of SANS 10400-K □ SANS 10400-B and SANS 10400-L	□
			□ gutters and downpipes, if any, are sized in accordance with the requirements of SANS 10400-R	□
			The fire resistance and combustibility of the roof assembly or any ceiling assembly are in accordance with: □ the detailed requirements of SANS 10400-L □ SANS 10400-T	□
M: Stairways			Stairways are in accordance with □ SANS 10400-B and SANS 10400-T □ the detailed requirements of SANS 10400-M	□
			Walls, screens, railings or balustrades to such stairway are in accordance with the provisions of: □ SANS 10400-B and SANS 10400-T □ SANS 10400-K and SANS 10400-T.	□
N: Glazing			The type and fixing of glazing is in accordance with: □ SANS 10400-B □ the detailed requirements of SANS 10400-N	□
			□ The selection of the glazing is in accordance with the detailed requirements of SANS 10400-N	□
O: Lighting and ventilation			□ The lighting in a habitable room, bathroom, shower room and room containing a toilet pan complies with the requirements of SANS 10400-T and the detailed requirements of SANS 10400-O.	□
			The ventilation is in accordance with the requirements of SANS 0400-T and: □ is in accordance with the detailed provisions of SANS 10400-O □ is the subject of a rational design	□
P: Drainage			The design of the drainage system is □ in accordance with the detailed provisions of SANS 10400-P; □ the subject of a rational design or rational assessment □ the subject of an Agrément certificate	□
Q: Non-waterborne means of sanitary disposal			The means of sewage disposal where water borne sewerage disposal is not available: □ is in accordance with the detailed provisions of SANS 10400-Q; □ is the subject of a rational design or rational assessment □ is the subject of an Agrément certificate	□
R: Storm water disposal			The means for the control and disposal of stormwater is □ in accordance with the detailed provisions of SANS 10400-R □ is the subject of a rational design	□
			□ The means for the control and disposal of stormwater interconnected complexes is the subject of a rational design	□
S: People with disabilities			The means for providing facilities for people with disabilities is □ in accordance with the detailed requirements of SANS 10400-S □ is the subject of a rational design	□
T: Fire protection			The fire protection measures provided are: □ in accordance with the detailed requirements of SANS 10400-T □ the subject of a rational design or rational assessment	□
V: Space heating			□ The provision of space heating is in accordance with the detailed requirements of SANS 10400-V	□
W: Fire installation			The fire installations comply with the detailed requirements of SANS 10400-W	□
			The supply of water is: □ in accordance with the detailed requirements of SANS 10400-W □ the subject of a rational design	□

1			2	3
Regulation	**yes**	**no**	**Deemed to satisfy provisions contained in relevant parts of SANS 10400**	**Regulation AZ4(1)(b)(ii)**
XA: Energy Usage			The building: □ has an orientation, shading, services and building envelope in accordance with SANS 10400 Part XA □ is the subject of a rational design which demonstrates acceptable energy usage □ is the subject of an assessment which demonstrates acceptable theoretical energy usage performance	□

Part 2: Engineering appointments

1		2	3	4
Applicability		**Duties**	**Name of registered engineering professional**	**Professional registration number**
Yes	**No**			
		Design and inspection of services in dolomite land in terms of SANS 10400-B		
		Specify and inspect, as relevant, deep footings, soil rafts, compaction of in-situ soil or sub-surface drains in terms of SANS 10400-H		
		Design and inspect slabs and fills in terms of SANS 10400-J		
		Rational design of control and disposal of stormwater in terms of SANS 10400-R or **Reg R(3)**		
		Rational design of control and disposal of stormwater in interconnected complexes in terms of SANS 10400-R.		
		Rational design or rational assessment of fire protection system in terms of SANS 10400-T or **Reg T1(2)**		
		Design and inspect geotechnical solutions or soil improvement in terms of SANS 10400-H		
		Rational design of ventilation system in terms of SANS 10400-O and **Reg O4**		
		Rational design or rational assessment of drainage system in terms of SANS 10400-P or **Reg P2(2)**		
		Rational design or rational assessment of sewage disposal in terms of SANS 10400-Q or **Reg Q3**		
		Rational design or rational assessment of structural system in terms of SANS 10400-B taking account of parts H, J, K, L, M, N of SANS 10400 or **Regs A(1)(3), A23(4)**		
		Rational design of roof in terms of parts B and L SANS 10400 where the foundations, floors and walls are in accordance with the rules provided in parts H, J and K of SANS 10400.		
		Rational design of supply of water to fire installations in terms of SANS 10400-W or **Reg W4**.		
		Rational design or assessment taking account of the provisions of SANS 10400-XA which demonstrates compliance with the requirements of **Reg XA1**		
		Other (describe)		

Part 3: Fire protection – competent persons

Note: These appointments are in addition to those for Rational design or rational assessment of fire protection system in terms of SANS 10400-T or Reg T1(2)

Applicability		Clause	Responsibility	Name of registered engineering professional	Professional registration number
Yes	No				
		4.2.7, 4.4, 4.8.2, 4.16.4, 4.26.1, 4.36.1 and 4.48.6	Design, install and maintain automatic sprinkler system in accordance with the requirements of SANS 10287 (2000)		
		4.12.2.4	Design and install a lightening protection system in accordance with the requirements of SANS 10313:2008 and SANS 62305-3:2007		
		4.25	Design, install, test and maintain the pressurization of emergency routes and components in accordance with the requirements of EN 12101.		
		4.31.1, 4.31.2, 4.31.3, 4.43.2 4.48.3 and 4.48.6	Design, install and maintain a fire detection and alarm system in accordance with the requirements of SANS 10139		
		4.36.1	Design, install and maintain a fixed automatic fire-fighting system that is in accordance with the requirements of SANS 306-4 or SANS 14520-1		
		4.37.3	Install, maintain and service portable fire extinguishers in accordance with the requirements of SANS 1475-1 and SANS 10105-1.		
		4.52.4	Direct the construction and installation of a tank in accordance with the requirements of SANS 10089-3.		
		4.53.1.1	The design, erection and protection of liquid petroleum gas storage in accordance with the requirements of SANS 10087-3.		
		4.52.4 and 4.53.1.3	Direct the installation of diesel fuel installation in accordance with the requirements of SANS 10131.		
		4.55.1	Perform a rational assessment of building materials and components to determine their fire resistance.		

I hereby certify that all the above information is to the best of my knowledge and belief, true and correct and the architectural works is generally in accordance with the production information that was issued to the contractor to enable construction or the production of manufacturing and installation information for construction.

.

I furthermore declare the building to be safe for use in terms of Regulation 6(1)(j) of the Construction Regulations 2014

Signature of professional responsible for the design of the building **Date:**

Name: **SACAP registration number**

Certificate D2:

Civil engineering works

Project title

Project number

Works covered by certificate ***(describe)***

I hereby certify that the works for which I am responsible has, to the best of my knowledge been designed and constructed in accordance with all statutory requirements and is generally in accordance with the production information that was issued to the contractor to enable construction or the production of manufacturing and installation information for construction.

I confirm that the design and construction of such work were in accordance with the following:

Design standard applied	
Critical design parameters	
Basic engineering properties of materials / type of materials	
Construction standards applied	
Tests (state type, frequency, range of results and comment on implications of non-compliances)	
Critical assumptions, if any	

I furthermore declare the works to be safe for use

Signature of professional responsible for the design of the works **Date:** . . . . . .

Name . . . . . .

Professional registration number: . . . . . **Registration council: ECSA**
(Insert number)

Certificate D3:

Electrical works

Project title

Project number

Works covered by certificate *(describe)*

I hereby certify that the works for which I am responsible has, to the best of my knowledge been designed and constructed / erected / installed in accordance with all statutory requirements and is generally in accordance with the production information that was issued to the contractor to enable construction or the production of manufacturing and installation information for construction.

I furthermore declare the works to be safe for use

Signature of professional responsible for the design of the works **Date:** . . . . . .

Name: . . . . . .

Professional registration number: . . . . . **Registration council: ECSA**
(Insert number)

Certificate D4

Fire Protection System

(Provide if a rational design is required in terms of Regulation T1(2) or Part T of the National Building Regulations is satisfied by means of a rational design or rational assessment i.e. not solely in terms of the rules contained in SANS 10400-T)

Project title

Project number

Buildings covered by certificate *(describe)*

Occupancy / Building classification(s) (see Regulation A20)

I hereby certify as required by Section 14(2)(a) of the National Building Regulations and Building Standards Act, 1977 (Act No. 103 of 1977) that the fire protection system for which I am responsible has, to the best of my knowledge been designed and constructed / erected / installed in accordance with the requirements of the National Building Regulations and is generally in accordance with the production information that was issued to the contractor to enable construction or the production of manufacturing and installation information for construction.

.

My rational design / rational assessment is based on the following *(outline)*:

Attach the report developed in terms of B.2.5 of Annex B (Rational Designs) if applicable

I confirm that the design of the following elements of the fire protection system were carried out under my direction by the following other competent persons in terms of Regulation A19(8):

(Complete if parts of the system were designed by others)

Element	Name	Professional registration no

I furthermore declare the system to be safe for use in terms of Regulation 6(1)(j) of the Construction Regulations 2014

I furthermore declare the system to be safe for use

Signature of Approved Competent Person responsible for the fire protection system (Regulation A19(7) and A19(8) **Date** . . . . . .

Name . . . . . .

Professional registration number: . . . . . **Registration council: ECSA**
(Insert number)

Certificate D5:

Landscape architectural works

Project title

Project number

Works covered by certificate ***(describe)***

I hereby certify that the works for which I am responsible has, to the best of my knowledge been designed and constructed in accordance with all statutory requirements and is generally in accordance with the production information that was issued to the contractor to enable construction or the production of manufacturing and installation information for construction.

I furthermore declare the works to be safe for use

Signature of professional responsible for the design of the landscape architectural works **Date:** . . . . . .

Name . . . . . .

Professional registration number: . . . . . **Registration council: SACLAP**
(Insert number)

Certificate D6A

Energy usage in buildings

(Provide if Regulation XA1 is satisfied by preparing a rational design which demonstrates acceptable energy usage or performing an assessment which demonstrates acceptable theoretical energy usage performance)

Project title

Project number

Buildings covered by certificate *(describe)*

I hereby certify that I have in accordance with the requirements of Regulation XA3 the National Building Regulations to (tick the appropriate box):

□ prepared a rational design which demonstrates acceptable energy usage

□ performed an assessment which demonstrates acceptable theoretical energy usage performance

My rational design / assessment is based on the following methodology and key assumptions:

I hereby further certify as required by Regulation A19(12)(c) of the National Building Regulations that the energy usage measures for the above project for which I am responsible has, to the best of my knowledge, been designed and constructed / erected / installed in accordance with the requirements of the National Building Regulations and is generally in accordance with the production information that was issued to the contractor to enable construction or the production of manufacturing and installation information for construction.

Signature of Approved Competent Person responsible for ensuring that Energy Usage Regulations are satisfied **Date** . . . . . .

Name . . . . . .

Professional registration number: . . . . . **Registration council**: . . . . . .
(Insert number)

Certificate D6B

Mechanical works

Project title

Project number

Works covered by certificate *(describe)*

I hereby certify that the works for which I am responsible has, to the best of my knowledge been designed and constructed / erected / installed in accordance with all statutory requirements and is generally in accordance with the production information that was issued to the contractor to enable construction or the production of manufacturing and installation information for construction.

I confirm that the design and construction of such work were in accordance with the following:

Design standard applied	
Critical design parameters	
Basic engineering properties of materials / type of materials	
Construction standards applied	
Tests (state type, frequency, range of results and comment on implications of non-compliances)	
Critical assumptions, if any	

I furthermore declare the works to be safe for use

Signature of professional responsible for the design of the works **Date:** . . . . . .

Name . . . . . .

Professional registration number: . . . . . **Registration council: ECSA**
(Insert number)

Certificate D6C

Artificial ventilation system

Project title

Project number

Buildings covered by certificate ***(describe)***

Occupancy / Building classification(s) **(see Regulation A20)**

I hereby certify that the artificial ventilation system for which I am responsible has, to the best of my knowledge been designed and installed in accordance with the requirements of the National Building Regulations and is generally in accordance with the production information that was issued to the contractor to enable construction or the production of manufacturing and installation information for construction.

My rational design / rational assessment is based on the following *(outline if not in accordance with the requirements of the relevant part of SANS 10400)*:

I confirm that the design of the following elements of the artificial ventilation system were carried out under my direction by the following other competent persons in terms of Regulation A19(8):

(Complete if parts of the system were designed by others)

Element	**Name**	**Professional registration no**

I furthermore declare the system to be safe for use in terms of Regulation 6(1)(j) of the Construction Regulations 2014

Signature of Approved Competent Person responsible for the fire protection system (Regulation A19(7) and A19(8)

Date . . . . . .

Name . . . . . .

Professional registration number: . . . . . **Registration council: ECSA**
(Insert number)

Certificate D7A

Structural system subject to the National Building Regulations

(Provide if a rational design or rational assessment of the structure is required in terms of Regulations A(1)(3), A23(4) or the structural aspects of Parts J, H, K, L , M or N of the National Building Regulations is satisfied by is satisfied by means of a rational design or rational assessment i.e. not solely in terms of the rules contained in Parts J, H, K, L or M of SANS 10400)

Project title

Project number

Buildings and associated siteworks

covered by certificate *(describe)*

Occupancy / Building classification(s) (see Regulation A20)

I hereby certify as required by Section 14(2)(a) of the National Building Regulations and Building Standards Act, 1977 (Act No. 103 of 1977) that the structural system for which I am responsible has, to the best of my knowledge, been designed and constructed / erected / installed satisfies the requirements of the National Building Regulations and is in accordance with the production information that was issued to the contractor to enable construction or the production of manufacturing and installation information for construction.

I confirm the following:

1 Key geotechnical parameters used in the design

(State)

2 Design and construction of structural elements

(Delete elements which do not apply, provide separate tabulations for each element)

Roof / Walls / Floors / Staircases / Foundations / Facades

Design standard applied	
Loads (outline)	
Basic engineering properties of structural materials	
Construction standards applied	
Tests (state type, frequency, range of results and comment on implications of non-compliances)	
Critical assumptions, if any	

3 Design carried out by other competent persons in terms of Regulation A19(8)

I confirm that the design of the following elements of the structural system were carried out under my direction by the following other competent persons in terms of Regulation A19(8):

(Complete if parts of the system were designed by others)

Element	Name	Professional registration no

I furthermore declare the structure to be safe for use in terms of Regulation 6(1)(j) of the Construction Regulations 2014

Signature of Approved Competent Person responsible for the structural system in its entirety (Regulation A19(7) and A19(8)

Date . . . . . .

Name . . . . . .

Professional registration number: . . . . . Registration council: ECSA
(Insert number)

Certificate D7B

Structural system not subject to the National Building Regulations

(delete that which does not apply and complete where such works are not covered by National Building Regulations)

Project title

Project number

Works covered by certificate *(describe)*

I hereby certify that the works for which I am responsible has, to the best of my knowledge been designed and constructed / erected / installed in accordance with all statutory requirements and is generally in accordance with the production information that was issued to the contractor to enable construction or the production of manufacturing and installation information for construction.

I confirm that the design and construction of such work were in accordance with the following:

Design standard applied	
Critical design parameters	
Basic engineering properties of materials / type of materials	
Construction standards applied	
Tests (state type, frequency, range of results and comment on implications of non-compliances)	
Critical assumptions, if any	

I furthermore declare the structure to be safe for use in terms of Regulation 6(1)(j) of the Construction Regulations 2014

Signature of professional responsible for the design of the structure **Date: . . . . . .**

Name . . . . . .

Professional registration number: . . . . . **Registration council: ECSA**
(Insert number)

Certificate D8A

Fire Installation Certificate

(Provide if a rational design is required in terms of Regulation W4 or if Part W of the National Building Regulations is satisfied by means of a rational design or rational assessment i.e. not solely in terms of the rules contained in SANS 10400-W)

Project title

Project number

Buildings covered by certificate *(describe)*

Occupancy / Building classification(s) (see Regulation A20)

I hereby certify as required by Section 14(2)(a) of the National Building Regulations and Building Standards Act, 1977 (Act No. 103 of 1977) that the fire installation system for which I am responsible has, to the best of my knowledge been designed and constructed / erected / installed in accordance with the requirements of the National Building Regulations and is generally in accordance with the production information that was issued to the contractor to enable construction or the production of manufacturing and installation information for construction.

My rational design / rational assessment is based on the following *(outline if not in accordance with the requirements of SANS 10252-1, and if relevant, SANS 10287)*:

I confirm that the design of the following elements of the fire installation system were carried out under my direction by the following other competent persons in terms of Regulation A19(8):

(Complete if parts of the system were designed by others)

Element	Name	Professional registration no

I furthermore declare the system to be safe for use

Signature of Approved Competent Person responsible for the fire protection system (Regulation A19(7) and A19(8)

Date . . . . . .

Name . . . . . .

Professional registration number: . . . . . **Registration council: ECSA**
(Insert number)

Certificate D8B

Drainage installation / non-water borne sanitation disposal system / stormwater disposal system *(delete that which does not apply)*

(Provide where regulations O(4), P(2), Q(3) or R(3) require an approved competent person to provide a rational design or where the artificial ventilation, non-water borne sanitation or stormwater disposal system of drainage installation is satisfied by means of a rational design or rational assessment i.e. not solely in terms of the rules contained in Parts O, Q, R or P, respectively.)

Project title

Project number

Buildings covered by certificate *(describe)*

Occupancy / Building classification(s) (see Regulation A20)

I hereby certify that the artificial ventilation system / drainage installation / non-water borne sanitation system / stormwater disposal system (delete that which does not apply) for which I am responsible has, to the best of my knowledge been designed and constructed / erected / installed in accordance with the requirements of the National Building Regulations and is generally in accordance with the production information that was issued to the contractor to enable construction or the production of manufacturing and installation information for construction.

My rational design / rational assessment is based on the following *(outline if not in accordance with the requirements of the relevant part of SANS 10400)*:

I confirm that the design of the following elements of the artificial ventilation system / drainage installation / non-water borne sanitation system / stormwater disposal system *(delete that which does not apply*) were carried out under my direction by the following other competent persons in terms of Regulation A19(8):

(Complete if parts of the system were designed by others)

Element	**Name**	**Professional registration no**

I furthermore declare the installation to be safe for use in terms of Regulation 6(1)(j) of the Construction Regulations 2014

Signature of Approved Competent Person responsible for the fire protection system (Regulation A19(7) and A19(8) **Date**: . . . . . .

Name . . . . . .

Professional registration number: . . . . . **Registration council: ECSA**
(Insert number)

Annexure D8C

Certificate for water installation in buildings

Project title

Project number

Buildings covered by certificate *(describe)*

Occupancy / Building classification(s) (see Regulation A20)

I hereby certify that the water installation to the best of my knowledge satisfies the requirements of Regulation 14 of the Water Services Act of 1997 (Act 108 of 1997) in that the water installation complies with the provisions of SANS 10252, *Water Supply and Drainage for Buildings,* and, where relevant, SANS 10254, *The installation of fixed electric Storage Water Heating Systems.*

I furthermore declare the installation to be safe for use

Signature **Date** . . . . . .

Name . . . . . .

Professional registration number: . . . . . **Registration council**: . . . .
(Insert number and council if applicable)

Annex E: Implementation plans

Implementation plans for infrastructure projects need as necessary to address the contents indicated in Table E1.

Table E1: Content of implementation plan

Suggested heading		Content
No	Title	
1	Programme / project objectives	An overview of the programme / project and identified objectives
2	Scope, budget and schedule	In respect of each project or package for the financial year under consideration: • outline of the scope, • the control budget for each project, broken down into financial years and the • the overarching control budget for each financial year • proposed / actual start and end date for the project
3	Key success factors and Key Performance Indicators	Key success factors and the key performance indicators which need to be measured, monitored and evaluated
4	Outline of procurement strategy	Procurement strategy in summary form for each project or order issued in terms of a framework contract, i.e. • Project delivery route (if applicable) - design strategy and interface management strategy • Packaging strategy - framework / non-framework • Contracting strategy – contract type, standard form of contract and procong strategy • Targeting strategy • Selection method
5	Time management plan	A time management plan for each project in the form of a Gantt Chart for the financial year under consideration, i.e. the baseline against which progress towards the attainment of milestone (key deliverables) target dates can be measured.
6	Projected budget and cash flow	The projected budget and cash flows for the financial year under consideration and subsequent financial years, which will enable planned and actual expenditure to be compared and revisions to the budget to be approved, and multiple project budgets to be managed
7	Procurement plan	The timeline for the financial year under consideration for advertising and closing of tenders and the obtaining of gate approvals leading up to • the award of the contract including information such as: - Tender number, title, broad scope of work - Estimated total of the prices for the contract / order - Proposed dates for o Approval of procurement documents (PG3) o Advertising of tender or submissions o Closing of tenders or submissions o Confirmation of the budget (PG4) o Authorisation to proceed to the next phase (if applicable) (PG5) o Initiation of next phase (if applicable) o Tender evaluation completed o Approval of tender recommendations (PG6) o Acceptance of the offer (PG7) • the issuing of an order in terms of a framework agreement including information such as: - Confirming justifiable reasons for selecting a particular framework contractor (FG1) - Obtaining approval for procurement documents (FG2) - Confirmation of the budget (FG3) - Authorising of the issuing of an order (FG4)
8	Major risks	The identification of major risks and how such risks are to be mitigated or managed
9	Health, safety and environmental and socio-economic risks	An outline of the controls and measures which will address health, safety, socio-economic or environmental risks
10	Quality plan	An indication as to how quality requirements and expectations are to be met and managed
11	Communication plan	A communication plan which determines the lines of communication and the key activities associated therewith
12	Allocation of resources	An indication of the assigned internal and external resources with implementation responsibilities

Annex F: Managing procurement activities

There are typically six principal activities associated with a generic procurement process:

a) the establishment of what is to be procured;

b) a decision on procurement strategies;

c) the solicitation of tender offers;

d) the evaluation of tender offers;

e) the award of the contract; and

f) the administration of the contract and confirmation of compliance with the requirements.

The establishment of what is to be procured (task 1) initiates the procurement process. Procurement strategy (task 2) is all about the choices made in determining which of the required goods and services or combinations thereof are to be delivered through a particular contract, the contracting arrangements, how procurement is to be used to promote secondary procurement objectives, if any, and the selection methods used to solicit tender offers. Conditions for the calling for expressions of interest to prequalify respondents to participate in a specific contract, project or programme and conditions of tender govern tasks 3 to 5. Conditions of contract (i.e. terms that collectively describe the rights and obligations of contracting parties and the agreed procedures for the administration of their contract) govern task 6.

Table F1 establishes a set of principal actions within the six principle tasks i.e. it incorporates actions leading to procedural milestones (control points) (see Figure F1).

Table F1:Procurement tasks and associated actions

Description	Principal action
Procurement activity 1: Establish what is to be procured (if not specifically identified in stage 1 of Table A1 of Annex A)	
1. Prepare broad scope of work for procurement	Develop a title for the procurement for the purpose of project identification and a broad scope of work.
2. Estimate financial value of proposed procurement	Estimate the financial value of the proposed contract for budgetary purposes, based on the broad scope of work.
3. PG 1 Obtain permission to start with the procurement process[a]	Make a decision to proceed/not to proceed with the procurement based on the broad scope of work and the financial estimates.
Procurement activity 2: Decide on procurement strategies (if not included in stage 2 of Annex A)	
1. Establish opportunities for promoting secondary procurement policies, if any	Identify the specific goals which are to be pursued, if any, and establish quantitative targets and implementation procedures which are consistent with the employer's objectives.
2. Establish contracting strategy	Decide on an appropriate form of contract and the methodology by which contractors are to be paid.
3. Establish targeting strategy	Decide on the methodology that is to be used to implement secondary procurement policy.
4. Establish selection method	Identify the process that will be followed to solicit tender offers and to conclude a contract.
5. PG 2 Obtain approval for procurement strategies that are to be adopted [a]	Confirm selection of strategies so that tender offers can be solicited including specific approvals to approach a confined market or the use of the negotiation procedure

Table F.1 *(continued)*

Description		Principal action
Procurement activity 3: Solicit tender offers		
1. Prepare procurement documents		Prepare expressions of interest or tender documents (or both), as appropriate, that are compatible with the approved procurement strategies.
2. PG 3 Obtain approval for procurement documents [a]		Designated person reviews the procurement document, identifies sections, if any, which require amendments or improvements, and grants the necessary approval.
3. PG 4 Confirm that budgets are in place [a]		Designated person ensures that finance / the necessary budget is available for the procurement to take place.
4. Invite tender offers or expressions of interest		Advertise tenders/identify contractor(s) that are to be invited to submit tender offers in accordance with the approved selection method, issue procurement documents, respond to requests for clarification, conduct clarification/site meetings, issue attendees with minutes of such meetings, and issue addenda, as relevant.
5. Receive submissions		Ensure that arrangements are in place to receive tender offers/expressions of interest and return unopened those that are received late, are not delivered in accordance with instructions given to respondents/tenderers or where only one tender is received and it is decided to call for fresh tenders.
6. Open and record submissions received		Open submissions and record data relating to the submission
Procurement activity 4: Evaluate tender offers		
Qualified, proposal or competitive negotiations selection methods only	1. Evaluate and prepare evaluation report on submissions received	Evaluate in accordance with the provisions of the procurement document that was issued and prepare an evaluation report (see ISO 10845-3 and ISO 10845-4)
	2. PG 5 Obtain authorisation to proceed with next phase of the procurement process [a]	Designated person or body reviews evaluation report and ratifies recommendations so that the next phase of the procurement process can commence
	3. Invite tender offers from qualified respondents or selected tenderers	Issue next phase procurement documents
	4. Open and record submissions received and if necessary repeat 1 to 4 above	Open submissions, record data relating to the submission and evaluate in accordance with the provisions of procurement documents
5. Evaluate tender offers and prepare a tender evaluation report		Evaluate in accordance with the provisions of the procurement document that was issued and prepare an evaluation report
6. PG 6 Confirm recommendations contained in tender evaluation report		Designated person or body reviews report and ratifies the recommendation or refers the report back to those who performed the evaluation for re-evaluation.
Procurement activity 5: Award contract		
1. Notify unsuccessful tenderers of the outcome		Notify the unsuccessful tenderers of the outcome and respond to any correspondence raised in this regard
2. Compile contract document		Assemble contract document from the relevant tender returnables and issue draft contract to tenderer, capturing all the changes that were agreed to between the offer and acceptance.
3. PG 7 Award contract		Accept the tender offer in writing and issue the contractor with a signed copy of the contract.
4. Capture contract award data		Capture, into a database, essential contract data for record purposes.
5 GF1 Upload data in financial management and payment systems		Upload financial data

Table F.1 *(continued)*

Description	Principal action
Procurement activity 6: Administer contracts and confirm compliance with requirements	
1. Administer contract in accordance with the terms and provisions of the contract	Administer the contract in accordance with its terms and conditions and pay contractors within the time periods provided for in the contract
2. Confirm compliance with requirements	Monitor contractor's performance for compliance with the requirements of the contract
3. Capture contract completion/ termination data	Record, in a database, key performance indicators relating to time, cost and the attainment of specific goals associated with a secondary procurement policy, or if the contract is terminated or cancelled, the reasons for this.
4. PG8A Obtain approval to waive penalties or low performance damages	Approve waiver of penalties or low performance damages
5. PG8B Obtain approval to notify and refer a dispute to an adjudicator, or for final settlement to an arbitrator or court of law	Grant permission for the referral of a dispute to an adjudicator or for final settlement to an arbitrator or court of law
6. PG8C Obtain approval to increase the total of prices, excluding contingencies and price adjustment for inflation, or the time for completion at the award of a contract or the issuing of an order up to a specified percentage	Approve amount of time and cost overruns up to a specified threshold
7. PG8D Obtain approval to exceed the total of prices, excluding contingencies and price adjustment for inflation, or the time for completion at award of a contract or the issuing of an order by more than 20% and 30%, respectively	Approve amount of time and cost overruns above a specified threshold
8. PG8E Obtain approval to cancel or terminate a contract	Approve amount
9. PG8F Obtain approval to amend a contract	Approve proposed amendment to contract
10 Close out the contract	Close out contract and finalise amount due

*shaded cells indicate the presence of a procurement gate (control point)

Control gates provide an opportunity to:

- authorise the proceeding with an activity within a process, or the commencing of the next process;
- confirm conformity with requirements before completing processes; or
- provide information which creates an opportunity for corrective action to be taken.

Table F2 establishes a set of principal actions associated with the issuing of orders in terms of a framework contract. Table F2 incorporates actions leading to procedural milestones (control points) (see Figure F1).

The level of detail contained in the documentation upon which a decision is made at a gate needs to be sufficient to enable informed decisions to be made to proceed to the next activity or to undertake a particular procedure.

The approvals or acceptances at each gate need to be retained for record and audit purposes for a period of not less than five years of such acceptance or approval in a secured environment.

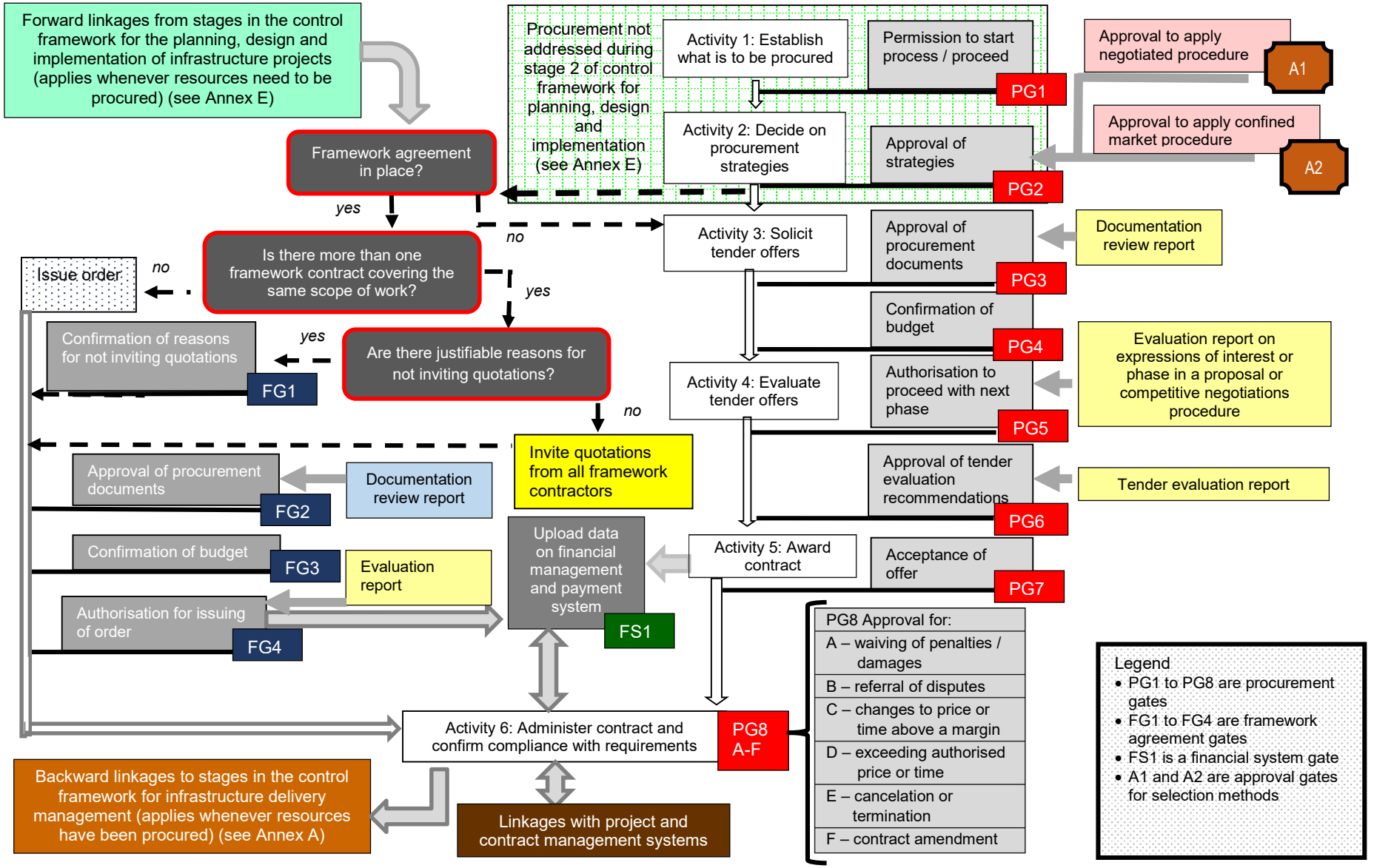

Figure F1: Control framework for infrastructure procurement

Table F2: Procurement activities and gates associated with the issuing of an order in terms of a framework agreement

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

*Shaded cells indicate the presence of a framework gate (control point)

Approvals for the reasons for pursuing a particular selection method are required where the confined procedure, negotiated procedure and proposal procedure using a two envelope or a two-stage system are applied to solicit tender offers (see approval Gates A1 and A2). Such approval confirms that the use of such procedures is in line with the provisions of the documented procurement system.

Annex G: Incorporating the provisions of this standard scope of services in a contract or order

G.1 General

Procurement documents need to be developed in accordance with the provisions of SANS 10845-2. This *Standard Scope of Professional Services associated with the delivery of a Package* needs to be incorporated into the scope of work of a professional service contract or a construction contract, depending upon where or not the client retains or transfers design responsibility.

G.2 Construction contracts

G.2.1 The scope of work of a construction contract should:

- provide a description of the works which includes the employer's objectives, an overview of the works and the location of the works;
- establish design requirements;
- contain particulars of applicable construction, management and procurement specifications;
- establish constraints on how the contractor provides the works; and
- stipulate the services and other things to be provided by the employer.

G.2.2 The manner in which the provisions of this *Standard Scope of Professional Services associated with the delivery of a Package* can be incorporated by reference into the scope of work of a construction contract where the client transfers design responsibilities to the contractor is illustrated in Example 1.

EXAMPLE 1

Design services

1 The Contractor shall in the provision of design services:
   a) observe all relevant statutes, by-laws and associated regulations, standards of professional conduct and industry norms established in relevant South African national standards published in terms of the Standards Act of 2008 or standards recommended by professional associations; and
   b) provide the services in accordance with the relevant provisions of the *Standard Scope of Professional Services associated with the delivery of a Package* as a project leader, lead designer, designer, and supervising agent and obtain from the employer the necessary acceptance of all applicable end of stage deliverables.

2 The responsibilities for providing design and related information shall be as follows:

Activity	**Responsibility***
Obtain the necessary approvals from relevant authorities and submit documents to relevant authorities	Employer /contractor
Provide stage 4 concept report in accordance with the provisions of *Standard Scope of Professional Services associated with the delivery of a Package*	Employer /contractor
Provide stage 5 design development report in accordance with the provisions of *Standard Scope of Professional Services associated with the delivery of a Package*	Employer / . contractor
Develop production information	Contractor
Design temporary works	Contractor
Produce record information	Contractor

delete that which is not applicable, depending upon which contracting strategy is selected*

Stage	*Contracting strategy*	
	Design and construct	*Develop and construct*
Stage 4: Concept and viability	*employer*	*employer*
Stage 5: Design development	*contractor*	*employer*
Stage 6A: Production information	*contractor*	*contractor*

Design procedures

The Contractor shall engage with the Employer's professional services providers appointed to undertake review services in accordance with the requirements of the Standard Scope of Professional Services associated with the Delivery of a Package in the finalisation of the end of stage deliverables. The Contractor shall respond to issues of clarity raised by the Employer's professionals and provide additional information that they may require to enable the Employer to take a decision on the deliverable.

NOTE Where the design by client contracting strategy is used, use should be made of SANS 1921-1, *Construction and management requirements for works contracts Part 1: General engineering and construction works*, and if relevant SANS 1921-3, *Construction and management requirements for works contracts Part 3: Structural Steelwork*, to develop the scope of work. These standards require the contractor to design the temporary works and, in the case of structural steel work, to provide the design of simple connections that are not intended to transfer bending moment, fabrication drawings and erection mark drawings, if so required in terms of the specification data.

G.3 Professional services contract

G.3.1 The scope of work of a professional service contract should:

- indicate the purpose of the service;
- provide a description of the service;
- identify existing information that is pertinent to the service;
- contain particulars of applicable specifications;
- identify constraints on how the services are to be provided; and
- stipulate the information and other things provided by the employer.

G.3.2 The manner in which the provisions of this standard can be incorporated by reference into the scope of work of a professional service contract is illustrated in Example 2.

EXAMPLE 2

Description of the services

*1 The Consultant shall provide ..... services and perform the role of ..... in relation to such services.**

*Identify the required services e.g. fire safety in the case of services relating to buildings (from Table 3). State the role to be performed e.g .project leader, lead designer, designer, supervisor or cost manager.

*2 The Consultant shall only provide review services in relation to stages .....as the contracting strategy adopted by the Employer for the works is the ..... strategy**

** Identify the stages and the adopted contracting strategy – see Tables 1 and 2.*

Specifications

1 The Consultant shall in the provision of the services observe all relevant statutes, by-laws and associated regulations, standards of professional conduct and industry norms established in relevant South African national standards published in terms of the Standards Act of 2008 or standards recommended by professional associations.

2 The Consultant shall take into account the information contained in clause . . . (Existing information) when providing the required services

*3 The Consultant shall provide the services in accordance with the relevant provisions of the Standard Scope of Professional Services associated with the delivery of a Package (see Annexure 2) as a . . . . . * in respect of stage . . . . . ***

** Identify the required function e.g. project leader, lead designer, designer, cost manager and supervising agent*

** List the applicable stages or state stages (see table 1), e.g. 4 to 9

4 The required level of construction monitoring is level ….. as described in Table 12

*State the level i.e. 1, 3 or 4 if the default level of 2 is not required