

RESULT BASED MANAGEMENT

SKILLS PROGRAMME

**Accredited
course
information:**

Unit Standard ID

NQF Level

Credits

252032

5

8

Develop, implement and evaluate an operational plan.

**Accredited
course
information:**

Unit Standard ID

NQF Level

Credits

252025

5

8

Monitor, assess and manage risk.

**Accredited
course
information:**

Unit Standard ID

NQF Level

Credits

252022

5

8

Develop, implement and evaluate a project plan.



CONTENTS



Pre-assessment meeting checklist	3
Assessment plan	4
Formative assessment.....	8
Summative Assessment Activities.....	9
Learner Evaluation of the Assessment Process.....	14
Development Plan	15

PRE-ASSESSMENT MEETING CHECKLIST

The **Qualification Induction Video** would've clearly explained all the items below. If you are not sure, revert to the video and ensure understanding before completing this checklist.

#	POINTS TO BE DISCUSSED	✓
Did the facilitator/Assessor:		
1.	Provide a clear explanation of Outcomes-based assessment and the NQF system.	
2.	Explain the assessment process and the principles of good assessment practice.	
3.	Explain the roles and responsibilities of the learner, assessor and moderator.	
4.	Explain the learner's rights, discuss the appeals process and assessment policies	
5.	Ensure the learner was ready for the assessment by conducting formative assessment	
6.	Provide the Learner with a copy of the unit standard against which they will be assessed	
7.	Discuss and identify any special needs of the learner	
8.	Discuss the VACS evidence requirements	
9.	Discuss the assessment planning and conducting document s indicating the evidence, methods, resources, timing and special needs	
10.	Discuss the importance of confidentiality if all the information.	
11.	Give the Learner an opportunity to seek clarification on any items discussed	
Learner Signature:		
Assessor Signature:		
Date of Meeting:		



ASSESSMENT PLAN

This document is for **assessment purposes** only. You are only required to complete your name and sign once the Assessor has assessed your Portfolio and provided you with feedback.

Assessor: Some formatives may not have been aligned to the plan, because they address the embedded knowledge required for the Unit. The practical criteria linked to the EEK have been addressed in the summative assessment to gather evidence from the learner.

Date of Assessment								
Assessor Declaration	The assessor at this moment declares that this document will be completed and a judgment made once all the evidence submitted according to this plan has been assessed against model answers and the VACS criteria							
Assessor Name				Assessor signature				
Moderator Name				Moderator Signature				
Learner Name				Learner Signature				
Mentor/ Facilitator Name				Mentor/ Facilitator Signature				
Key to Methods	Obs	Observation	Q	Questioning	PE	Product Evaluation	LB	Logbook

ID 252032 - Develop, implement and evaluate an operational plan.

Specific Outcomes and Assessment Criteria	Assessment	Evidence	Method	C	NYC
SO1: Develop operational strategies for a unit.					
1.1 The strategic plan of an entity is examined to determine the purpose of a unit in contributing to the achievement of the entity's strategy.	Summative 2	Practical Demonstration	PE		
1.2 Operational strategies for achieving the purpose of a unit are developed and recorded.	Summative 2	Practical Demonstration	PE		
1.3 The operational strategy of a unit is aligned with the overall strategy of an entity.	Summative 2	Practical Demonstration	PE		
1.4 A systematic process is followed to develop goals, objectives and performance standards that are clear, concise, measurable and achievable.	Summative 2	Practical Demonstration	PE		
1.5 Stakeholders are involved in the formulation of the goals, objectives and performance standards of a unit to obtain their commitment.	Summative 2	Practical Demonstration	PE		
SO2: Develop an operation plan for a unit.					
2.1 The operation plan is developed to transform the goals and objectives into tasks, responsibilities, time frames, performance measures, resource needs and contingencies.	Summative 2	Practical Demonstration	PE		
2.2 Measurable parameters are validated against customer and unit performance requirements.	Summative 2	Practical Demonstration	PE		
2.3 Monitoring systems are described in the operational plan to enable the measurement	Summative 2	Practical Demonstration	PE		

	Specific Outcomes and Assessment Criteria	Assessment	Evidence	Method	C	NYC
	of progress and results against the performance standards.					
2.4	Feedback on the operational plan is obtained from team members to promote buy-in in the implementation of the plan.	Summative 2	Practical Demonstration	PE		
SO3: Implement an operational plan.						
3.1	The operational plan is implemented, with amendments where necessary, to meet the specified goals, objectives and performance standards.	Summative 2	Practical Demonstration	PE		
3.2	Optimal use of available resources is ensured during implementation to promote cost-effectiveness.	Summative 2	Practical Demonstration	PE		
3.3	The use of control measures by first line managers is encouraged in the areas of their responsibility.	Summative 2	Practical Demonstration	PE		
SO4: Monitor, measure and evaluate the achievement of goals and objectives.						
4.1	The performance of the unit is monitored against the goals, objectives and performance standards in the plan using established monitoring systems.	Summative 2	Practical Demonstration	PE		
4.2	Performance reviews are conducted to measure inputs and outputs of team members against the operational plan.	Summative 2	Practical Demonstration	PE		
4.3	Recommendations on corrective action are implemented with the agreement of the responsible first line managers.	Summative 2	Practical Demonstration	PE		
4.4	Results are evaluated in terms of the teams' contribution to the performance of a unit.	Summative 2	Practical Demonstration	PE		

ID 252025 - Monitor, assess and manage risk.

	Specific Outcomes and Assessment Criteria	Assessment	Evidence	Method	C	NYC
SO1: Demonstrate an understanding of potential risks to a unit.						
1.1	The concept of risk is explained with reference to accepted theory and practice.	Formative Topic 5 Summative 1	Knowledge	Q		
1.2	The factors that could constitute risks to a unit are identified and explained.	Summative 2	Practical Demonstration	PE		
1.3	The role of organisational policies and procedures are explained in relation to risk management.	Formative Topic 5 Summative 1	Knowledge	Q		
SO2: Identify potential risks and assess the impact thereof in a unit.						
2.1	Potential risk factors for critical processes in a unit are identified and documented.	Summative 2	Practical Demonstration	PE		
2.2	Possible scenarios that could constitute a risk are identified and documented.	Summative 2	Practical Demonstration	PE		
2.3	The possibility of each scenario occurring is evaluated and recorded for future use.	Summative 2	Practical Demonstration	PE		
2.4	An analysis is performed and documented to rate the impact of each scenario on a unit.	Summative 2	Practical Demonstration	PE		
2.5	Priorities resulting from the impact analysis are determined and documented for implementation in the event of the risk materialising.	Summative 2	Practical Demonstration	PE		
SO3: Develop contingency plans for managing risk.						
3.1	Contingency plans are developed and documented in accordance with the entity's policies and procedures.	Summative 2	Practical Demonstration	PE		

	Specific Outcomes and Assessment Criteria	Assessment	Evidence	Method	C	NYC
3.2	Contingency plans are communicated to relevant stakeholders in accordance with the entity's risk management procedures.	Summative 2	Practical Demonstration	PE		
3.3	Contingency plans are distributed and stored in accordance with the entity's risk management procedures.	Summative 2	Practical Demonstration	PE		
SO4: Test and revise contingency plans.						
4.1	Contingency plans are tested in accordance with the entity's risk management procedures.	Summative 2	Practical Demonstration	PE		
4.2	Recommendations on improvements to the contingency plans are documented in relation to the findings of the testing.	Summative 2	Practical Demonstration	PE		
4.3	Contingency plans are revised to incorporate recommendations from the testing in accordance with the entity's policies and procedures.	Summative 2	Practical Demonstration	PE		

ID 252022 - Develop, implement and evaluate a project plan.

	Specific Outcomes and Assessment Criteria	Assessment	Evidence	Method	C	NYC
SO1: Demonstrate an understanding of the potential risks to a unit.						
1.1	Project alternatives are considered in relation to their viability in achieving unit objectives.	Summative 2	Practical Demonstration	PE		
1.2	The decision on the preferred alternative is motivated in terms of viability, cost and results.	Summative 2	Practical Demonstration	PE		
SO2: Scope a work-based project for a unit.						
2.1	The scope of work and deliverables are defined in relation to the unit objectives.	Summative 2	Practical Demonstration	PE		
2.2	The principal work activities are determined that will be required to achieve the unit objectives.	Summative 2	Practical Demonstration	PE		
2.3	The potential risks are identified and analysed in relation to the likelihood of risks materialising.	Summative 2	Practical Demonstration	PE		
2.4	Change processes that are essential to project success are described in terms of their contribution to the project results.	Summative 2	Practical Demonstration	PE		
SO3: Develop a project plan.						
3.1	The overall objectives of the plan are described with reference to the achievement of unit objectives.	Summative 2	Practical Demonstration	PE		
3.2	The sponsor, project team and other stakeholders are described with their contributions to the project.	Summative 2	Practical Demonstration	PE		
3.3	A work breakdown structure (WBS) is developed to describe the main activities of the project and the interrelationship between them.	Summative 2	Practical Demonstration	PE		
3.4	The project activities required performance levels and quality criteria are stipulated and communicated to team members and other stakeholders to promote quality and effectiveness.	Summative 2	Practical Demonstration	PE		
3.5	The project plan is checked for accuracy, completeness and compliance with internal and external requirements.	Summative 2	Practical Demonstration	PE		

	Specific Outcomes and Assessment Criteria	Assessment	Evidence	Method	C	NYC
SO4: Develop tools to measure key performance parameters.						
4.1	A GANTT chart is developed for managing and evaluating the time dimension.	Summative 2	Practical Demonstration	PE		
4.2	A budget is developed for managing and evaluating the cost dimension.	Summative 2	Practical Demonstration	PE		
4.3	Quality parameters are developed for managing and evaluating quality.	Summative 2	Practical Demonstration	PE		
4.4	The measurement tools are communicated to team members to promote a common understanding of requirements.	Summative 2	Practical Demonstration	PE		
SO5: Implement the plan and evaluate project progress.						
5.1	Project implementation is monitored and evaluated against the plan, the stipulated performance criteria and quality requirements.	Summative 2	Practical Demonstration	PE		
5.2	Project results are monitored to establish progress and effectiveness.	Summative 2	Practical Demonstration	PE		
5.3	Deviations from the project plan are identified and analysed in order to take corrective action.	Summative 2	Practical Demonstration	PE		
5.4	Corrective actions are implemented to ensure the achievement of project objectives.	Summative 2	Practical Demonstration	PE		
5.5	Results are evaluated against the scope and objectives of the project.	Summative 2	Practical Demonstration	PE		






Learner Instruction: Please complete the following checklist to indicate that you have completed all the formative assessment activities required for your portfolio. These activities must have been completed on the DigiAssist System and evidence of each outcome pdf printed signed and placed behind this page.

FORMATIVE ASSESSMENT

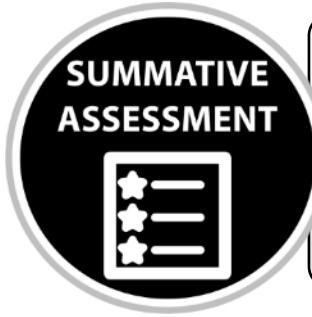
#	FORMATIVE ASSESSMENT ACTIVITY	TICK TO CONFIRM COMPLETION
1	Formative Assessment Activity 1	
2	Formative Assessment Activity 2	
3	Formative Assessment Activity 3	
4	Formative Assessment Activity 4	
5	Formative Assessment Activity 5	
6	Formative Assessment Activity 6	
7	Formative Assessment Activity 7	
8	Formative Assessment Activity 8	

Learner signature: 

Assessor signature: 

Moderator signature: 





Learner Instruction: Please complete the following checklist to ensure that you have completed all the summative assessment activities. These activities should be completed in full and as per instructional video provided after the Cluster, ensure to have full understanding of what is required before attempting these activities.

SUMMATIVE ASSESSMENT ACTIVITIES

#	SUMMATIVE ASSESSMENT ACTIVITY	TICK TO CONFIRM COMPLETION
1.	Summative Assessment Activity 1	
2.	Summative Assessment Activity 2	
Learner Signature:		
Assessor Signature:		
Moderator Signature:		



SUMMATIVE ASSESSMENT ACTIVITY 1: KNOWLEDGE ASSESSMENT



252025 S01 AC 1, 3

EEK: 1, 2

CCFO: 4, 5

Assessment Method: Questioning

INSTRUCTIONS: Use the method as explained in your POE Instructional Video from Cluster 1 to complete the questions.

1. What is risk? Explain the concept, referring to accepted theory and practice.
2. What role do organisational policies and procedures play in relation to risk management?
3. How does legislation relate the policies and procedures in relation to risk management?

Feedback to Learner:

VACS Assessment of Evidence	V	A	C	S
The result of First Assessment	C	NYC	Date	
Result of Second assessment	C	NYC	Date	
The result of Third Assessment	C	NYC	Date	
Learner Signature:		Date 2023/08/18		
Assessor Signature:		Date		
Moderator Signature:		Date		



10



SUMMATIVE ASSESSMENT ACTIVITY 2: PRACTICAL ASSIGNMENT



252032 SO 1 - 4

252022 SO 1 – 5

252025 SO1 AC 2, 3, SO 2 – 4

EEK: All

CCFO: All

Assessment Method: Product Evaluation

INSTRUCTIONS: Use the method as explained in your POE Instructional Video from Cluster 1 to complete the questions.

Special Instructions: This is a practical assignment and will require a week or two to complete. It involves the development of an operational plan integrated with a project plan and will require of you to develop or create professionally formatted documents to show that you can plan, execute and monitor the implementation of these plans. The implementation may be simulated, thus only showing on the documentation how you monitored the project with simulated dates.

Task 1

Do the following:

1. Obtain a copy of department/organisations strategic plan, examine the purpose of your department in achieving the strategy.
2. Develop a draft operational plan to achieve the department's purpose in achieving the departments strategy. The plan must include but is not limited to:
 - a. Operational strategies to achieve the purpose of the unit.
 - b. Be aligned to the overall business strategy.
 - c. Develop the goals, objectives, and performance standards to ensure that they are clear, concise, measurable, and achievable.
 - d. Include monitoring systems and validation of measurable parameters against performance requirements.
 - e. Risks that are foreseen, including the type, occurrence, impact, and contingency.
 - f. Resources that will be required.
 - g. Any other areas that need are of relevance to the plan and acceptance from management.
3. Arrange a meeting with management to discuss the drafted plan. Minute the meeting.
4. Make amendments to the plan if necessary.

A handwritten signature in black ink, appearing to read "HZ".



5. Develop the amended plan in a formal document.
6. Develop schedule to implement the operational plan.
Ensure that the action plan includes all elements of tasks, responsibilities, time frames, performance measures, resource needs and contingencies.
7. Develop any monitoring and controlling document that will be needed to implement the plan.
8. Monitor and control the plan, through simulation – provide simulated dates times and measurements of what you may perceive would happen in a live scenario in your business unit.
9. Evaluate the achievement of goals and objectives.
10. Arrange a performance review of the team members. You may use the same performance review templates from Cluster 4.

Provide the following as evidence:

1. A professional documented Operational Plan.
2. Minutes of the meeting held that shows buy in from management.
3. All monitoring and controlling simulated documentation used to implement the plan, including the controlled schedule with planned and actual dates.
4. Performance review of unit and team members.

Task 2

Do the following: Using information gathered and developed from Task 1.

1. Develop a scope of work.
2. Define all the deliverables in a hierarchical WBS.
3. Develop a gnatt chart from the action plan, ensure to create all necessary relationships between tasks.
4. Create a hierarchical organisational structure relative to the operational plan.
5. Create a budget for the Operational Plan.
6. Develop a change control process.
7. Arrange a meeting with all team members to discuss the work that needs to be performed to ensure understanding. Minute the meeting.

Provide the following as evidence: These items may all be collectively put together in one document. Visit www.pmdocs.co.za for suitable templates to use.

1. A project plan that includes all elements included in No. 1 – 6 above.
2. Minutes of the meeting held with team members that documents their understanding of what is required.

Task 3




Do the following:

1. Extract the risks from the Operational Plan in Task 1.
2. Develop a risk assessment document that includes but not limited to:
 - a. How the risk factors of the unit played a role in relation to organisational policies and procedures.
 - b. How the risks could be tested against the contingency plans.
 - c. How the risks could be revised to incorporate recommendations.

Feedback to Learner:

VACS Assessment of Evidence	V	A	C	S
Result of First Assessment	C	NYC	Date	
Result of Second assessment	C	NYC	Date	
Result of Third Assessment	C	NYC	Date	
Learner Signature:			Date	2023/08/18
Assessor Signature:			Date	
Moderator Signature:			Date	



LEARNER EVALUATION OF THE ASSESSMENT PROCESS

Kindly complete the form below to provide feedback to the assessor

Please answer the following questions by ticking the applicable box		
Criteria	Yes	No
Did the assessor go through the assessment meeting with you?		
Did the assessor explain the reason for the assessment		
Did you receive a copy of the Unit standard/s you were being assessed against		
Did the assessor explain the assessment methods and criteria?		
Were the instructions for each assessment clear?		
Did your assessor provide you with developmental feedback?		
Do you agree with the feedback?		
Additional Comments:		
Learner Name:	Halalisani Zulu	
Signature:		
Date:	2023/08/18	



DEVELOPMENT PLAN

To be completed by the Assessor.

Assessor it is important to provide the learner with direction, development, and growth. Observation during the process will assist in completing this for the learner. Take note of time management, self-esteem, confidence, organisation, self-management and discipline.

Learner Name:	
Assessor Name:	
Programme Name:	
Date:	
Areas of development and additional evidence required	
Resubmission date	
Learner Signature	
Assessor Signature	



SUMMATIVE ASSESSMENT 1

HZ

SUMMATIVE ASSESSMENT ACTIVITY 1: KNOWLEDGE ASSESSMENT

1. What is risk? Explain the concept, referring to accepted theory and practice.

A risk is the probability of meeting danger or suffer harm, a project risk, however, is the potential to of harm to an asset or some characteristic value that may arise from some present process or in a future event

2. What role do organisational policies and procedures play in relation to risk management?

Company policies and procedures are developed as a result of understanding industry standards and/or legislation. The company policies and procedures form part of the risk management process in that they provide guidelines to ensure that the company adheres to industry standards and legislative requirements.

3. How does legislation relate the policies and procedures in relation to risk management?

Legislation forms part of control measures to control or mitigate risks as it requires that hazards be identified, assessed and managed in accordance with specific legislation.



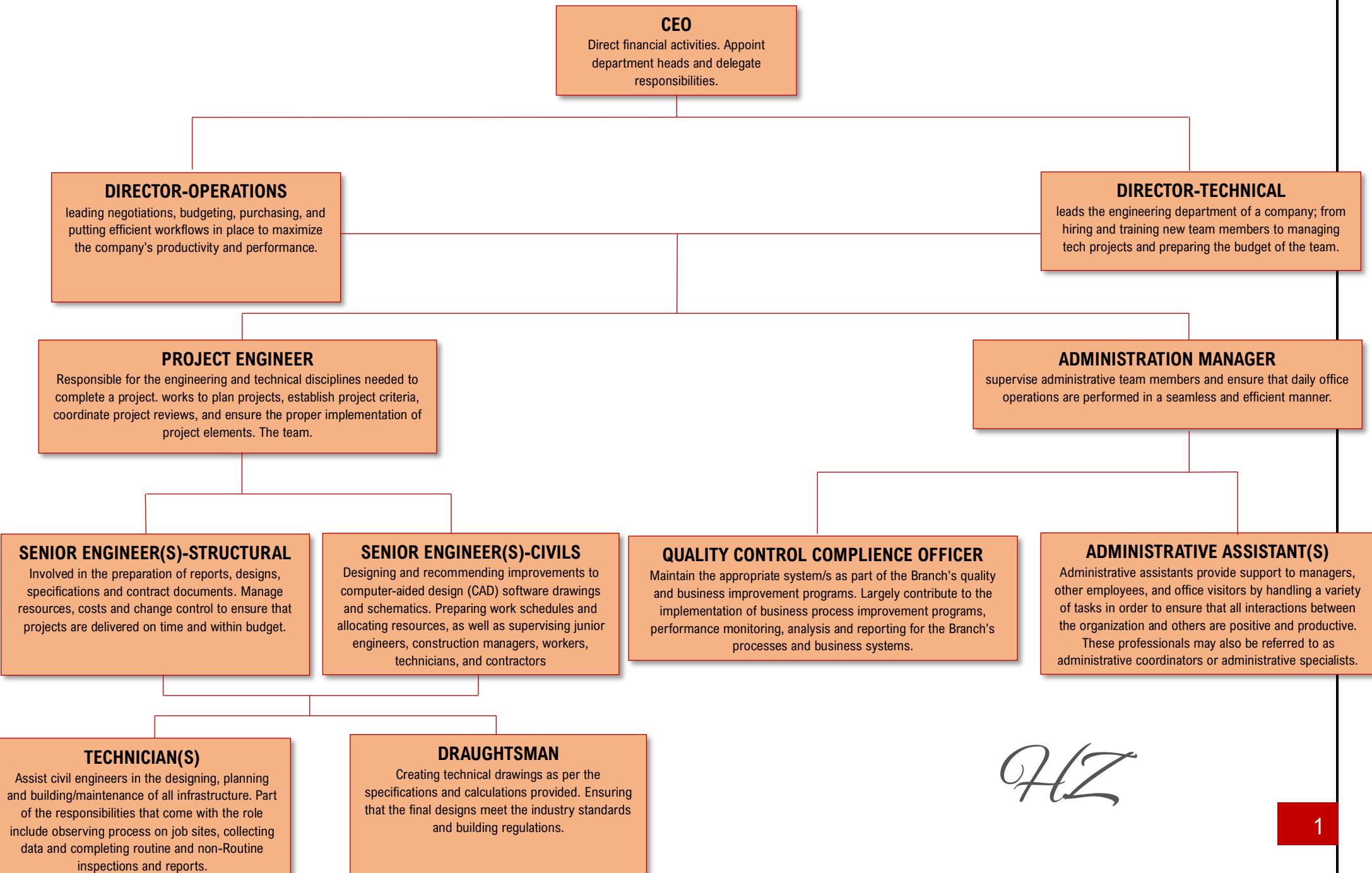
TASK 1

1. Operational Plan
2. Minutes with buy in From Management
3. Performance Reviews



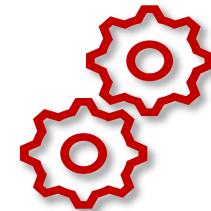
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RESULTS BASED MANAGEMENT SKILLS PROGRAMME; OPERATIONAL PLAN



Hz

Our Vision, Mission & Values



Our Vision

We aspire to be a leading technology driven. and environmentally focused Consulting Engineering firm in the built environment throughout the various fast-growing markets of Africa and Europe

Our Mission

We provide high quality Engineering Consultancy services to the construction industry to ensure satisfaction of our Clients. We strive for excellence in focusing on the Client's needs and ensuring satisfaction and project sustainability.

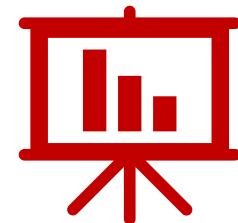
A stylized, handwritten-style logo consisting of the letters 'H' and 'Z' joined together in black, located at the bottom right corner of the slide.



Our Values

We pride ourselves in our people and strive to build a culture of excellence through our shared

- values of:
- Competency
- Leadership
- Integrity
- Accountability
- Trustworthy
- Reliable



Our Goals

To become one of the top influential Engineering Consultation companies in South Africa, uplifting our people and giving back to the local community and their needs. We strive to design smarter, more efficient and comfortable structures around the world for a better tomorrow

HZ

OPERATIONAL PLAN

Organisational Objectives

Provide high quality Engineering Consultancy services to the construction industry to ensure satisfaction of our clients. We strive for excellence in focusing on the Client's needs and ensuring satisfaction and project sustainability.

Departmental Objectives

- Ensure trained and competent staff in our staff complement.
- Execute tasks within set guidelines, specifications, budget and time frame.
- Continually improve on Quality assurance and Quality control measures



Risks	Contingencies	Tasks	Person Responsible	Time frame	Performance measures	Resources needs
Possible risk include client requiring services and scope is not relayed/understood as required by client	A scoping document should be in place signed by the client and attendee to agree on the scope and deliverables	Attend scoping session and site walk with client to align with scope and deliverables	Meshack Nkabinde/Halalisani Zulu	Monday, 21 August 2023		Vehicles
Relaying the incorrect scope to Engineers	submit a scoping document	Give feedback to engineer(s) and align scope and deliverables	Meshack Nkabinde	Tuesday, 22 August 2023		
Submitting a Proposal that maybe outside the client's budget	Submit a cost breakdown along with the proposal and have the client.	Prepare a Job Cost Estimate (proposal) for client approval	Jan Coetzer	Wednesday, 23 August 2023 Wednesday, 30 August 2023	PO Awarded	
		Receive Purchase Order from Client	Jan Coetzer	Wednesday, 30 August 2023 Monday, 04 September 2023		
Completing the design without client's approval with respect to the scope and budget	Once concept has been completed, it must be presented to the client for buy in	Complete a preliminary design for client Review and approval Set up meeting with Client, Engineers and Technicians for preliminary design presentation	Jan Coetzer Jan Coetzer Russel Dlamini Meshack Nkabinde Halalisani Zulu	Friday, 08 September 2023 Friday, 22 September 2023 Monday, 25 September 2023	Client approval	Design softwares
		Adopt client feedback, if any, and proceed to final design	Halalisani Zulu Jan Coetzer Meshack Nkabinde	Monday, 25 September 2023		
		Submit final design along with specification, drawings and BoQ	Jan Coetzer	Monday, 25 September 2023 Friday, 06 October 2023	Designs and drawings all complying to relevant standards	
Misalignment with relevant stakeholders of the project requirements, safety, Budget and working/applicable project specifications	Project specification, budget, scope of works, methodology and safety should be discussed and agreed upon by all parties involved	Attend PDA	Meshack Nkabinde Russel Dlamini	Friday, 20 October 2023		Vehicles

Contractor to procure and material and adopt mythologies and material that could be outside the parameters of the project specification and budget	Engineers to receive QCP from contractor for buy in from all parties involved	Receive QC pack from contractor for review and approval.	Russel Dlamini Meshack Nkabinde	Monday, 23 October 2023		
Parties can be misaligned of their availability, communication methods and working procedures of the project	A meeting to be arranged to discuss communication channels, inspections frequencies, and all logistics required to run the project effectively	Attend Project kick off meeting(s)	Halaisani Zulu	Friday, 27 October 2023	QC Pack approval	Vehicle
No update with the progress and challenges/shortcomings encountered in the project	Weekly meeting to address milestones and mishaps that could have risen amidst the project	Set up weekly progress meetings with client, contractor and sub-contractor	Halaisani Zulu	Friday, 27 October 2023	All members present	laptops
Unsupervised contractor workmanship	Advocate site inspections to monitor the workmanship and provide engineering council to contractor where needed and advise in case of any deviations	Attend daily site inspection and report on progress on weekly office meetings	Halaisani Zulu Meshack Nkabinde Thembelani Oliphant Russel Dlamini	Wednesday, 15 November 2023 Monday, 18 March 2024 Friday, 15 November 2024	No unforeseen project lags and delays	Vehicles
Proceeding with works whilst the material used to execute the works does not comply to project specification	Acknowledge witness and hold points on the QCP and set up scheduled site visits to verify if the project is executed to spec	Witness site tests (Slump, cube, MODS) as required by project specification/SoW	Halaisani Zulu Meshack Nkabinde Thembelani Oliphant Russel Dlamini	Monday, 18 March 2024 Wednesday, 13 March 2024	All tests should fall within allowable parameters	
		Attend a project Punch out	Halaisani Zulu Meshack Nkabinde Thembelani Oliphant Russel Dlamini		Little to no snag items falling behind	Vehicles
		Handover over project Submit invoice, document transmittal and client satisfaction survey	Jan Coetzer Jan Coetzer	Wednesday, 13 March 2024 Monday, 18 March 2024	No NCR's Client approval	

Date	02 Augst 2023	TIME	15:30	FACILITATOR	Halalisani Zulu
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WLA MEMBERS

Halalisani Zulu	Sean Kay	Director	
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TIME	ITEM	OWNER
15:30-15:32	Opening & welcoming	Halalisani Zulu
15:32-15:55	Gave a presentation of the operational plan and its structure	Halalisani Zulu
15:55-16:00	Acknowledged the operational and had question and suggestions I. Is the operational plan project or organizational based? II. Made suggestions on the presentation. III. Made suggestions on the organization hierarchy. IV. Made inputs on the organizational objectives.	Sean Kay
16:00-16:15	Addressed questions and made updates as per recommendation and suggestion.	Halalisani Zulu
16:00-16:15	Made a recommendation on the Gantt chart and WBS I. The use of Microsoft excel in the absence Microsoft projects and how it works, drawbacks and advantages	Sean Kay
16:15-16:30	Acknowledged the recommendation and closure	Halalisani Zulu

EMPLOYEE PERFORMANCE EVALUATION

Employee Information

Employee Name:	Enock Nhlabathi	Date:	12/08/23
Department:	Structures	Period of Review:	First Quater
Designation:	Site assistant	Review Title:	Performance

Performance index	Excellent	Good	Fair	Poor	Comments
Job Knowledge			x		
Productivity			x		
Work Quality					
Technical Acumen			x		
Work Consistency		x	x		
Enthusiasm	x				
Cooperation	x				
Attitude		x			
Initiative		x			
Work Relation		x			
Creativity			x		
Punctuality			x		
Attendance		x			
Dependability			x		
Communication Skills		x			
Overall Rating			x		

Opportunities for developments

Reviewers Comments

Very consistent subordinate with lots of potential to be harnessed and room for improvement in other areas

Nhlabathi. E 18/08/203
Employee Signature Date

Zulu. 18/08/2023
Employer Signature Date

EMPLOYEE PERFORMANCE EVALUATION

Employee Information

Employee Name:	Russell Dlamini	Date:	12/08/23
Department:	Structures	Period of Review:	First Quater
Designation:	Technician	Review Title:	Performance

Performance index	Excellent	Good	Fair	Poor	Comments
Job Knowledge	x				
Productivity	x				
Work Quality		x			
Technical Acumen			x		
Work Consistency		x			
Enthusiasm		x			
Cooperation	x				
Attitude		x			
Initiative		x			
Work Relation		x			
Creativity			x		
Punctuality			x		
Attendance	x				
Dependability	x				
Communication Skills		x			
Overall Rating		x			

Opportunities for developments

Requesting more exposure to design and QA/QC projects

Reviewers Comments

Impeccable work ethic



Dlamini. R

18/08/203

Employee Signature

Date

Zulu.



18/08/2023

Employer Signature

Date

HZ

TASK 2

1. Scope of Work
2. Hierarchical WBS
3. Gantt Chart
4. Organisational Hierarchy (In task 1)
5. Change control process

HZ

PROJECT SPECIFICATION

SCOPE

This project specification is set out in two portions. Portion 1 covers a general description of the project, the facilities available, and the requirements to be met. Portion 2 covers variations and additions to standardised and/or particular specifications applicable to this Contract.

STATUS

Should any requirements of the project specification or the standardised specifications listed in clause PS8 conflict with any requirements of Sasol Synfuel's Standard Commercial Terms for Operations Contracts, Sasol Synfuel's Standard Commercial Terms for Operations Contracts shall prevail.

PART 1

THE WORKS

PS1 GENERAL DESCRIPTION

This contract comprises inter alia of the provision of concrete remedials of the Tanks Units 066TK115, 067 and 069 at Sasol Synfuels, Secunda. The concrete tanks where bare concrete is exposed will be coated as per clause CCM5. Units 069 TK1001 and 2101 will be done complete as well as Unit 067TK1002.

Where the existing polyurea coating is intact but defects are present it will be repaired in accordance with clause CCM6. The following Tanks will be repaired in accordance to CCM6 as well as Unit 066TK115.

Unit 067TK2001, Unit 067TK2002, Unit 067TK 2003, Unit 069 TK1001, Unit 069TK1102, Unit 069TK1202, Unit 069TK2201, Unit 069TK4102 and Unit 069TK4202.

PS1.1 Sequence of work

- Concrete surface preparation.
- Remove all defective concrete and coatings.
- Seal all cracks as indicated by the Engineer.
- Repair concrete.
- Protective lining to concrete.

The work is broadly described, but not limited to:

PS1.2 Access

Access to the Tanks Units 066, 067 and 069 will be supplied by Sasol Synfuels (Pty) Ltd. A joint inspection by the Engineer and the Contractor will be done as soon as the tanks are decommissioned and cleaned to finalize the scope of work.

PS1.3 Concrete remedials

Remedials of defective concrete.

PS1.4 Coating

Coating of all concrete surfaces with a protective lining. The operating temperatures for the Tanks are 40°C except for Tanks Unit 066TK 115, which is 95°C. The chemical analysis of the product is as attached to the specification in Annexure 1.

The contractor needs to confirm that the chosen system could meet the operating conditions for a life span of five years.

PS2 DETAILS OF CONTRACT

The Bill of Quantities has been documented in a manner that indicates the Scope of Work for the above contract.

PS3 CONSTRUCTION PROGRAMMING

PS3.1 Starting/completion dates.

Contract Period: Shutdown – August/September 2023

PS3.2 Programmes and reports required.

In addition to the requirements of Clause 15 of the Standard Commercial Terms for Operations Contracts (GCC 2010 or latest version), the following requirements shall prevail:

3.2.1 Contractual programme

A contractual programme, meaning: a chart showing the different sections of construction making up the Works and the order, resourcing and sequence in which the work is to be carried out in order to achieve completion on the prescribed dates shall be submitted with the Contractor's tender. This programme shall, upon the Engineer's agreement in writing become binding on the parties to the contract.

Such program shall include for possible delays for inclement weather.

The Contractual program shall in addition clearly indicate any Contractor's float as may be applicable.

3.2.2 Construction programme

A construction programme, meaning: an agreed chart which shall be used to monitor the progress of the works shall be submitted within 14 days of agreement of the contractual programme by the Engineer. This chart shall, as far as is practical, be based upon the agreed contractual programme, but shall not in any way relieve either party of their obligations or rights in terms of the contractual programme or the contract. The chart shall show the different sections of the Works suitably divided into elements and activities, clearly indicating the start and completion dates of each activity and element against which the progress shall be monitored.

The Contractor is advised to determine the programming requirements of section 6.9 described below.

PS3.3 Reports required

The Contractor shall provide the Engineer a fortnightly report detailing the following:

- a) Date of report
- b) Working days elapsed from start
- c) Working days left to contractual completion and/or key dates and forecast of any slippage envisaged
- d) Percentage of work complete per activities on construction programme and forecast remaining time and resources required
- e) Supervisory staff and labour force on site
- g) List of constructional plant
- h) Delays encountered
- i) Information required
- j) Variation Orders and site instructions received
- k) Claims status (if any)
- l) Weather delays
- m) Signature of site agent

The Contractor shall in addition provide the Employer with weekly returns showing the number and grade of Employees employed and the number and type of Constructional Plant on site.

PS4 SITE FACILITIES AVAILABLE

PS4.1 Water for the Works

Potable water will be supplied free of charge by the Employer at points to be identified at commencement of Works. The cost of further temporary reticulation shall be to the Contractor's account.

PS4.2 Power supply

Power will be supplied free of charge by the Employer at points to be identified at commencement of Works. The costs of any temporary reticulation; transformers, etc. shall be to the Contractor's account.

PS4.3 Air for the Works

Compressed air will not be supplied by the Employer. The Contractor shall make all necessary provisions in this regard if necessary.

PS4.4 Lay-down area

A specific area will be set aside for the use of the Contractor. The location of the area shall be agreed with the client prior to commencement of works.

PS5 SITE FACILITIES REQUIRED

PS5.1 Accommodation of labour force

No employees are to be accommodated on site. The Contractor shall issue his employees with a Company overall for easy identification.

PS5.2 Temporary storage facilities

The Contractor shall make provision in his price for all temporary storage facilities if necessary. The location of these shall be agreed with the client prior to the commencement of works.

PS5.3 Laboratory facilities

Approved testing laboratories may be nominated by the Contractor.

PS5.4 Ablution and latrine facilities

No sanitary facilities for the specific use of the Engineer or their staff need be provided.

The Contractor shall make provision for adequate and approved temporary ablution and latrine facilities for his workmen on site and their removal on completion of the Works. These facilities are to be kept in a clean and hygienic condition, to the approval of the Engineer, at all times.

PS6 FEATURES REQUIRING SPECIAL ATTENTION

PS6.1 Work in an operating plant

The work will be undertaken during the September 2023 shutdown. The contractor will have to allow to work 24 hours in shifts to complete the work.

During the execution of the works, other contractors could also be working in this area. Rates must allow for a margin of discontinuity of operations to the Works under this Contract. No claims for disruption of access or for the working of abnormal hours due to the above factors, or restrictions on work hours due to wind will be entertained.

PS6.2 Existing Services

The location of existing services which may be affected by the Works must be ascertained by the Contractor. Any damage caused by the Contractor to existing structures and services shall be repaired to the satisfaction of the Engineer.

PS6.3 Dust and debris

The Contractor shall take all necessary precautions to keep debris caused by the remedial activities to a minimum.

PS6.4 Liquid fuels and lubricants

The Contractor shall supply all required liquid fuels and lubricants.

PS6.5 Key personnel

The Contractor shall furnish the Employer with a list of addresses and telephone numbers of key personnel in the Contractor's organisation who may be contacted in an emergency both during and outside office hours.

PS6.6 Site meetings

The Engineer shall hold regular site meetings, one per week for the duration of the contract, and keep and circulate minutes. The Contractor shall attend these meetings and ensure that all sub-contractors are represented.



PS6.7 Removal of rubbish and debris

Contractors shall, at all times, keep the site and surrounding areas free of all superfluous materials, rubbish, debris, etc. A temporary dumpsite area will be identified at the Site inspection. The Contractor is to allow for fencing off of this area with a shade cloth covered fence and is to ensure the works remain contained within the fenced off area.

PS6.8 Access

Access to the Sasol Synfuel's Secunda Plant will be identified at the site inspection. No employee of the Contractor will be allowed onto premises without proper identification. The movement of men, equipment and material to site will be restricted and as agreed at the site inspection.

Prices to include for all access requirements.

PS6.9 Programming

Contractors are advised that the programming of the works remains their responsibility.

It is the intention of this contract to provide the Contractor with uninterrupted access and working hours.

Rates must allow for any interrupted access and the Contractor's attention is drawn to clause PS6.1 in this regard.

PS6.10 Control of work and Quality Assurance

It is an essential element of this contract that the control of the work, the Quality Control and Quality Assurance falls under the direct control of the Contractor. Should the Tenderer have a specialist sub-contractor special arrangement will be required in terms of their contractual arrangement to ensure that the above control is possible. Such arrangements are to the Tenderers discretion, but the Tenderer must demonstrate that the arrangement is functional and workable to the entire satisfaction of the Engineer.

The Quality Control on site shall be structured, and the Quality Control Manager of such a position as to have a veto on the progress of the works. Attention to detail will be of prime importance. Should the Quality be of an unacceptable standard, the Engineer, who shall be the sole arbitrator as to the sufficiency of the standard achieved shall stop the Works and **no other work shall continue until the Quality is of an acceptable standard.**

PS7 SECURITY AND SAFETY

PS7.1 Security

All security regulations set forth by Sasol Synfuels, Secunda, are to be strictly adhered to and the Contractor is to make himself fully acquainted with all and any security conditions regarding personnel, material and equipment entering or leaving the property.

The Contractor shall, if so required by Sasol Synfuels, Secunda, at any time during the currency of the Contract, remove from the works any employee engaged by him on the works and shall provide suitable replacements.

Should Sasol Synfuels, Secunda, disclose the reason for requesting such removal, all costs involved in such removal and replacement shall be borne by the Contractor.

Should Sasol Synfuels, Secunda, not disclose the reason for requesting such removal, all costs involved in such removal shall be for the account of Sasol Synfuels, Secunda.

Should an employee or employees employed by the Contractor be required to leave the Site, the Contractor's obligations in terms of the Contract shall in no way be altered.

PS7.2 Safety

7.2.1 The Contractor shall provide, maintain and remove such hoarding, fans, screens, tarpaulins, drop sheets and other materials and items required to effectively uphold and protect from damage the works, materials and property of Sasol Synfuels, Secunda, and to secure the safety and freedom from injury of all persons.

7.2.2 The Contractor shall comply with Sasol Synfuels, Secunda's safety/security regulations.

7.2.3 The Contractor shall acquire and use the required PPE for works.

PS8 GUARANTEE

The contractor needs to provide a guarantee for a period of five years. The chosen product should meet the operating conditions as described in Clause PS1.4.



PS9.1 APPLICABLE STANDARDISED SPECIFICATIONS

The following documents form part of this contact:

- PS9.1.1 “General Conditions of Contract for Civil Engineering Construction, Second Edition (2010)”. Prepared under the auspices of the South African Institute of Civil Engineers, the South African Association of Consulting Engineers and the South African Federation of Civil Engineering Contractors. Short title “**General Conditions of Contract 2010 of latest version**”.
- PS9.1.2 “Standardized Specification for Civil Engineering Construction (SANS 1200)”. The document is available separately and tenders shall obtain their own copies of the relevant sections as required.
- PS9.1.3 The “Project Document” (this document), Special Conditions of Contract, Project Specification and particular specifications applicable to this Contract.

The Employer’s Letter of Acceptance, correspondence, guarantees and all Addenda issued before the closing date of tenders, also forms part of the final contract between the Employer and the successful Contractor.

PS9.2 SPECIAL CONDITIONS OF CONTRACT

PS9.2.1 Amendments to the General Conditions of Contract

- SCC16(2)** Contractor’s copies
 One copy of this document will be issued free of charge to the Contractor.
- SCC26(7)** Cost of test specimens and tests. Add the following additional sub-clause 26(7).
 “(c) No payment will be made to the Contractor for any tests required as part of his quality control programme as well as tests ordered by the Engineer and which failed. The cost of all such tests shall be deemed to have been allowed for in this tender”.
- SCC45(3)** Some reasons for extensions of time. Add the following to sub-clause (b) Abnormal climatic conditions:
 “Normal rainfall is not regarded as “abnormal climatic conditions” which entitles the Contractor to an extension of time. Allowance for normal rainfall shall be deemed to have been made for in his tendered rates, prices and programme. The number of days per month on which work is expected not to be possible as a result of normal rainfall for which the Contractor shall make provision

based on information obtained from the Weather Bureau, Department of Environment Affairs, Pretoria, for the average monthly rainfall figures, quoted for the Rainfall Station closest to Secunda.

During the execution off the Work, the Engineer will certify a working day lost as a result of unfavourable climatic conditions only if:

- (a) No work was possible on the relevant working day on any item which is on the critical path of the latest approved work programme.
- (b) If less than 30% of the working team and construction equipment on site could do any work on the day.

Extension of time as a result of the abnormal climatic conditions shall be calculated monthly and will be taken as the total number of working days certified on which the Contractor was unable to proceed with the work, less the total number of working days allowed. Should the extension of time, as calculated, be negative, it shall be taken as nil for the month. The total extension of time as a result of abnormal climatic conditions for which the Contractor may apply, shall be the sum of the monthly extensions.

Sub-clause (f): Disruption of labour. Add the following:

“Disruption of labour as a result of political unrest or organised mass action or strikes on a national or local level, will be regarded as being beyond the Contractor’s control. Any strike only within the Control”.

SCC49(2)

Application of contract price adjustment factor.

Contract price adjustment will not be applicable to this contract. This contract is fixed.

SCC53

Variations exceeding 15%.

Amend the margin notes and contents of Clause 53 by submitting “25%” for “15%” in each instance.

PS9.4 For the purposes of this Contract, the following Particular Specifications are included:

- CSP: Spall repair of concrete.
RWS: Remedial waterproofing sealant.
CCM: Coating of concrete surfaces.

PS10 DRAWINGS

The following drawings are issued with this document and are deemed to form part of this documentation.

Detailed drawing:

N/A

PS11 SITE INSPECTION

Secunda,Sasol Synfuels

A compulsory site inspection will take place at



GENERAL: REMEDIAL WORK

VARIATIONS OF STANDARDISED SPECIFICATIONS

PSA1 MATERIAL

PSA1.1 Quality

All materials are to bear the mark of the South African Bureau of Standards where a standard is applicable to the particular material.

Materials shall be the best of their kind. Only new and undamaged materials shall be used in the Works. Materials to be permanently installed into the Works shall not be used for any temporary purposes on site.

Where reference is made in these Schedules of Quantities to proprietary types or trade names, the products or materials, etc., are, unless otherwise described, to be exactly those described.

Should the Tenderer wish to price for, or to supply, a similar article not of the specified type and/or method of manufacture, application must be made to the Engineer not less than seven days prior to the closing date of tenders, to enable the Engineer, to indicate his approval.

After the signing of the Contract the prior approval of the Engineer must be obtained for any substitution and where materials, etc. are used other than those specified, adjustments in rates will be made and variation orders will be issued to substantiate these adjustments.

In all cases the word "approved" shall mean "approved by the Engineer".

In all cases where the Contractor takes delivery of, handles, stores, applies and/or fixes any proprietary product, he shall do so in strict accordance with the manufacturers authorized written recommendations and/or instructions.



In the event of a discrepancy between the Project Specification and the manufacturer's instructions, it shall be brought to the attention of the Engineer.

PSA1.2 Structures and Natural Materials on Site

Old materials

Unless otherwise stated the whole of the materials arising from the alterations/remedial work, shall become the property of the Contractor and shall be carted away from site immediately it becomes available.

The Employer reserves the right to retain any of the materials at the price shown in the list of credit for materials or if no price is shown in that list at no charge to the Employer.

Material set aside for re-use

Old materials specified as set aside for re-use, shall be carefully removed, cleaned, repaired as necessary, classified, stacked, stored and properly protected from damage until required for re-use.

Handing over of materials

Where certain materials, equipment, articles etc are described to be handed over to the Employer, the Contractor shall obtain from the Employer an official receipt listing the materials handed over and the date of handover. Should the Contractor fail to submit such a receipt when requested to do so, it shall be deemed that the materials, equipment, articles etc., are still in his possession and he will be held liable for the full replacement value thereof, the value of which will be deducted from any moneys due to the Contract.

PSA2 PLANT

PSA2.1 Contractor's Offices, Stores and Services

The Accommodation of employees on the site will not be permitted and the Contractor shall make arrangements to accommodate his employees elsewhere.



PSA2.2 Scaffolding

Not Applicable.

PSA3 PROTECTION OF STRUCTURES

In taking off and removing the existing epoxy coating etc the utmost care must be observed to avoid any structural or other damage to the remaining portions of the work.

Such damage that is made to other elements shall be made good at the Contractor's expense.

The method statement for the removal and replacement of the defective concrete shall be submitted to the Engineer for approval. The repairs shall be carried out in small sections as not to compromise the structural integrity of the structure.

PSA4 TENDERER TO DEMONSTRATE ABILITY

The successful Tenderer must be able to demonstrate, to the Engineer's satisfaction, that he is equipped to carry out the remedial works tendered for. The Engineer shall be the sole judge as to the Tenderer's ability or otherwise. The successful Tenderer shall also be required to demonstrate that they have at least five (5) years' experience in the relevant field of remedial works.

PSA5 SITE VISIT

It is an essential condition of this contract that the Contractor visit the site to determine the exact working conditions, access, nature of the demolitions, remedial works and the intended scope of work. The submission of a Tender shall be deemed to be evidence of his visiting site notwithstanding anything to the contrary. No claim will be accepted for work not envisaged at tender stage which was ordinarily visible at such a site visit or was pointed out to the Contractor at the Site inspection.



PSA6 EXTENSION OF TIME DUE TO RAIN

The Contractor is advised that only the official records of the nearest meteorological station will be considered for the application of extension of time due to rain. Should there not be a meteorological station within the vicinity and the Contractor considers that he will be prejudiced as a result, he is to install at contract commencement a rain gauge, which is to be monitored and recorded daily.

PSA7 TESTING

PSA7.1 Principles

These clauses are amended to provide that the Contractor shall implement a quality control and assurance programme in accordance with the "Quality Assurance program" forming part of these tender documents.

The Contractor shall provide all necessary personnel and facilities to implement the programme including the provision of a qualified and competent quality control technician whose time will be solely devoted to quality control and assurance matters for the full duration of the contract.

Tenderers are to allow for all costs associated with implementing the QA/QC programme under the heading of "Quality Assurance" in the Preliminary and General section of the schedules of quantities.

PSA8 PROTECTION OF SERVICES

The Contractor shall protect all drainage pipes, manholes, water supply, electrical cabling as shown on the drawings or as may be indicated on site.

PSA9 The Contractor shall adhere at all times to Sasol Synfuels's Safety Rules and Regulations.



SPECIFICATION CSP: SPALL REPAIR OF CONCRETE MEMBERS

CONTENTS

<u>CLAUSE</u>	<u>DESCRIPTION</u>
CSP1	SCOPE
CSP2	SUPPORTING SPECIFICATIONS
CSP3	CLEANING OF OVERALL CONCRETE SURFACES
CSP4	SURVEY AND TESTING OF CONCRETE STRUCTURES
CSP5	REMOVAL AND CUTTING OUT CONTAMINATED AND DEFECTIVE CONCRETE
CSP6	CLEANING OF REINFORCEMENT AND/OR EMBEDDED METAL
CSP7	REPAIR MATERIAL AND COATINGS
CSP8	FORMWORK
CSP9	PROTECTION AND CURING OF REPAIR MATERIAL
CSP10	REINFORCING STEEL SURFACE PREPARATION
CSP11	HAND PLACED CEMENTITIOUS REPAIR MORTAR
CSP12	CEMENTITIOUS GROUT
CSP13	CEMENTITIOUS COATING
CSP14	MEASUREMENT AND PAYMENT



SPALL REPAIR OF CONCRETE MEMBERS

CSP1 SCOPE

This specification covers the requirements for the repair of spalling concrete.

CSP2 SUPPORTING SPECIFICATIONS

The following specifications shall, inter alia, form part of this specification

- a) The project specification,
- b) SANS 1200 A: General,
- c) SANS 1200 G: Concrete (structural),
- d) Variation to SANS 1200G:

The reinforced concrete repairs shall be carried out in compliance with the requirements of:

- a) the local bye-laws.
- b) this Specification.
- c) relevant SANS specification; and to
- d) the satisfaction of the Engineer or his representative

CSP3 CLEANING OF OVERALL CONCRETE SURFACES

3.1 General

All exposed external concrete shall be cleaned and prepared to achieve a contaminant free open textured concrete surface to the approval of the Engineer. This must fully expose all defects including cracks, honeycombing, blowholes, day work joints, etc. and remove all contaminants including moss, lichen, algae, oil, grease, efflorescence, skims, renders, old repair material, coatings, etc.

3.2 Contractor to provide method statement.

The Contractor shall include in his method statement his intended method of cleaning and preparation. However, such method statements will not limit in any way the Contractor's contractual obligations to meet the requirements of the proceeding and following sub-clauses and this Specification generally, to the entire satisfaction of the Engineer or his representatives.

The Contractor shall satisfy the Engineer prior to commencing with the works that his stated method of surface preparation is practical, economical and acceptable to the Client.

3.3 **Cleaning of adjoining elements**

All adjoining elements, equipment, fittings etc. shall be thoroughly cleaned of all cleaning materials and residue which remains resting upon or lodged in same on completion of the aforementioned concrete operations.

3.4 **Acceptable methods of cleaning**

The method of cleaning is the Contractor's responsibility and depends on the existing surface.

If the surface is uncontaminated then the surface may be cleaned by means of a high-pressure wash at a minimum pressure of 350 bars at 16 litres/minute.

Where the surface is contaminated or has to have all laitance removed then the surface should be abrasive blast cleaned. The existing coating will have to be removed by mechanical means.

All areas which are to be grit blasted are to be agreed in writing by the Engineer prior to grit blasting. Such approval would normally be indicated by an initial on the QC sheet supplied by the contractor, which exactly identifies the location of and dimensions of the area involved.

3.5 **Abrasive Blast cleaning of Concrete**

3.5.1 **Choice of abrasive and degree of blast cleaning required**

Blast cleaning of concrete is carried out generally to remove surface laitance or existing coatings from the concrete and to provide the ability of subsequent applications to penetrate. In certain circumstances, it is necessary to expose the main aggregate (stone) of the concrete to improve the structural bonding.

This is normally necessary when improvement in the shear strength of the bond is required. For surface coatings a light blast cleaning (brush off) is all that is required to achieve the correct bond. A medium sandpaper finish is to be achieved.

The degree of blast cleaning is achieved by using different size aggregates, (where coarse aggregates for deep etching and fine aggregates for brush off blasting) and by the duration of the blast cleaning.

CSP4 SURVEY AND TESTING OF THE CONCRETE STRUCTURES

4.1 **Visual inspection and hammer test**

These tests are to be undertaken by the contractor as a matter of course.

External concrete surfaces shall be visually inspected, and hammer tested to locate and expose defective areas that are not readily visible. All defects including records of contamination or other matter related to the adequate repair of the element shall be noted on record sheets and/or plan/elevation drawings.

CSP5 REMOVAL AND CUTTING OUT CONTAMINATED AND DEFECTIVE CONCRETE

The removal of concrete shall be done in accordance with this Specification.

5.1 Area to be clean

Prior to the commencement of placing repair materials or coatings in any section of the structure, all framework and reinforcement shall be fully fixed and clean over the entire area of the proposed repair. Parent concrete shall be clean and free of dust and other deleterious matter.

5.2 Mechanical demolitions

Where indicated in the Specifications or by the Engineer as determined on site, defective, contaminated concrete or old repairs shall be broken out by mechanical means to sound alkaline concrete and tested with phenolphthalein solution where necessary to ensure that all non-alkaline concrete has been removed.

The use of heavy power tools which could lead to fracturing of surrounding concrete or reinforcement damage is not permitted. All breaking out shall be carried out using sharp tools in order to avoid unnecessary damage to the remaining concrete.

5.3 Surface cracks

All cracks in the surface of the concrete are to be identified and cut out (chased) as directed by the Engineer to a neat line.

- i) Expose corroding reinforcement, and/or
- ii) Ensure that reinforcement is not corroding, and/or
- iii) Remove loose concrete debris and other deleterious materials.

The extent to which concrete is cut for the purpose of repair must be approved by the Engineer prior to commencing with repair of these broken out areas. The contractor shall ensure that adequate supervision of all breaking out operations is provided such that over-break is limited to +10mm.

5.4 **Feathered edges**

Feathered edges to cut out areas are not permissible and a minimum rebate at right angles to the surface of 10mm is required to be formed to receive the repair mortar.

5.5 **Contractor to maintain structure stability**

The contractor shall not commence breaking out any concrete, which might endanger the stability of the structure or element and is to bring such areas to the attention of the Engineer for his written decision.

The Contractor shall exercise care in breaking out the defective concrete so that adjacent sound structural or aesthetic elements are not damaged in the process.

CSP6 CLEANING OF REINFORCEMENT AND/OR EMBEDDED METAL

6.1 **Removal of reinforcing to satisfaction of Engineer**

Corroded reinforcing is to be removed only on the written instruction of the Engineer or his representatives.

6.2 **Bending of reinforcement**

No reinforcement shall be bent or cut without the consent of the Engineer. All corroded reinforcement, ferrules, etc. shall be fully exposed along their corroding length and for a distance of approximately **50mm beyond such corrosion**. (It is not necessary to cut behind non-corroding bars, ferrules, etc. embedded in sound uncontaminated alkaline concrete).

6.3 **Breakout of concrete behind reinforcement**

Where it is necessary to break out concrete from behind reinforcement, ferrules, etc. the breakout shall be at least 20 mm behind the embedded metal unless alternatively instructed by the Engineer.

6.4 **Cleaning of reinforcement**

All corroding reinforcement, ferrules, etc. shall be thoroughly cleaned to remove all corrosion and expose clean metal. A high standard of preparation is required similar to that used in the preparation of steel for painting. (Swedish Standard SA2½) or ST3.

On areas where it has become necessary to break out concrete behind reinforcing bars, ferrules, etc. the back of such bars, ferrules, etc. shall be cleaned to the same standard.

In locations where the corrosion is severe and more than 10% of the reinforcement area has been lost, the Engineer is to be immediately informed before proceeding further with the repair.

6.5 Drying of reinforcement

After surface preparation of the reinforcing steel but before applying the priming coat, the reinforcement, ferrules, etc. shall be dried by compressed air which shall also remove dust and other loose material.

CSP7 REPAIR MATERIAL AND COATINGS

7.1 Material to be that specified

All repair materials and coatings used in the works shall be those as specified and precisely as detailed in this Specification and in the manufacturer's technical data sheets which form an integral part of this Specification.

7.2 Water requirement

Water used shall be clean potable water.

CSP8 FORMWORK

8.1 Contractor responsible for design and position of formwork

The Contractor shall be responsible for the design and fixing in position of all temporary formwork that may be necessary and such formwork shall be so constructed that it remains true to line and level under the loads imposed by the repair materials during all stages of construction. The Contractor shall ensure that there is no leakage of grout or fine material from wet repair materials.

8.2 Formwork to be coated

The Contractor shall ensure that all formwork is coated and/or adequately treated such that it does not absorb water from the repair mortar.

8.3 Repair of material damaged by formwork removal etc.

The Contractor shall remove and reconstruct or otherwise rectify to the satisfaction of the Engineer, any repair material damaged by premature or incorrect removal of formwork and/or propping thereto.

In locations where formwork is fixed or maintained in position by piercing, fixing on to or through existing building fabric this shall be repaired by the contractor at his own expense in accordance with this specification and to the satisfaction of the Engineer.

Formwork supports which are permanently embedded in the repair material shall not be permitted, unless approved in writing by the Engineer.

CSP9 PROTECTION AND CURING OF REPAIR MATERIAL

9.1 General

During periods of hot weather and under conditions of drying winds, repair mortar and coatings shall be placed as quickly as practicable, and the Contractor shall take particular care to minimise the effects of such conditions so as to prevent drying to minimise shrinkage.

9.2 Contractor to specify means of protection.

The contractor is to specify the means of protection he intends to use prior to commencement of the works and receive written approval thereof from the Engineer.

9.3 Exposed faces to be protected from temperature changes.

All exposed faces of placed repair mortar and coatings shall be protected against rapid temperature changes and from drying out for a period of 4 days after the repair mortar or coating has taken its initial set.

9.4 Method of Curing

The method of curing shall prevent loss of moisture from the repair mortar or coating. The fixing by appropriate means of polythene is one approved method.

Spray curing techniques employing curing compounds are not permitted. All necessary precautions shall be taken to ensure that protective sheeting, etc. that may be used to comply with this clause does not impair the final surface of the repair or protective coating so as to affect the finished performance or appearance.

CSP10 REINFORCING STEEL SURFACE PREPARATION

10.1 SA2½ or ST3 is the minimum acceptable standard for preparation of the steel prior to painting.

10.2 Reinforcement Protective Coating

Immediately after cleaning (within 2 hours) and following air cleaning as described above, the reinforcing bars shall be given 2 coats of the reinforcement protective coating -the second coat being applied just after the first coat has set. Where part of the reinforcing bar, ferrules, etc. remain embedded in sound alkaline concrete; the reinforcement protective coating is to overlap on to the concrete by approximately 10mm. The Contractor shall exercise due care in ensuring that all exposed reinforcement, is fully coated with the reinforcement protective coating over their whole exposed perimeter, particularly in those positions where concrete has been removed from behind the reinforcement.

10.3 Bonding Primer Coat

The bond coat shall be applied to the pre-dampened surface (saturated, surface dry) of the concrete repair area. The bond coat shall be applied immediately prior to application of the repair mortar whether applied as the priming bond coat or between successive layers of repair mortar.

The bond coat shall not be allowed to dry unless specified so in the manufacturer's instructions, prior to application of the repair mortar. Any bonding agent not complying with these instructions shall be fully re-coated at the Contractor's own cost prior to continued application of the repair mortar.

CSP11 HAND PLACED CEMENTITIOUS REPAIR MORTAR

11.1 General

Apply immediately to the bond coat in the repair areas (wet on wet) a cementitious repair mortar in layers not exceeding 40 mm in depth (minimum depth 10mm) unless the manufacturer's data sheet states otherwise. Allow for initial set between successive layers (3-8 hours dependent upon climatic conditions) and pre-dampen if required. On all repair mortars if time between layer applications is in excess of 12 hours, then another layer of the bonding coat is to be applied. The Contractor's costs for carrying out such operations shall be included in his unit rate for repairs.

11.2 Compaction in layers

The repair mortar shall be thoroughly compacted in layers into the repair area or into shuttering in positions where an arris, rebate, raised rib or similar is required

and brought up to reform the original profile. In placing the repair mortar care shall be taken to ensure full compaction and absence of voids.

CSP12 CEMENTITIOUS GROUT

12.1 Large areas of repair

Where large areas of broken out concrete are to be repaired, application by means of concrete grout techniques may be used in preference to repair patching by hand. A shrinkage compensating free flowing high strength cement based concrete with a maximum aggregate size of 13mm is to be used for large repair volumes.

12.2 Bond coat

All large areas to be grouted shall receive a modified bonding coat as previously specified when the finishing to the shuttering and whole grouting operation can be completed within a single shift of 8 hours. Where this is not feasible the concrete surface shall be thoroughly dampened (saturated, surface dry) prior to the placement of the grout.

12.3 Placement of repair grout

The grout shall completely fill the void and the contractor shall ensure that air entrapment cannot take place. An adequate head is to be provided to the grout pour to ensure that these conditions are met. The grout shall be agitated to ensure compaction. No mechanical vibrators are to be used. Should the grout not completely fill the void the Engineer may instruct that the repair be broken out and be regROUTed.

CSP13 SKIM COAT

Seal all blow holes and defects in the concrete substrate with approved skimming mortars.

SP14 MEASUREMENT AND PAYMENT

The pay items in this clause shall include full compensation for all work associated with the repair of concrete structures which are not already covered by the measurement and pay items of the Standard Specification or the Project Specification e.g., all procurement, transport, additional access and temporary works, plant and equipment required to undertake the work specified.

The quantities indicated in the Schedule of Quantities are based on inspections performed as part of the preliminary and detail design phases. The actual work may result in significant variations as the work is executed which shall be considered in terms of the Special Conditions of Contract.

Item	Unit
14.1	Cutting back concrete to a new surface to (m^3) remove contaminated or spalled concrete as per CSP5.

The unit of measurement is the cubic metre of concrete cut back, measured in its original position on a structural member.

The tendered rate shall include full compensation for all labour, materials, equipment, screening and protective measures, plant etc that is required to cut back the concrete and reinforcement to the profile shown and to load, transport and dump the material at the nearest approved dumping area.

Item	Unit
14.2 (m^3)	Cutting back concrete to expose reinforcement to 20 mm beyond reinforcing as per CSP5 and CSP6. The unit of measurement is the cubic metre of concrete cut back, measured in its original position on a structural member.

The tendered rate shall include full compensation for all labour, materials, equipment, screening and protective measures, plant etc that is required to cut back the concrete and reinforcement to the profile shown and to load, transport and dump the material at the nearest approved dumping area.

Item	Unit
14.3	Concrete contact surface preparation to achieve a contaminant free open textured concrete. surface by means of high-pressure wash at a minimum pressure of 350 bars.

The unit of measurement is the square metre contact surface that is prepared for repair.

The tendered rate shall include full compensation of all labour, materials, equipment, plant, etc. that is required to adequately prepare the concrete surface for remedial work.

It shall also include for the cleaning and treating of embedded and exposed reinforcement to accept a primer coat.

Item	Unit
14.4	Extra over for 13.3 Square metre (m^2) including shot for shot blasting as per CSP3.5.
Item	Unit
14.5	Cleaning reinforcement to SA2½ or ST3 standard and corrosion protection coating to reinforcement as listed in approved list of products.
	The unit of measurement is the square metre surface area cleaned to SA2½ or ST3 and coated determined from the nominal bar size perimeter and length of bar.
	The tendered rate shall include full compensation for all labour, materials, plant, equipment, safety precautions, wastage etc. required for the supply, preparation and application of the coating to the required thickness.
Item	Unit
14.6	Bonding layer as per Specification CSP11.3
	The unit of measurement is the square metre surface area bonding layer applied.
	The tendered rate shall include full compensation for all labour, materials, equipment, etc. that is required for the supply, preparation and application of the bonding layer to the prepared concrete contact surface.
Item	Unit
14.7	Proprietary cementitious repair compound Hand placed mortar as per Specification CSP11.
	The unit of measurement is the cubic metre of proprietary repair compound used in the structural repair measured in situ.
	cubic metre (m^3)

The tendered rate shall include full compensation for all labour, materials, plant and equipment required for the supply and delivery, storage, mixing and placement of the proprietary repair compound, and finishing the surfaces after removing all projections resulting from access openings for the placement of the repair compound.

No payment shall be made for material not prepared and placed according to the Manufacturer's specification nor for any excess mixed material or wastage.

New reinforcement shall be measured separately.

Item	Unit	
14.8	Proprietary cementitious grout as per Specification CSP12. (m ³)	cubic metre
	The unit of measurement is the cubic metre of proprietary repair compound used in the structural repair measured in situ.	
	The tendered rate shall include full compensation for all labour, materials, plant and equipment required for the supply and delivery, storage, mixing and placement of the proprietary repair compound, and finishing the surfaces after removing all projections resulting from access openings for the placement of the repair compound.	
	No payment shall be made for material not prepared and placed according to the Manufacturer's specification or for any excess mixed material or wastage.	
	New reinforcement shall be measured separately.	
Item	Unit	
14.9	Formwork for cementitious grout as per Specification CSP8.	Square metre (m ²)
	The unit of measurement is the square metre surface of formwork required for the grouting process.	
	The unit of measurement shall include full compensation for material, labour and plant to achieve a concrete surface equivalent or better than the surrounding concrete surface.	
Item	Unit	
14.10	Curing of repair surfaces by means of	Square metre (m ²)

Self-curing, cover with plastic sheeting
or wet hessian etc.

The unit of measurement is the square metre of concrete repair surface treated or coated by the method of curing indicated and accepted by the Engineer.

The unit of measurement shall include full compensation for all labour, materials, plant, equipment and safety measures required to cure the repair work to the satisfaction of the Engineer.

Item	Unit	
14.11	Coating of repaired concrete	Square metre (m ²)

The unit of measurement is the square metre of concrete coated.

The unit of measurement shall include full compensation for material, labour and plant to achieve a concrete surface equivalent or better than the surrounding concrete surface.

SCHEDULE OF APPROVED MATERIALS FOR CONCRETE REPAIR

MATERIALS	PRODUCT	SUPPLIER
Anti corrosive steel rebar coating	Sika Mono Top 610	Sika
	ProStruct 688	ProStruct
	Mapefar, Maperfer 1K	MAPEI
Bonding Primers	Sika Mono Top 610	Sika
	Not necessary	ProStruct
	Eporip	MAPEI
Patch Repair Mortars	Sika Mono Top 615HB	Sika
	Prostruct 528VO MCI	ProStruct
	Mapegrout Rapide, Mapeygrout T60	MAPEI
Skimming Mortars	Sika Mono Top 620	Sika
	ProStruct 526	ProStruct
	Planitop 200, Planitop 540	MAPEI
Non-shrink Grout	ProStruct 531M	ProStruct
	Sika grout 212, Sikacrete 214	Sika
	Mapegrout Hi-flow, Mapefill Mapegrout SV, Mapegrout SVT	MAPEI



SPECIFICATION: CCM COATING OF CONCRETE MEMBERS**CONTENTS**

<u>CLAUSE</u>	<u>DESCRIPTION</u>
CCM1	SCOPE
CCM2	SUPPORTING SPECIFICATIONS
CCM3	CLEANING OF OVERALL CONCRETE SURFACES
CCM4	SKIMMING MORTAR
CCM5	PROTECTIVE COATING
CCM6	MAINTENANCE COAT TO POLYUREA COATING



SPECIFICATION: CCM COATING OF CONCRETE MEMBERS

CCM1 SCOPE

This specification covers the requirements for the coating of concrete with a spray on polyurea system as well as maintenance of existing coated surfaces.

CCM2 SUPPORTING SPECIFICATIONS

The following specifications shall, inter alia, form part of this specification

- e) The project specification,
- f) SANS 1200 A: General,
- g) SANS 1200 G: Concrete (structural),
- h) Variation to SANS 1200G:

The reinforced concrete repairs shall be carried out in compliance with the requirements of:

- a) the local byelaws.
- b) this Specification.
- c) relevant SANS specification; and to
- d) the satisfaction of the Engineer or his representative

CCM3 CLEANING OF OVERALL CONCRETE SURFACES

3.1 General

All exposed concrete surfaces shall be cleaned and prepared to achieve a contaminant free open textured concrete surface to the approval of the Engineer. This must fully expose all defects including cracks, honeycombing, blowholes, day work joints etc. and remove all contaminants including oil, dust, efflorescence, skims, renders, old repair material, etc. The concrete surface should be acid etched. Thereafter the area shall be cleaned with high pressure washing until all contaminants are removed.

3.2 Contractor to provide method statement.

The Contractor shall include in his method statement his intended method of cleaning and preparation. However, such method statements will not limit in any way the Contractor's contractual obligations to meet the requirements of the proceeding and following sub-clauses and this Specification generally, to the entire satisfaction of the Engineer or his representatives.

The Contractor shall satisfy the Engineer prior to commencing with the works that his stated method of surface preparation is practical, economical and acceptable to the Client.

3.3 Cleaning of adjoining elements

All adjoining elements, equipment, fittings etc. shall be thoroughly cleaned of all cleaning materials and residue which remains resting upon or lodged in same on completion of the aforementioned concrete operations.

3.4 Acceptable methods of cleaning

If the surface is uncontaminated then the surface may be cleaned by means of a high-pressure wash at a minimum pressure of 350 bars at a delivery of 16 litres/minute.

Where the surface is contaminated or has to have all laitance removed then the surface should be abrasive blast cleaned.

All areas which are to be grit blasted are to be agreed in writing by the Engineer prior to grit blasting. Such approval would normally be indicated by an initial on the QC sheet supplied by the Contractor, which exactly identifies the location of and dimensions of the area involved.

3.5 Abrasive blast cleaning of concrete

3.5.1 Choice of abrasive and degree of blast cleaning required

Blast cleaning of concrete is carried out generally to remove surface laitance from the concrete and to provide the ability of subsequent applications to penetrate. In certain circumstances, it is necessary to expose the main aggregate (stone) of the concrete to improve the structural bonding.

This is normally necessary when improvement in the shear strength of the bond is required. For surface coatings a light blast cleaning (brush off) is all that is required to achieve the correct bond. A medium sandpaper finish is to be achieved.

The degree of blast cleaning is achieved by using different size aggregates, (coarse aggregates for deep etching and fine aggregates for brush off blasting) and by the duration of the blast cleaning.



CCM4 SKIMMING MORTAR

Where instructed by the Engineer, apply Sikagard 720 Epocem to smooth concrete surfaces to close all blow holes and minor defects.

CCM5 PROTECTIVE COATING (BARE CONCRETE)

Surface as indicated by the Engineer in writing are to be coated with a protective polyurea as follows:

- A light sweep blast must be undertaken to open the pores of the concrete surface, Sikalastic 8800 must be applied, by means of an airless sprayer as per Product Data Sheet. The application rate as per Sika data sheet.
- Apply Primer Sika Floor 161 at the rate as per Sika data sheet.
- When the primer is tack free, the Sikalastic 8800 will be applied at no less than 1,5mm thick.
- Product must be allowed to cure for at least 24 hours before being put into service.

The contractor should price the above polyurea coating, but he could submit alternative material similar to the above with the necessary technical backup.

CCM6 MAINTENANCE COAT TO POLYUREA COATING

- Remove delaminating or defective Polyurea by cutting it back this will include any blisters/bubbles.
- HP wash the surface to remove any oil and salt-based contamination. Any excess water must be swept to the sumps and pumped with submersible pumps.
- Using duct tape and a strip of 300mm plastic, carefully mask the termination area in a neat square fashion.
- Abrade the existing Polyurea in order to break the gloss. The masked edges of the Polyurea can be feathered as not to leave a protruding edge.
- Thoroughly wipe the application surface with MEK and a clean rag, in order to remove any dust and other debris. Within five minutes of wiping, apply a thin layer of Sikalastic IC primer to the application surface and allow to cure for minimum of two hours at 20°C or until odour and tack free. The maximum overcoating time for Sikalastic IC primer will be six hours at 20°C.
- Within the allowable overcoating window, spray a layer of Sikalastic 8800 Polyurea over the application area at 1,5mm DFT, if any pinholes appear during the spraying process, they can immediately be closed off with a non-silicone-based epoxy i.e.

Sikadur 31CF and immediately thereafter resprayed with Sikalastic 8800. Maximum overcoating of Sikalastic 8800 onto itself is three hours at 20°C. Using duct tape and a strip of 300mm plastic, carefully mask the termination area in a neat square fashion.

- Care must be taken not to get any tape stuck underneath the lining. To avoid this, the tape line can be cut within 15 minutes of the Polyurea being sprayed, while the Polyurea is still soft.
- Unit 066 TK 115 where repairs are needed as directed by the Engineer the DFT will be 5mm to accommodate the high temperature.



SPECIFICATION RWS: REMEDIAL WATERPROOFING SEALANTS

CONTENTS

<u>CLAUSE</u>	<u>DESCRIPTION</u>
RWS1	SCOPE
RWS2	SUPPORTING SPECIFICATIONS
RWS3	GENERAL
RWS4	MATERIALS
RWS5	APPLICATION OF SEALANTS



SPECIFICATION RWS: REMEDIAL WATERPROOFING SEALANTS

RWS1 SCOPE

This specification covers the requirements for the remedial waterproofing sealants, sealing of junctions and joints.

RWS2 SUPPORTING SPECIFICATIONS

The following specifications shall, inter alia, form part of this specification:

- (a) SANS 1200.
- (b) The project specification
- (c) Manufacturer's data sheet of specific products specified in the specified approved product list and Schedule of Quantities.

RWS3 GENERAL

3.1 Generally

The work described herein generally relates to the remedial waterproofing sealants of the joints. The work includes, but is not limited to:

- (a) Sealing of junctions.
- (b) Sealing expansion joints in concrete.
- (c) Sealing of cracks.

3.2 Work to be carried out by Specialist.

An approved Specialist using artisans, shall carry out the work detailed in the Specification and staff skilled and experienced in the use of sealant and coating materials and additives, referred to hereunder.



RWS4 MATERIALS

4.1 Sealant

Shall comply with the requirements of SANS 1200 for polyurethane sealant.

4.2 Primers

Only primers approved by the Manufacturer of the sealant are to be used.

4.3 Single pack polyurethane sealant (Not for chemical use on internal of Tanks)

The following sealants are approved:

- Sikaflex 11FC+

4.4 Polysulphide Sealant

ProStruct 849 or similar.

4.5 Backing Cord

Sondor “Polycord” foam backing cord.

4.6 Flexible Bandage

Flexible TPE bandage from ProStruct or Combiflex from Sika.

4.7 Epoxy adhesives

ProStruct 617NS or Sikadur 31CF.

RWS5 APPLICATION OF SEALANTS

5.1 Junctions and joints

Remove all failed sealants from the joints and junctions. All junctions and joints to be sealed must be carefully inspected.

Any loose material, dust or foreign matter is to be removed to give the sealant a firm base to be bonded to. If the width of the junction exceeds 5mm a backing cord is to be installed prior to the application of the sealant.

The sealant is to be applied strictly in accordance with the manufacturer's instructions with particular reference to primers etc.

5.2 Expansion joints

5.2.1 Joint Sealant

A suitable rope and bond breaker such as Polycord having a dimension of approximately twice the size of the joint shall be carefully inserted into the joints so that a snug fit is achieved. The Polycord or other suitable backing shall be clear of the top surface of the concrete by 8 mm to 10 mm.

It is essential that the backing rope is squeezed between the two surfaces to ensure that the expansion joint sealant does not exceed a maximum depth of 10 mm.

The two prepared and cleaned vertical surfaces on which the polyurethane sealant must be adhered shall be primed with the approved primer. A continuous bead of polyurethane sealant shall be applied into the joint over the Polycord. The thickness of the bead shall not exceed 10 mm. The application shall comply with the manufacturer's recommendations and data sheets.



PREAMBLE TO SCHEDULES OF QUANTITIES

1. GENERAL

The General Conditions of Contract, the Special Conditions of Contract, the Specifications (including the Project Specification) are to be read in conjunction with the Schedule of Quantities.

2. SCHEDULE OF QUANTITIES

The schedules comprise items covering the Contractor's profit and costs of general liabilities and of the construction of temporary and permanent works.

These Schedules are provisional and will be subject to re-measurement prior to payment.

These Schedules are not to be used for ordering materials. The Quantities reflected herein reflect the indicative value and extent of the Works. No liability whatsoever shall be accepted by the Engineer or the Client for materials incorrectly ordered.

3. INSERTION OF RATES

The Tenderer is at liberty to insert a rate of his own choosing for each item in the Schedules and his attention is drawn to the fact that the Contractor has the right, under various circumstances, to payment for additional works carried out and that the Engineer is obliged to base his assessment of the rates to be paid for such additional work on the rates inserted in the Schedule by the Contractor.

4. METHOD OF MEASUREMENT

Descriptions in the Schedules of Quantities are abbreviated, and the Schedule have been drawn up generally in accordance with the latest issue of the South African Bureau of Standards Standardized Specification for Civil Engineering Construction. The method of measurement is as hereinafter described notwithstanding any trade or customary usage. Should any of the terms of the Schedule conflict with any requirement for measurement or payment given in a specification, the requirement of the Schedule shall prevail.



5. **RATES AND PRICES**

The prices and rates to be inserted in the Schedules of Quantities are to be the full inclusive prices to the Employer for the work described under the several items. Such prices shall cover all costs and expenses that may be required in and for the construction of the work described, and shall cover the cost of all general risks, liabilities and obligations set forth or implied in the documents on which the tender is based.

A price or rate is to be entered against each item in the Schedule of Quantities, whether the quantities are stated or not. An item against which no price is entered will be considered to be covered by the other prices or rates in the Schedule.

Rates for demolition work shall be deemed to include for carting rubble off site to a commercial dump.

6. **UNBALANCED RATES OR PRICES**

A tender may be rejected if the unit rates or prices for some of the items in the Schedule of Quantities are, in the Engineer's opinion, unreasonable or out of proportion, and the Tenderer fails within a period of seven (7) days after having been notified by the Engineer to adjust the unit rates or prices of such items, to make such adjustments.

7. **RATES ONLY ITEMS**

The Tenderer shall fill in a rate opposite all items where the words "rate only" appear in the "Quantity" column. The intention is that although no work is foreseen under such an item and quantities are accordingly given in the "Quantity" column are indicative, the tendered rate shall apply in the event of work under this item being actually required. The Tenderer's attention is directed to provisions of Clause 6 of this preamble.

8. **ERRORS IN TENDERS**

The Engineer reserves the right to correct arithmetical or other errors in the extensions of rates and totals in the Tender. The Tenderer will be informed of the effect of any corrections on his Tender Sum prior to the acceptance of the Tenders. In no case will tendered rates be adjusted when correcting such errors.



9. **SCHEDULES TO BE IN INK**

The Tenderer must price each item in the Schedule of Quantities in ink. Computer generated facsimiles of the Schedules will not be accepted.

10. **CROSS REFERENCING**

Cross referencing of the “Pay Reference” clause in these Schedules is only made to Measurement and Payment Clauses in the Specification. The Tenderer is advised to study the complete specification carefully before pricing the Schedules. Failure to do so, or any errors or omissions in the cross referencing in these Schedules will not constitute a basis for any claim arising therefrom.

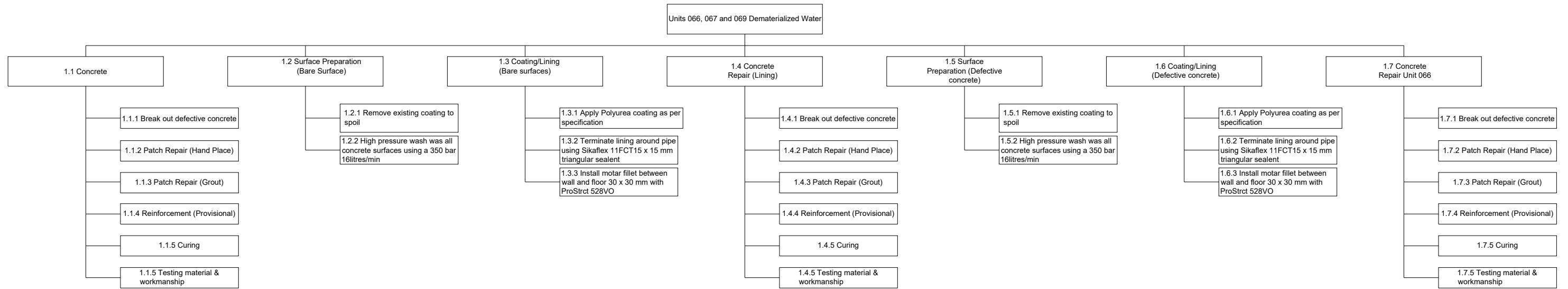
11. **PRELIMINARY AND GENERAL PRICING**

Where no rates are entered against the disestablishment item in the fixed section of these Schedules of Quantities or the rate entered against this item is, in the Engineer’s opinion, too low, the cost of disestablishment shall be deemed to be 20% of the site establishment costs and the rates shall be altered accordingly.

12. **VALUE ADDED TAX**

Value Added Tax (VAT) shall be specifically excluded from the rates and shall be added to the Contract Sum on the final summary page.





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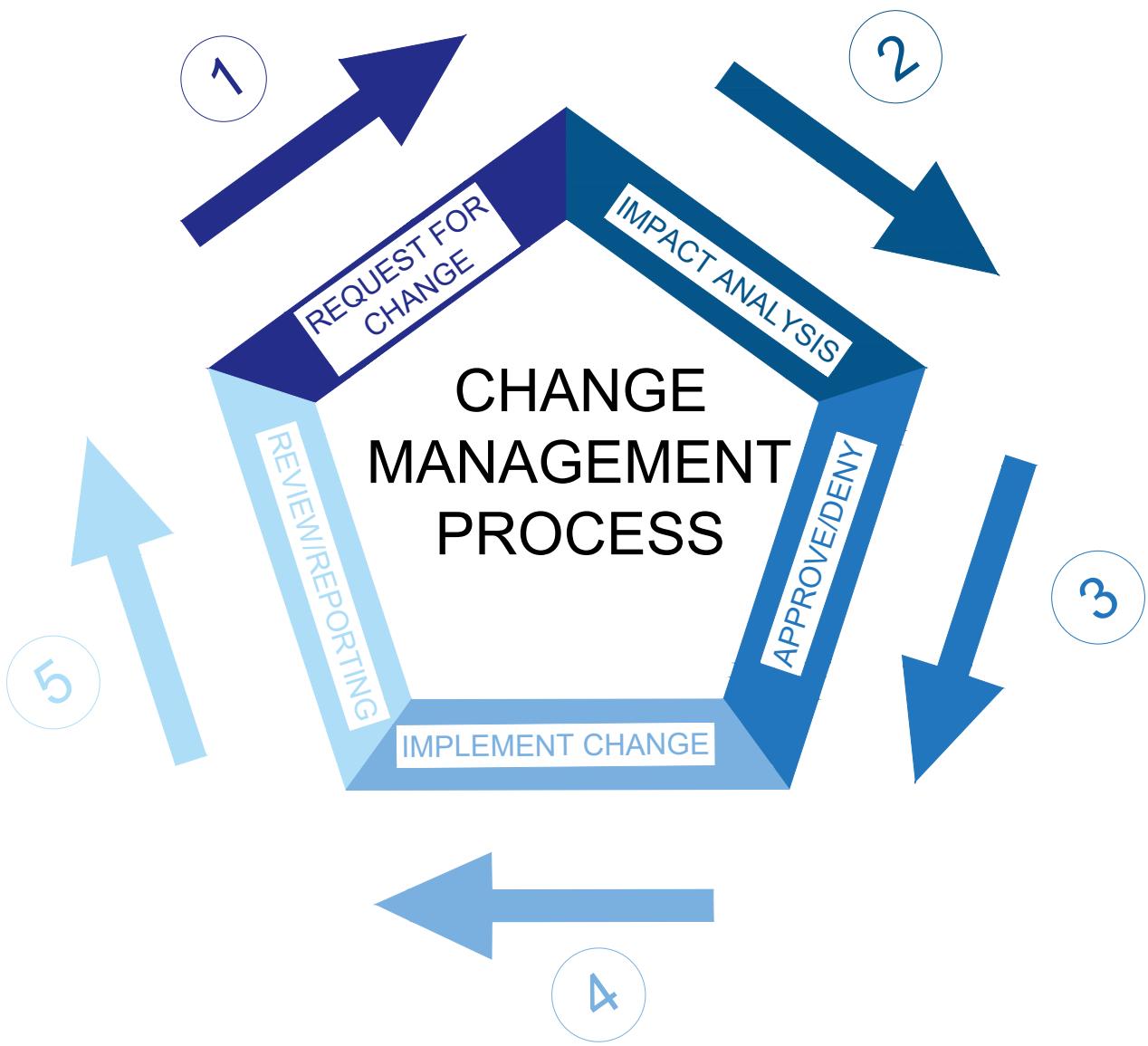
Units 066, 067 and 069 Demineralized Water

Project Budget

Budget Summary		
Budget	Actual (Timesheets)	Under (Over)
R 463 327,00	R 430 803,15	R 32 523,85

		Resource			Fixed Cost				Budget	Actual (Timesheets)	Under (Over)
	Tasks	Personnel	Hrs	Rate	Airtime	Travel	Other				
					Rate	km's					
1	Front End-Loading										
1,1	Meetings (PDA, Kick off & Progress)	Meshack Nkabinde	50	R 420,60		R 4,00	304		R 21 500,00	R 22 246,00	-R 746,00
1,2	Admin	Amanda Gobbler	60	R 380,45	R 200,00				R 23 027,00	R 15 000,00	R 8 027,00
2	Site Activities										
2,1	Site measures & Verification	Meshack Nkabinde	20	R 420,60		R 4,00	96		R 9 000,00	R 8 796,00	R 204,00
		Russell Dlamini	10	R 560,75		R 4,00	64		R 7 800,00	R 5 863,50	R 1 936,50
2,2	Site walks	Meshack Nkabinde	8	R 420,60		R 4,00	48		R 3 500,00	R 3 556,80	-R 56,80
		Jan Coetze	8	R 980,73		R 4,00	48		R 8 500,00	R 8 037,84	R 462,16
2,3	Inspection call outs	Meshack Nkabinde	28,5	R 420,60	R 400,00	R 4,00	342		R 13 000,00	R 13 755,10	-R 755,10
		Russell Dlamini	28,5	R 560,75	R 400,00	R 4,00	342		R 18 500,00	R 17 749,38	R 750,63
		Halalisani Zulu	28,5	R 560,75	R 400,00	R 4,00	342		R 18 500,00	R 17 749,38	R 750,63
3	Design and Analysis										
3,1	Analysis & design	Jan Coetze	50	R 980,73					R 50 000,00	R 49 036,50	R 963,50
3,1	Drawings		80	R 980,73					R 80 000,00	R 78 458,40	R 1 541,60
3,2	Squad Check	Meshack Nkabinde	8	R 420,60					R 4 000,00	R 3 364,80	R 635,20
		Russell Dlamini	8	R 560,75					R 6 000,00	R 4 486,00	R 1 514,00
		Halalisani Zulu	8	R 560,75					R 6 000,00	R 4 486,00	R 1 514,00
3,3	As-Builts	Jan Coetze	50	R 980,73					R 55 000,00	R 49 036,50	R 5 963,50
3,4	Review & Approval	Wynand Louw	7	R 1 100,52					R 10 000,00	R 7 703,64	R 2 296,36
4	Project Pack										
4,1	Bill of Quantities	Jan Coetze	16	R 980,73					R 16 000,00	R 15 691,68	R 308,32
4,2	Project specification		12	R 980,73					R 12 000,00	R 11 768,76	R 231,24
4,3	Site Instruction & Redlines		6	R 980,73					R 5 000,00	R 5 884,38	-R 884,38
5	Project Management										
4,4	Project Management	Halalisani Zulu	150	R 560,75	R 900,00	R 4,00	480	R 1 200,00	R 96 000,00	R 88 132,50	R 7 867,50

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TASK 3

1. Risk assessment Document



A handwritten signature consisting of the letters "HZ" in a cursive, italicized font.

Date:	Assessed by:	Checked by:	Location:	Assessment ref no:	Review Date:
12/08/2023	Halalisani Zulu	Joseph Nkabinde	Secunda	RA2308SEC	12/08/2023
Risk assessment for activities associated with project related environment					

Activity	Hazard	Who/What might be harmed and how	Control Measures	Risk rating	Result
Possible risk include client requiring services and scope is not relayed/understood as required by client	Incorrect deliverables	The integrity of the project and timeline of the project	A standard scoping document must be at time in posetion of the attendee of the scoping session, singed by the attendee and the client, confirming the scope and deliverables	Low	A
Relaying the incorrect scope to Engineers			Commence with conceptual design and halt for client buy in before finalising		
Completing the design without client's approval with respect to the scope and budget	Unsafe working practices and no compliance to safety procedures	Task executers might not be informed of potential job/process hazards and might work in a way that will cause fatal injuries	Adhere to all safety file and permit requirements, a designated permit and task risk assessment receiver must be appointed to act as a supervisor and implement safe work practices	High	N
Misalignment with relevant stakeholders of the project requirements, safety, Budget and working/applicable project specifications	Compromised structural integrity of the works	The structures' safe use cannot be assured as per intended design use, as such, works maybe in catastrophic failure in the near future or immediately after works have been completed	Engineers to monitor progress by signing of on all control point on QCP and monitoring works	Medium	N
Contractor to procure and material and adopt methodologies and material that could be outside the parameters of the project specification and budget	No accountability of compromised work site	Project and company integrity	Set up weekly progress meetings	Low	A
No update with the progress and challenges/shortcomings encountered in the project	Compromised structural integrity of the works	The structures' safe use cannot be assured as per intended design use, as such, works maybe in catastrophic failure in the near future or immediately after works have been completed	Engineers to monitor progress by signing of on all control point on QCP and monitoring works	Medium	N
Unsupervised contractor workmanship			Engineers to Approve Contractor QC Pack before commencement of works, and sign off all material certificates		
Proceeding with works whilst the material used to execute the works does not comply to project specification				Medium	N

Action plan				
Ref. No	Further action required	Actioned by whom	Action by when	Done
	Appoint as safety rep.	Project/Safety manager	21-Aug-23	-
	Engineer to have periodic site visits and sign off on all activities	Project Engineer	Weekly	-





A handwritten signature in black ink, appearing to read "HZ".