

VAAL UNIVERSITY OF TECHNOLOGY

BID/TENDER NO: PU 8110/026 2022

THE APPOINTMENT OF A MULTI-DISCIPLINARY PROFESSIONAL TEAM FOR THE DESIGN, SUPERVISION AND CLOSEOUT OF A NEW STUDENT STUDY CENTRE FOR THE VAAL UNIVERSITY OF TECHNOLOGY: MAIN CAMPUS

C3.1 Scope of Work

1. BACKGROUND

The VUT requires the services of a Multi-Disciplinary Professional Team for the Design, Supervision and Closeout of a New Study Centre in Main Campus.

2. PROFESSIONAL SERVICES REQUIRED: MULTI-DISCIPLINARY TEAM

Based on the Project Requirements, the following Professional Services are required:

- Project Management
- Architect
- Quantity Surveyor
- Civil/Structural Engineer
- Electrical Engineer
- Mechanical Engineer

3. PROJECT STAGES

1. Stage 1 : Initiation
2. Stage 2 : Concept and Viability
3. Stage 3 : Design Development
4. Stage 4 : Documentation and Procurement
5. Stage 5 : Construction
6. Stage 6 : Close Out

4. PROJECT SCOPE

4.1 THE APPOINTMENT OF A MULTI-DISCIPLINARY PROFESSIONAL TEAM FOR THE DESIGN, SUPERVISION AND CLOSEOUT OF A NEW STUDENT STUDY CENTRE FOR THE VAAL UNIVERSITY OF TECHNOLOGY: MAIN CAMPUS:

- The Appointed Service Provider Design following the DHET Norms and Standards, and In Line with The Amended National Building Regulations and Building Standards Amendment Act 8 Of 2008.

4.2 The Consulting Services for the Built Environment under Specific Disciplines, to Design, Implement, Monitor and Submission of Close Out Report as follows:

- Preliminary Designs and Specifications for approval by the VUT,
- Preparation of and submission of Preliminary Design Concept Report,
- Preparation of Design Specifications and Reports,
- Submissions of Design Report and revised specifications (both Technical and Functional),
- Preparation of Preliminary Cost Estimates and format for overall cost reporting in consultation with the appointed Quantity Surveyors,
- Preparation of Working Drawings, Specifications and Tender Documents,
- Submission of Building Plans and Specifications for approval by EMFULENI LOCAL MUNICIPALITY
- Co-ordination of all activities within the appointed consultants and production of consolidated plans showing all services,

- Contract Administration Services.
- Co-ordinate Project/Site Progress Meetings with the Contractor and all consultants.
- Undertake room by room data sheets and fit out schedules.

5. PROJECT SCOPE AND DELIVERABLES PER CONSULTANT FOR EACH PROJECT STAGE

5.1 Project/Program Manager or Lead Consultant

Stage 1 - Inception

Definition

Agreeing Client requirements and preferences, assessing User Needs and options, appointment of necessary Consultants in establishing Project Brief, Objectives, Priorities, Constraints, Assumptions and Strategies in Consultation with the Client

Scope of Service

- 1.1 Facilitate the Development of a Clear Project Brief.
- 1.2 Establish the Client's Procurement Policy for the Project.
- 1.3 Assist the Client in the Procurements of any Specialist Consultants including the Clear definition of their Role, Responsibilities and Liabilities.
- 1.4 Establish in conjunction with the Client, Consultants, and all Relevant Authorities the Site Characteristics necessary for the proper Design and Approval of the intended Projects.
- 1.5 Manage the Integration of the Preliminary Design to form the Basis for the Initial Viability Assessment of the Project.
- 1.6 Prepare, Co-ordinate and Monitor a Project Initiation Programme.
- 1.7 Facilitate the preparation of the Preliminary Viability Assessment of the Project.
- 1.8 Facilitate Client Approval of all Stage 1 Documentation.

Project Management Deliverables

- Project Brief.
- Project Procurement Policy.
- Signed Consultant/Client Agreements.
- Project Initiation Programme.
- Record all Meetings
- Approval by Client to proceed to Stage 2

Stage 2 - Concept and Viability

Definition

Finalisation of the Project Concept and Feasibility

Scope of Service

- 2.1 Assist the Client in the Procurements of any Specialist Consultants including the Clear Definition of their Role, Responsibilities and Liabilities.
- 2.2 Advise the Client on the Requirement to appoint the Health and Safety Consultant.
- 2.3 Communicate the Project Brief to the Consultants and Monitor the Development of the Concept and Feasibility within the Agreed Brief
- 2.4 Agree the Format and Procedures of the Cost Control Reporting by the Cost Consultants on the Project.
- 2.5 Co-ordinate and Integrate the Income Stream Requirements of the Client into the Concept Design and Feasibility.
- 2.6 Manage and Monitor the Preparation of the Projects Costing by other Consultants.
- 2.7 Prepare and Co-ordinate the Indicative Project Documentation and Construction Programme.
- 2.8 Manage and Integrate the Concept and Feasibility Documentation for presentation to the Client for Approval.
- 2.9 Facilitate Client Approval of all Stage 2 Documentation.

Project Management Deliverables

- Signed Consultant/Client Agreement.
- Indicative Project Documentation and Construction Programme.
- Approval by Client to Proceed to Stage 3.

Stage 3 - Design Development

Definition

Management, Co-ordinate and Integrate the Detail Design Development Process within the Project Scope, Time, Cost and Quality.

Scope of Services

- 3.1 Assist the Client in the Procurements of any Specialist Consultants including the Clear Definition of their Roles, Responsibilities and Liabilities.
- 3.2 Prepare, Co-ordinate and Agree a Detail Design and Documentation Programme, based on the updated Indicative Construction Programme with all Consultants.
- 3.3 Establish and Co-ordinate the Formal and Informal Communication Structure, Processes and Procedures for the Design Development of the Project.
- 3.4 Manage, Co-ordinate and Integrate the Design by the Consultants in a sequence to suit the Project Design Documentation Programme and Quality Requirements.
- 3.5 Conduct and Record the appropriate Planning, Co-ordination and Management Meetings.
- 3.6 Facilitate any input from the Design Consultants required by Construction Manager during Construction.
- 3.7 Facilitate any input from the Design Consultants required by Health and Safety Consultant.
- 3.8 Manage and Monitor the Timely Submission by the Design Team and all Plans and Documentation to obtain the necessary Statutory Approvals.
- 3.9 Establish responsibilities and Monitor the information flow between the Design Team, including the Cost Consultants.
- 3.10 Monitor the preparation by the Cost Consultants of Cost Estimate, Budgets, and Cost Reports.
- 3.11 Monitor the Cost Control by the Cost Consultants to verify Progressive Design Compliance with Approved Budget, including necessary Design Reviews to achieve Budget Compliance.
- 3.12 Facilitate Client Approval for all Stage 3 Documentation.

Project Management Deliverables

- Signed Consultant/Client Agreement.
- Detailed Design & Documentation Programme.
- Update Indicative Construction Programme.
- Record of All Meetings
- Approval by Client to Proceed to Stage 4

Stage 4 - Documentation and Procurement

Definition

The Process of establishing and implementing Procurement Strategies and Procedures, including the preparation of necessary Documentation, for effective and timely execution of the Project

Scope of Services

- 4.1 Select, Recommend and Agree the Procurement Strategy of Contractors, Sub-contractors and Suppliers with the Client and Consultants.
- 4.2 Prepare and Agree the Procurement Programme.
- 4.3 Co-ordinate and Monitor the preparation of the Tender Documentation by Consultants in accordance with the Project Procurement Programme.
- 4.4 Facilitate and Monitor the preparation of the Site-Specific Health and Safety Plan by the Health and Safety Consultant.
- 4.5 Advise the Client, in conjunction with the other Consultants on the appropriate Insurances required for the implementation of the Project.
- 4.6 Monitor the reconciliation by the Cost Consultants of the Tender Prices with the Project Budget.
- 4.7 Agree the format and procedure for Monitoring and Control by the Cost Consultants of the Cost of the Works.
- 4.8 Facilitate Client Approval of the Tender Recommendation(s).

Project Management Deliverables

- Contractors, Sub-contractors, and Suppliers Procurement Strategy.
- Project Procurement Programme.
- Project Tender/Contract Conditions.
- Site Specific Health and Safety Plan.
- Record of all Meetings.

Stage 5 - Construction

Definition

The Management and Administration of the Construction Contracts and Processes, including the Preparation and Co-ordination of the necessary Documentation to Facilitate effective execution of the Works.

Scope of Services

- 5.1 Facilitate the appointment of Contractor(s) in conjunction with the Consultants and the Client.
- 5.2 Instruct the Contractor on behalf of the Client to appoint Sub-contractors.
- 5.3 Receive, Co-ordinate, Review and Obtain Approval of all Contract Documentation provided by the Contractor, Sub-contractors, and Suppliers for Compliance with all the Contract Requirements.
- 5.4 Monitor the ongoing Projects Insurance Requirements.
- 5.5 Facilitate the Handover of the Site to the Contractor.
- 5.6 Establish and Co-ordinate the Formal and Informal Communication Structure and Procedures for the Construction Process.
- 5.7 Regularly Conduct and Record the necessary Site Meetings.
- 5.8 Monitor, Review and Approve the preparation of the Construction Programme by the Contractor.
- 5.9 Regularly Monitor the Performance of the Contractor against the Contractor's Programme.
- 5.10 Review and Adjudicate Circumstances and Entitlements that may arise from and changes required the Construction Programme.
- 5.11 Monitor the Presentation of the Contractor's Health and Safety Plan and Approval thereof by the Health and Safety Consultant.
- 5.12 Monitor the Auditing of the Contractor's Health and Safety Plan by the Health and Safety Consultant.
- 5.13 Monitor the Compliance by the Contractor of the requirements of the Health and Safety Consultant and Contractors
- 5.14 Monitor the production of the Health and Safety File by the Health and Safety Consultant and contractors
- 5.15 Monitor the preparation by the Environment Consultants of the Environmental Management Plan
- 5.16 Establish the Construction information distribution procedures.
- 5.17 Agree and Monitors the Construction Documentation Schedule for timeous delivery of required information to the contractors.
- 5.18 Expedite, review and monitor the timeous issue of construction information to the contractors.
- 5.19 Manage the review of all approval of all necessary shop details and product propriety information by the design consultants.
- 5.20 Establish procedures for monitoring, controlling and agreeing all scope and cost variations
- 5.21 Agree the quality assurance procedures and monitor the implementation thereof by the consultants and contractors.
- 5.22 Monitor, review, approve and certify monthly progress payments.
- 5.23 Receive, review and adjudicate any contractual claims.
- 5.24 Monitor the preparation of monthly cost reports by the cost consultants.
- 5.25 Monitor long lead items and off- site production by the contractors and suppliers.
- 5.26 Prepare monthly project reports including submission to the client.
- 5.27 Manage, co- ordinate and Monitor all necessary Testing and Commissioning by Consultants and Contractors.
- 5.28 Co- ordinate, monitor and issue the Practical Completion Lists and the Certificate of Practical Completion.
- 5.29 Co-ordinate and Monitor the preparation and issue of the Works Completion List by the Consultants to the contractor.
- 5.30 Monitor the execution by the contractors of the defect items to achieve Works Completion.
- 5.31 Facilitate and co-ordinate adequate access with the occupant for the rectification of defects by the Contractor.
- 5.32 Co-ordinate the submission of any Special Project related Monthly Progress Report in line with Client's requirements.

Project Management Deliverables

- Signed Contractor's Agreements.
- Agreed Construction Programme.
- Adjudication and Award of Contractual Claims.
- Construction Documentation Schedule.
- Monthly Progress Payments Certificates.
- Monthly Project Progress Report.
- Record of all Meetings.
- Certificates of Practical Completion.

Stage 6 - Close Out

Definition

The process on Managing and Administering the Project Closeout, including preparation and Co-ordination of the necessary Documentation to Facilitate the effective Completion of the Project.

Scope of Services

- 6.1 Issue the Works Completion Certificates.
- 6.2 Manage, Co-ordinate and Expedite the preparation by the Design Consultants of all As-Built Drawings and Design Documentation.
- 6.3 Manage and Expedite the Procurement of all Statutory Compliance Certificate and Documentation.
- 6.4 Manage the Finalisation of the Health and Safety File for submission to the Client.
- 6.5 Co-ordinate, Monitor and Manage the Rectification of Defects during the Defects Liability Period.
- 6.6 Manage, Co-ordinate and Expedite the preparation and Agreement of the Final Account by Cost Consultants with the Contractor.
- 6.7 Co-ordinate, Monitor and Issue the Final Completion Defects List and Certificate of Final Completion.
- 6.8 Prepare and Present Project Closeout Report in lien with Client's requirements.

Project Management Deliverables

- Works Completion Certificate.
- Certificate of Final Completion.
- Record of all Meetings.
- Project Closeout Report.

5.2 Architectural

Stages

The scope of works is based on the South African Institute of Architects (SAIA) Work Plan (Architectural Profession Act No. 44 of 2000). The appointment is for the following Six stages:

Stages

- Stage 1: Inception.
- Stage 2: Concept and viability
- Stage 3: Design development
- Stage 4: Documentation and procurement
 - 4.1: Local authority approval plans; and
 - 4.2: Construction drawings and specifications.
- Stage 5: Contract administration and construction monitoring during the construction phase; and
- Stage 6: Close out phase.

Stage 1 - Inception

Scope of Services

- 1.1 Study the Accommodation Requirements to create a Formal Brief
- 1.2 As-built drawings of existing Structures and Site Features.

- 1.3 Survey of existing Street Furniture; Site Conditions, Services, etc, all aspects of Site Survey.
- 1.4 Evaluation and recommendations of existing structure

Architect Deliverables

- Understanding and Formalisation of the Brief.
- As-Built Drawings of the relevant area of intervention

Stage 2 - Concept and Viability

Scope of Services

- 2.1 Prepare Design Concept Layouts based on the approved Space Planning Norms and other Design criteria applicable to the Building Typology and in accordance with the current National Building Standards and regulations.
- 2.2 Clarify and Confirm the Project Space norms to optimize functional and operational efficiency in terms of Scale, Circulation and Relationships of areas
- 2.3 Co-ordinate design interfaces with the other Consultants where applicable to fully Integrates Design, Services and Technology required.
- 2.4 Provide information to the Cost Consultants for suitable estimates of Construction Costs
- 2.5 Prepare and submit presentation of the Design Concept and Site Development Plan (SDP) to the Client for approval.

Architect Deliverables

- Sections to indicate Heights and Levels in a Typical Station/Area.
- Zoning Diagrams.
- Overall External Works Concept for Site
- Full extents of Concept Structure and Placement of all Ancillary Buildings required.
- Final Brief and Approved Brief.
- Approved Concept Layout

NB: The Architect should also provide Drawings to show Layouts: Layouts Plans, Scale 1:200/1:500 on A1 and 1:100/1:200 Scale Plans on A1

Stage 3 - Design Development

Scope of Services

- 3.1 Finalize the Client's detailed requirements into Building Design.
- 3.2 Develop the Design into more Detail, Develops a Construction System, Materials and Components.
- 3.3 Incorporate Building Services and Co-ordinate with the work of Consultants.
- 3.4 Review the Design, Costing and Programme together with the Consultants.
- 3.5 Review the Documentation Programme with the Principal Consultant and the other Consultants.
- 3.6 Attend Design and Consultants' Co-ordination Meetings.
- 3.7 Incorporate and Co-ordinate the other Consultants' Designs into Building Design.
- 3.8 Prepare Design Development Drawings including Draft Technical Details and outline Specifications.
- 3.9 Review Budget in conjunction with the Cost Consultant.
- 3.10 Liaise, Co-operate and Provide necessary information to the Client, Consultant and other Sub-consultants.
- 3.11 Submit drawings to Local Authorities at the end of this Stage, including the SDP for Council Approval.

Architect Deliverables

- All Final Design Drawings (Size A1), submitted to and for approval by the Client.
- A written Report (Stage 3 Design Report) on the Design Development Work Stage.

Stage 4 - Documentation and Procurement

Scope of Services

- 4.1 Local Authority Building Plans and Rational Designs for approval.
- 4.2 Complete Technical Documentation and complete Primary Co-ordination with other Consultants.
- 4.3 Confirm Material Specifications and extent of works for implementation
- 4.4 Prepare Specifications for the Works and Agree Preambles with the Cost Consultant.
- 4.5 Review the Costing and Programme with the Consultants.
- 4.6 Obtain the Client's Authority.
- 4.7 Recommend and Agree Procurement Strategy for Contractors, Sub-contractors and Suppliers with the Client and the other Consultants.
- 4.8 Prepare and Agree the Procurement Programme.
- 4.9 Provide Working Drawings to the Cost Consultant for preparation of Procurement Documentation.
- 4.10 Liaise, Co-operate and provide necessary information to the Principal Consultant and the other Consultants.
- 4.11 Obtain the Client's Authority for the execution of the Works.
- 4.12 Assist with the preparation of Contract Documentation for Signature.
- 4.13 Assess Samples and Products for compliance and Design Intent.
- 4.14 Finalise Documentation for the execution of the Works (Working Drawings).
- 4.15 Attend all Design and Consultants Meetings.
- 4.16 Co-ordinate Services and prepare necessary Services Co-ordination Drawings.
- 4.17 Check cost estimate with the Cost Consultant and adjust Documents if necessary to remain within Budget.
- 4.18 Advise the Client, in conjunction with the other Consultants on the appropriate Insurances.
- 4.19 Co-ordinate and Monitor Preparation of Procurement Documentation by Consultants in accordance with the Project Procurement Programme.
- 4.20 Agree the format and procedures for monitoring and control by the quantity surveyor of the cost of the Works.
- 4.21 Co-ordinate and assemble the contract documentation for signature.

Architect Deliverables

- A Complete Set of Construction Drawings of all Disciplines in either A1 or A0 Format Size.
- An A4 or A3 detailed specification document inclusive of all Disciplines.
- A completed priced Bill of Quantities and un-priced Bill of Quantities for Construction and Tender purposes.
- Request written Instruction from Client to proceed with Construction Phase.
- Procurement Programme.
- Contract Documentation for signature.

Stage 5 – Contract Administration and Construction Monitoring

Scope of Services

- 5.1 Attend the Site Handover in conjunction with other Consultants and Client to Contractor.
- 5.2 Issue Construction Documentation in accordance with the Documentation Programme.
- 5.3 Attend regular Site, Technical and Progress Meetings.
- 5.4 Inspect the Works for conformity to Contract Documentation.
- 5.5 Clarify details and descriptions during Construction as required.
- 5.6 Comment on Interim Payment Valuations as per the Architectural Scope.
- 5.7 Witness and Review all Tests and mock-ups carried out both on and Off Site in line with Architectural Specification.
- 5.8 Check and approve Sub-contract Architectural Shop Drawings for Design Intent.
- 5.9 Update and Issue the Drawings Register.
- 5.10 Issue Contract Instructions as and when required in line with the Architectural Scope.
- 5.11 Review and comment on Operations and Maintenance Manuals, Guarantees, Certificates and Warranties.
- 5.12 Inspect the Works and Issue Defects Lists.
- 5.13 Assist in obtaining Statutory Certificates Agree and Monitor issue and Distribution of Construction Documentation.
- 5.14 Co-ordinate and Issue Practical Completion Lists for Practical Completion.

Architect Deliverables

- Monitor the interpretation by the Contractor the Construction Drawings and Documentation.
- Approval of Architectural Work.

- Coordinate Drawings with other Design Consultants.
- Sign Off Practical Completion List.

Stage 6 - Closeout

Scope of Services

- 6.1 Inspect and verify Rectification of Defects.
- 6.2 Review Operations and Maintenance Manuals, Guarantees and Warranties in with Architectural Specification.
- 6.3 Prepare As-Built Drawings and Closeout Documentation
- 6.4 Co-ordinate and Monitor Rectification of Defects in line with the Architectural Scope.

Architect Deliverables

- As-Built Drawings.
- Signing of Occupation Certificate.
- Project Closeout Report.

5.3 Civil/Structural Engineer

Stage 1 - Inception

Scope of Services

- 1.1 Assist in Developing a clear Project Brief.
- 1.2 Attend Project Initiation Meetings.
- 1.3 Advice on Procurement Policy for the Project.
- 1.4 Advice on the Rights, Constraints, Consent and Approvals.
- 1.5 Define the Service and Scope of Work required.
- 1.6 Inspect the Site and Advise on the necessary Surveys, Analyses, Tests and Site Condition or other Investigations where such information will be required for Stage 2 including the availability and location of Infrastructure and Services.
- 1.7 Determine the availability of Data, Drawings and Plans relating to the Project.
- 1.8 Advise on criteria specific own Scope of Work that could influence the Project Life Cycle Cost significantly.
- 1.9 Provide necessary information within the agreed Scope of the Project to other Consultants involved.

Civil/Structural Deliverables

- Agreed Service and Scope of Work.
- Signed Agreement.
- Report on Project, Site and Functional Requirements
- Schedule of required Surveys, Tests, Analyses, Site Conditions and other Investigations.
- Schedule of Consents and Approvals and related Lead Times.

Stage 2 - Concept and Viability (Preliminary Design)

Scope of Services

- 2.1 Agreed Documentation Programme with Principal Consultant and other Consultants involved.
- 2.2 Attend Design and Co-ordination Meetings.
- 2.3 Establish the Concept Design Criteria.
- 2.4 Prepare Initial Concept Design and related Documentation.
- 2.5 Advise Client for further Surveys, Analyses, Tests and Site Investigations which may be required.
- 2.6 Establish Regulatory Authorities' requirements and incorporate into Design.
- 2.7 Refine and Assess the Concept Design to ensure conformance with all Regulatory Requirements and Consents.
- 2.8 Establish Access, Utilities, Services and Connections required for the Design.
- 2.9 Co-ordinate Design Interfaces with other Consultants involved.
- 2.10 Prepare Preliminary Processes Designs, Preliminary Designs, and related Documentation for Approval by Authorities and Client and suitable for Costing.

- 2.11 Provide Cost Estimate and Comment on Life Cycle Costs as required.
- 2.12 Liaise, Co-operate and provide necessary information to the Client, Principal Consultant and other Consultants involved.

Civil/Structural Deliverables

- Concept/Preliminary Design.
- Schedule of required Surveys, Tests and other Investigations and related Reports.
- Process Design.
- Preliminary Cost Estimate.

Stage 3 - Design Development

Scope of Services

- 3.1 Review Documentation Programme with Principal Consultant and other Consultants involved.
- 3.2 Attend Design and Co-ordination Meetings.
- 3.3 Incorporate Client's and Authorities' Detailed Requirements into the Design.
- 3.4 Incorporate other Consultants' Design and Requirements into the Design.
- 3.5 Prepare Design Development Drawings including Draft Technical Details and Specifications.
- 3.6 Review and Evaluate the Design and outline Specification and exercise Cost Control.
- 3.7 Prepare detailed Estimates of Construction Cost.
- 3.8 Liaise, Co-operate and provide necessary information to the Principal Consultant and other Consultants involved
- 3.9 Submit the necessary Design Documentation to Local and other Authorities for approval.

Civil/Structural Deliverables

- Design Development Drawings.
- Outline Specifications.
- Local and other Authorities Submission of Drawings and Reports.
- Detail Estimate of Construction Costs.

Stage 4 - Documentation and Procurement

Scope of Services

- 4.1 Attend Design and Co-ordination Meetings.
- 4.2 Prepare Specifications and Preambles for the Work.
- 4.3 Accommodates Services Design.
- 4.4 Check Cost Estimate and Adjust Designs and Documents if necessary to remain within Budget.
- 4.5 Formulate the Procurement Strategies for Contractors or Assist the Principal Consultant where necessary.
- 4.6 Review Designs, Drawings and Schedules for compliance with Approved Budget.
- 4.7 Prepare Contract Documentation for signature.
- 4.8 Assess Samples and Products for compliance and Design Intent.

Civil/Structural Deliverables

- Specifications.
- Service Co-ordination.
- Working/Construction Drawings
- Budget Construction Costs.
- Price Contract Documentation.

Stage 5 - Contract Administration and Inspection

Scope of Services

- 5.1 Attend Site Hand Over.
- 5.2 Issue Construction Documentation in accordance with the Documentation Schedule including, in the

- case of Structural Engineering, Reinforcing Bending Schedules and Detailing and Specifications of Structural Steel Sections and Connections.
- 5.3 Carry Out Contract Administration Procedures in terms of Contract.
 - 5.4 Prepare Schedules of predicted Cash Flows.
 - 5.5 Prepare Pro-active Estimates of proposed Variations for Client Decision Making.
 - 5.6 Attend regular Site, Technical and Progress Meetings.
 - 5.7 Review the Contractor's Quality Control Programme and Advise and Agree a Quality Assurance Plan.
 - 5.8 Inspect the Works for Quality and Conformity to Contract Documentation.
 - 5.9 Review the Outputs Quality Assurance procedures and Advise the Contractor and Client on the Adequacy and need for additional Controls, Inspections and Testing.
 - 5.10 Adjudicate and Resolve Financial Claims by Contractor(s).
 - 5.11 Assist in the resolution of Contractual Claims by the Contractor.
 - 5.12 Establish and Maintain a Financial Control System.
 - 5.13 Clarify details and descriptions during Construction as required.
 - 5.14 Prepare Valuations for Payment Certificate to be issued by the Principal Consultant.
 - 5.15 Instruct, Witness and Review all Tests and Mock Ups carried out both on and off site in line with Civil/Structural Scope.
 - 5.16 Check and approve Contractor drawings for Design Intent.
 - 5.17 Update and issue Drawings Register.
 - 5.18 Issue Contract Instructions as and when required.
 - 5.19 Review and comment on operation and Maintenance Manuals, Guarantee Certificates and Warranties.
 - 5.20 Inspect the works and issue Practical completion and Defects Lists.
 - 5.21 Arrange for delivery of all Tests Certificates, Statutory (Regulatory) and other approvals, As-Built Drawings and Operating Manuals.

Civil/Structural Deliverables

- Schedules of predicted Cash Flows.
- Construction Documentation.
- Drawings Register.
- Estimate for Proposed Variations.
- Contract Instructions
- Financial Control Reports.
- Valuation for Payment Certificates.
- Progressive and Draft Final Account(s).
- Practical Completion and Defects List.
- All Statutory Certification and Certificates of Compliance as required by Local and other Statutory Authority

Stage 6 - Closeout

Scope of Services

- 6.1 Inspect and Verify the Rectification of Defects.
- 6.2 Receive, Comment and Approve Relevant Payment Valuations and Completion Certificates.
- 6.3 Facilitates and/or Procure Final Operations and Maintenance Manuals, Guarantees and Warranties.
- 6.4 Prepare and/or Procure As-Built Drawings and Documentation.
- 6.5 Conclude the Final Accounts Where Relevant.

Civil/Structural Deliverables

- Valuations for Payment Certificates.
- Works and Final Completion Lists.
- Operations and Maintenance Manuals, Guarantees and Warranties.
- As Built Drawings and Documentation.
- Final Accounts.

5.4 Electrical/Mechanical Engineer

Stage 1 - Inception

Scope of Services

- 1.2 Assist in Developing a clear Project Brief.
- 1.2 Attend Project Initiation Meetings.
- 1.3 Advice on Procurement Policy for the Project.
- 1.4 Advice on the Rights, Constraints, Consent and Approvals.
- 1.5 Define the Service and Scope of Work required.
- 1.6 Inspect the Site and Advise on the necessary Surveys, Analyses, Tests and Site Condition or other Investigations where such information will be required for Stage 2 including the availability and location of Infrastructure and Services.
- 1.7 Determine the availability of Data, Drawings and Plans relating to the Project.
- 1.8 Advise on criteria specific own Scope of Work that could influence the Project Life Cycle Cost significantly.
- 1.10 Provide necessary information within the agreed Scope of the Project to other Consultants involved.

Electrical/Mechanical Deliverables

- Agreed Service and Scope of Work.
- Signed Agreement.
- Report on Project, Site and Functional Requirements
- Schedule of required Surveys, Tests, Analyses, Site Conditions and other Investigations.
- Schedule of Consents and Approvals and related Lead Times.

Stage 2 - Concept and Viability (Preliminary Design)

Scope of Services

- 2.1 Agreed Documentation Programme with Principal Consultant and other Consultants involved.
- 2.2 Attend Design and Co-ordination Meetings.
- 2.3 Establish the Concept Design Criteria.
- 2.4 Prepare Initial Concept Design and related Documentation.
- 2.5 Advise Client for further Surveys, Analyses, Tests and Site Investigations which may be required.
- 2.6 Establish Regulatory Authorities' requirements and incorporate into Design.
- 2.7 Refine and Assess the Concept Design to ensure conformance with all Regulatory Requirements and Consents.
- 2.8 Establish Access, Utilities, Services and Connections required for the Design.
- 2.9 Co-ordinate Design Interfaces with other Consultants involved.
- 2.10 Prepare Preliminary Processes Designs, Preliminary Designs, and related Documentation for Approval by Authorities and Client and suitable for Costing.
- 2.11 Provide Cost Estimate and Comment on Life Cycle Costs as required.
- 2.12 Liaise, Co-operate and provide necessary information to the Client, Principal Consultant and other Consultants involved.

Electrical/Mechanical Deliverables

- Concept/Preliminary Design.
- Schedule of required Surveys, Tests and other Investigations and related Reports.
- Process Design.
- Preliminary Cost Estimate.

Stage 3 - Design Development

Scope of Services

- 3.1 Review Documentation Programme with Principal Consultant and other Consultants involved.
- 3.2 Attend Design and Co-ordination Meetings.
- 3.3 Incorporate Client's and Authorities' Detailed Requirements into the Design.
- 3.4 Incorporate other Consultants' Design and Requirements into the Design.
- 3.5 Prepare Design Development Drawings including Draft Technical Details and Specifications.
- 3.6 Review and Evaluate the Design and outline Specification and exercise Cost Control.
- 3.7 Prepare detailed Estimates of Construction Cost.
- 3.8 Liaise, Co-operate and provide necessary information to the Principal Consultant and other Consultants

involved

3.9 Submit the necessary Design Documentation to Local and other Authorities for approval.

Electrical/Mechanical Deliverables

- Design Development Drawings.
- Outline Specifications.
- Local and other Authorities Submission of Drawings and Reports.
- Detail Estimate of Construction Costs.

Stage 4 - Documentation and Procurement

Scope of Services

- 4.1 Attend Design and Co-ordination Meetings.
- 4.2 Prepare Specifications and Preambles for the Work.
- 4.3 Accommodates Services Design.
- 4.4 Check Cost Estimate and Adjust Designs and Documents if necessary to remain within Budget.
- 4.5 Formulate the Procurement Strategies for Contractors or Assist the Principal Consultant where necessary.
- 4.6 Review Designs, Drawings and Schedules for compliance with Approved Budget.
- 4.7 Prepare Contract Documentation for signature.
- 4.8 Assess Samples and Products for compliance and Design Intent.

Electrical/Mechanical Deliverables

- Specifications.
- Service Co-ordination.
- Working/Construction Drawings
- Budget Construction Costs.
- Price Contract Documentation.

Stage 5 - Contract Administration and Inspection

Scope of Services

- 5.1 Attend Site Hand Over.
- 5.2 Issue Construction Documentation in accordance with the Documentation Schedule including, in the case of Structural Engineering, Reinforcing Bending Schedules and Detailing and Specifications of Structural Steel Sections and Connections.
- 5.3 Carry Out Contract Administration Procedures in terms of Contract.
- 5.4 Prepare Schedules of predicted Cash Flows.
- 5.5 Prepare Pro-active Estimates of proposed Variations for Client Decision Making.
- 5.6 Attend regular Site, Technical and Progress Meetings.
- 5.7 Review the Contractor's Quality Control Programme and Advise and Agree a Quality Assurance Plan.
- 5.8 Inspect the Works for Quality and Conformity to Contract Documentation.
- 5.9 Review the Outputs Quality Assurance procedures and Advise the Contractor and Client on the Adequacy and need for additional Controls, Inspections and Testing.
- 5.10 Adjudicate and Resolve Financial Claims by Contractor(s).
- 5.11 Assist in the resolution of Contractual Claims by the Contractor.
- 5.12 Establish and Maintain a Financial Control System.
- 5.13 Clarify details and descriptions during Construction as required.
- 5.14 Prepare Valuations for Payment Certificate to be issued by the Principal Consultant.
- 5.15 Instruct, Witness and Review all Tests and Mock Ups carried out both on and off site in line with Civil/Structural Scope.
- 5.16 Check and approve Contractor drawings for Design Intent.
- 5.17 Update and issue Drawings Register.
- 5.18 Issue Contract Instructions as and when required.
- 5.19 Review and comment on operation and Maintenance Manuals, Guarantee Certificates and Warranties.
- 5.20 Inspect the works and issue Practical completion and Defects Lists.
- 5.21 Arrange for delivery of all Tests Certificates, Statutory (Regulatory) and other approvals, As-Built Drawings and Operating Manuals.

Electrical/Mechanical Deliverables

- Schedules of Predicted Cash Flows.
- Construction Documentation.
- Drawings Register.
- Estimate for Proposed Variations.
- Contract Instructions.
- Financial Control Reports.
- Valuation for Payment Certificates.
- Progressive and Draft Final Account(s).
- Practical Completion and Defects List.
- All Statutory Certification and Certificates of Compliance as required by Local and other Statutory Authority

Stage 6 - Closeout

Scope of Services

- 6.1 Inspect and Verify the Rectification of Defects.
- 6.2 Receive, Comment and Approve Relevant Payment Valuations and Completion Certificates.
- 6.3 Facilitates and/or Procure Final Operations and Maintenance Manuals, Guarantees and Warranties.
- 6.4 Prepare and/or Procure As-Built Drawings and Documentation.
- 6.5 Conclude the Final Accounts Where Relevant.

Electrical/Mechanical Deliverables

- Valuations for Payment Certificates.
- Works and Final Completion Lists.
- Operations and Maintenance Manuals, Guarantees and Warranties.
- As Built Drawings and Documentation.
- Final Accounts.

5.5 Cost Consultants/Quantity Surveyor

Stage 1 - Inception

Scope of Service

- 1.1 Assisting in Developing A Clear Project Brief.
- 1.2 Attending Project Initiation Meetings.
- 1.3 Advising on The Procurement Policy for The Project.
- 1.4 Advising on Other Professional Consultants and Service Required.
- 1.5 Defining the Cost Consultant's/Quantity Surveyor's Scope of Work and Services.
- 1.6 Concluding the Terms of The Client/Quantity Surveyor Professional Services Agreement with The Client.
- 1.7 Advising on Economic Factors Affecting the Project.
- 1.8 Advising on Appropriate Financial Design Criteria.
- 1.9 Providing Necessary Information Within the Agreed Scope of the Project to other Professional Consultants.

Cost Consultant/Quantity Surveyor Deliverables

- Agreed Scope of Work.
- Agreed Services.
- Signed Client/Cost Consultant Professional Service Level Agreement.

Stage 2 - Concept and Viability

Scope of Service

- 1.1 Agreeing the Documentation Programme with the principal consultant and other Professional Consultants.
- 1.2 Attending Design and Co-ordination Meetings.
- 1.3 Reviewing and Evaluating Design Concepts and advising on Viability in conjunction with the other Professional Consultants.
- 1.4 Receiving relevant Data and Cost Estimates from the other Professional Consultants.
- 1.5 Preparing Preliminary and Elementary Estimates of the Construction Cost.
- 1.6 Assisting the Client in preparing a Financial Viability Report.
- 1.7 Audit Space Allocation against the Initial Brief.
- 1.8 Liaising, co-operating and providing necessary information to the Client, Principal Consultant and other Professional Consultants.

Cost Consultants/Quantity Surveyor Deliverables

- Preliminary Estimate(s) of Construction Cost.
- Elementary or Equivalent Estimate(s) of Construction Cost.
- Space Allocation Audit for the Project.

Stage 3 – Design Development

Scope of Services

- 3.1 Reviewing the Documentation Programme with the Principal Consultant and other Professional Consultants.
- 3.2 Attending Design and Co-ordination Meetings.
- 3.3 Reviewing and evaluating Design and outline Specifications and exercising Cost Control in conjunction with other Professional Consultants.
- 3.4 Receiving relevant Data and Cost Estimates from the other Professional Consultants.
- 3.5 Preparing Detail Estimates Construction Cost.
- 3.6 Assisting the Client in reviewing the Financial Viability Report.
- 3.7 Commenting on Space and Accommodation allowances and preparing an Area Schedule.
- 3.8 Liaising, Co-operating and providing necessary information to the Client, Principal Consultant and other Professional Consultants.

Cost Consultant/Quantity Surveyor Deliverables

- Detail Estimate of Construction Cost.
- Area Schedule.

Stage 4 - Documentation and Procurement

Scope of Services

- 4.1 Attending Design and Co-ordination Meetings.
- 4.2 Assisting the Principal Consultant in the formulation of the Procurement Strategy for Contractors, Sub-contractors and Suppliers.
- 4.3 Reviewing Working Drawings for compliance with the approved Budget Construction Cost and/or Financial Viability.
- 4.4 Preparing Documentation for both Principal and Subcontract Procurement.
- 4.5 Assisting with preparation of Contract Documentation for signature.

Cost Consultant/Quantity Surveyor Deliverables

- Budget of Construction Cost
- Priced Contract Documentation

Stage 5 - Construction

Scope of Services

- 5.1 Attending Site Handover.
- 5.2 Preparing Schedules of Predicted Cash Flow.

- 5.3 Preparing Pro-active Estimates for proposed Variations for Client Decision-making.
- 5.4 Attending regular Site, Technical and Progress Meetings.
- 5.5 Adjudicating and resolving Financial Claims by the Contractor(s).
- 5.6 Assisting in the resolution of Contractual Claims by the Contractor(s).
- 5.7 Establishing and maintaining Financial Control System.
- 5.8 Preparing Valuations for Payment Certificates to be issued by the Principal Agent.
- 5.9 Preparing Final Account(s) including re-measurement(s) as required for the works on a progressive basis.

Cost Consultant/Quantity Surveyor Deliverables

- Schedule(s) of Projected Cash Flow.
- Estimate for Proposed Variations.
- Financial Control Reports.
- Valuation of Payment Certificate.
- Progressive and Draft Final Account(s)

Stage 6 - Closeout

Scope of Services

- 6.1 Preparing Valuations for Payment Certificates to be issued by the Principal Agent.
- 6.2 Concluding Final Account(s).

Cost Consultant/Quantity Surveyor Deliverables

- Valuation of Payment Certificates.
- Final Account(s)

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