



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

BRIEFING SESSION: ROODEFONTEIN DAM SAFETY REHABILITATION

Presented by:

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ROODEFONTEIN DAM PROJECT: PROJECT MANAGER

Chief Directorate: Strategic Asset Management

Sub-directorate: Dam Safety Surveillance

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Presentation layout

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PROJECT BACKGROUND

Roodefontein Dam forms part of the Breede-Gouritz Government Water Scheme which functions primarily as storage for irrigation, domestic and industrial use. The owner of the dam is Department of Water and Sanitation: Chief Directorate: Strategic Asset Management.

Chief Directorate: Strategic Asset Management is the custodian of all departmental dams. Their responsibility is to insure that the safety of dams is maintained. In doing so, the Chief directorate has two programme namely; Dam Safety Evaluation (DSE) and Dam Safety Rehabilitation Programme (DSRP) to fulfil its responsibility.

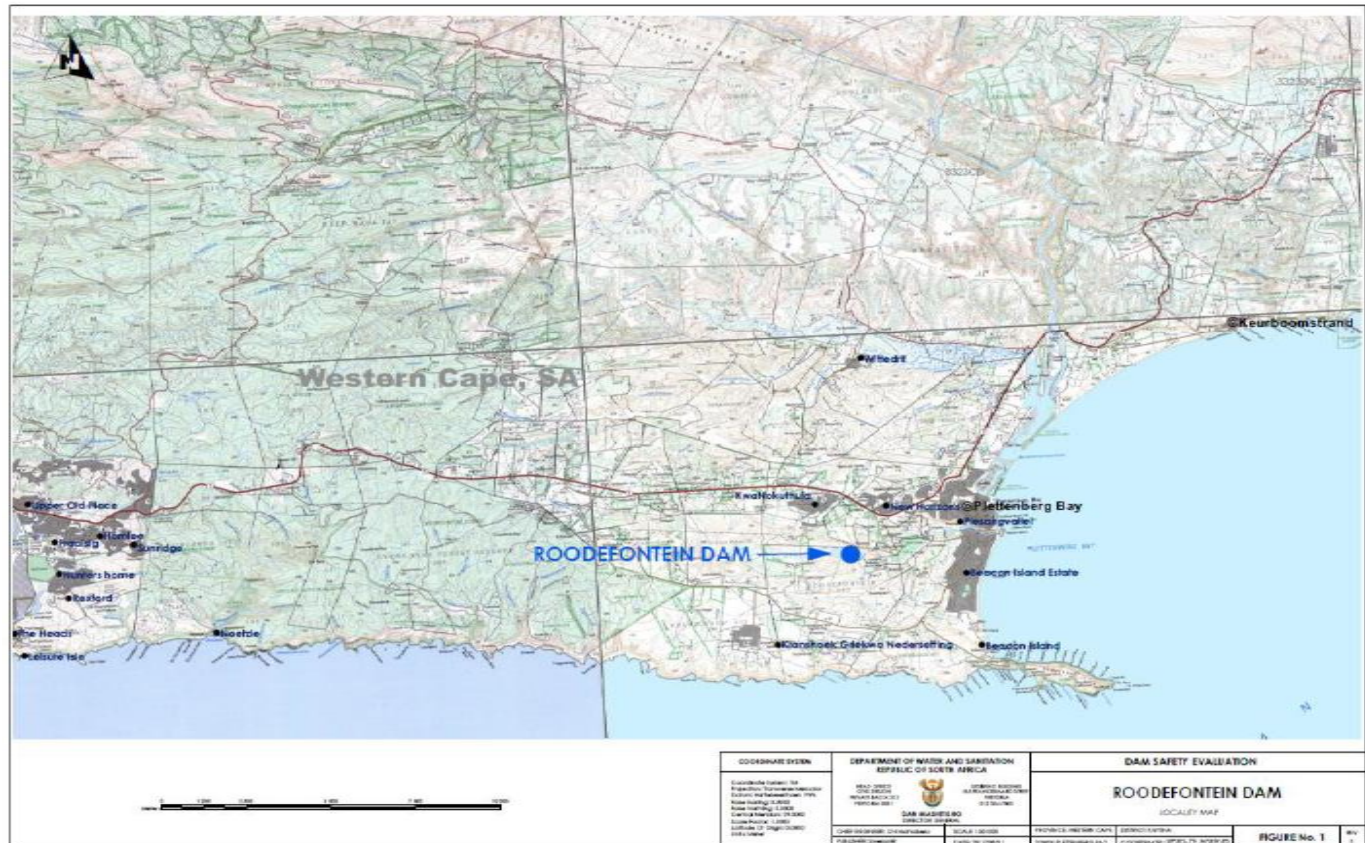
DSE programme includes conducting 5 yearly dam safety valuation on the dams owned by the department. DSRP is informed by the recommendation from the 5 yearly dam safety evaluation. DSRP implement the recommendations from DSE by rehabilitating dams to comply with the dam safety regulations.

Roodefontein Dam is one of the dams in which the dam safety evaluation was conducted and the several dam safety issues have been identified which need to be addressed, below is the list of issues that need to be addressed:

- Evaluate the geological stability of the left flank and provide remedial measures
- Evaluate the geological and geotechnical stability of the embankment to address existing horizontal crack and provide remedial measures
- Insufficient freeboard
- Remedial measures around the outlet house
- Remedial measures for mechanical and electrical components
- Investigate the effects of the sudden closure of the emergency valve
- Install a proper toe drain system to manage seepage on the downstream of the dam
- And other dam safety related issues

Locality

- Western Cape Province
- About 2 km away from Plettenberg Bay town



Roodefontein Dam Description

- **Dam type:** Zoned earthfill dam
- **Height :** 19.5 m
- **Classification:** Category 3 with high hazard potential
- **Spillway type:** Reinforced concrete ogee side channel (on the left flank)
- **Outlet works:**
- **RMF:** 530 m³/s
- **Storage Capacity:** 2.003 x 10⁶ m³

Scope of Work

The deliverables that the PSP is required to produce as part of this study, are as follows:

Stage 1: Inception

- Site meeting with DWS officials and stakeholders to confirm dam safety issues at the dam
- Inception Report

Stage 2: Preliminary design/feasibility studies

- Develop concepts in order to meet the objectives as stipulated on the project background.

Stage 3: Detailed design

- Analyze and prepare design report
- Prepare construction drawings, specifications and contract documentation for the rehabilitation works.

Stage 4: Tendering

- Assist with the compilation of tender documentation
- Assist during tender site briefing meeting
- Assist with responding to any queries from bidders prior the closing of the tender

Scope of Work Continues...

Stage 5: Construction

- Perform site supervision and monitoring up to the end of this appointment
- Review and recommend contractor's payment certificates for payment
- Ensure that OHS and Environmental audits are conducted by relevant persons

Stage 6: Commissioning

- Prepare as built drawings and handover to client with the necessary O&M and EPP manuals, completion reports.

Other service required to meet objectives

- Facilitate stakeholder meetings at various stages of the assignment and produce meeting minutes.
- Provide monthly progress/assessment reports
- Fulfill the duties of Employer's Agent
- Apply for license to alter a Category III dam
- Environmental screening
- Obtain Environmental Authorization
- Compile baseline risk assessment and OHS specification

Legislative Requirement

1. Roodefontein Dam is classified as Category III dam in terms of Dam Safety Regulation R139 of 24 February 2012. Therefore, PSP must have the following in their Design Team:
 - An Approved Professional Person (APP)
 - Professional Team
2. Provision for appointment of an Occupational Health & Safety Agent (OHS Agent), should the construction scope of work require a work permit in terms of Construction Regulations, 2014
3. Compliance with National Environmental Management Act, 1998. If required, PSP must provide:
 - Environmental Assessment Practitioner
 - Environmental Control Officer
4. Water Use License (WULA, if required)

Other Requirements

1. Make provision for any studies that may be required while implementing the project e.g Geotechnical investigations, Environmental impact assessment and lidar survey etc.
2. Submission of reports: 1 hard copy and CD with soft copies including calculations.

Available Documentations

The following documentations are available on request at Head Office

1. Design Reports, viz:

- Raising the FSL by 2 m by means of solid raising, 2002
- Evaluation of dam raising option: Addendum, 2002
- Evaluation of dam raising option, Revision 1, 2001
- Rehabilitation of the Spillway. Report No. 2214/4601, 1994
- Rehabilitation of the Spillway: Supplementary Report No. 2214A/4601, 1994

2. Construction Reports, viz:

- Construction Completion Report, 2006
- Raising the Spillway & Embankment of Roodefontein Dam, 2004
- Construction Completion Report. Report No. 2465/4601, 1996
- Construction Completion Report. Report No. 1628/4601, 1990

3. Geological/Geotechnical Reports, viz:

- Engineering Geological Report for Dam Safety Purposes, 2006
- Rehabilitation of the Spillway, Final Geology Report, 1996
- The effect of an Earthquake on the dam, 1996
- Dam Safety Inspection Geological Report, 1993
- Preliminary Report on Geological Investigations, 1987

Available Documentations cont...

4. Hydrological Reports, viz:

- Flood Frequency Analysis: Roodefontein Dam, 2018
- Flood Frequency Analysis: Roodefontein Dam, 2010
- Flood Frequency Analysis: Roodefontein Dam, 2001

5. Dam Safety Evaluation Reports, viz:

- Fourth Dam Safety Evaluation Report, 2020
- Third Dam Safety Inspection Report, 2011
- Second Dam Safety Inspection Report, 2006
- First Dam Safety Inspection Report, 2002

6. Operations and Maintenance Manuals, viz:

- Operations, Monitoring & Maintenance Manual : Vol. 2, 2004
- Operations & Maintenance Manual, 1998
- Operations & Maintenance Manual, 1990

7. Emergency Preparedness Plans

- Operations and Maintenance Manual & Emergency Preparedness Plan, 2005
- Roodefontein Dam: Emergency Preparedness Plan, 2015

8. As-Built drawings/Plans

Pricing Schedule

The pricing schedule in the terms of reference and as outlined below is just a guide. PSP is allowed to develop their own schedule but it must cover all stages of the project.

| Stage No | Resource Based Fees | Man Hours | Rate | No. | Amount |
|------------|-----------------------------|-----------|------|-----|--------|
| 1.0 | Inception Stage | | | | |
| | 1. Project Manager/ Leader | | | | |
| | 2. Other (Specify) | | | | |
| | Sub total | | | | |
| 2.0 | Preliminary design | | | | |
| | 1. Project Leader: | | | | |
| | 2. APP & Professional team: | | | | |
| | 3. Draughtsman: | | | | |
| | 4. Technician Engineer: | | | | |
| | 5. Other staff (Specify): | | | | |
| | Sub total | | | | |
| 3.0 | Detailed design | | | | |
| | 1. Project Manager/ Leader: | | | | |
| | 2. APP & Professional team: | | | | |
| | 3. Draughtsman: | | | | |
| | 4. Technician Engineer: | | | | |
| | 5. Other (Specify): | | | | |
| | Sub total | | | | |
| 4.0 | Tendering | | | | |
| | 1. Project Manager/ Leader: | | | | |
| | 2. Quantity Surveyor: | | | | |
| | 3. Other (Specify): | | | | |
| | Sub total | | | | |
| 5.0 | Construction | | | | |
| | 1. Project Manager/ Leader: | | | | |
| | 2. APP & Professional team: | | | | |
| | 3. Draughtsman: | | | | |
| | 4. Environmentalist (ECO): | | | | |
| | 5. Resident Engineer: | | | | |
| | 6. OHS Agent: | | | | |
| | 7. Other (Specify): | | | | |
| | Sub total | | | | |
| 6.0 | Commissioning | | | | |
| | 1. Project Manager/ Leader: | | | | |
| | 1. APP & Professional team: | | | | |
| | 2. Draughtsman: | | | | |
| | 3. Resident Engineer: | | | | |
| | 4. OHS Agent: | | | | |
| | 5. Environmentalist (ECO): | | | | |
| | 6. Other (Specify) : | | | | |

Pricing Schedule Cont.....

| No | Studies | Unit | Amount |
|-----|---|------|--------|
| 1.0 | Geotechnical /Soil Studies | Sum | |
| 2.0 | Ground water Studies | Sum | |
| 3.0 | Environmental scoping report | Sum | |
| 4.0 | Baseline risk assessment and specifications | Sum | |
| 5.0 | Other studies (Specify) | Sum | |
| | Total | | |

| | Disbursements | Unit | Amount |
|--|---------------|--------------------------|--------|
| | Total | 5% of resource based fee | |

Duration of Assignment

The contract period for this assignment is estimated at 3 years from date of appointment.

Form of Contract

The standard DWS PSP contract will be used for the assignment.

Key Stakeholders

The following key stakeholders have been identified and may be of assistance during the implementation of the project:

- Department of Water and Sanitation Head Office
- Department of Water and Sanitation Cluster Manager
- Water Users
- Officials and/ or workers on site engaged in operations and maintenance

Responsible Person

The PSP will report to the Chief Director: Strategic Asset Management, who will be supported by the Department of Water and Sanitation's project steering committee made up of Dam Safety Rehabilitation Programme Manager and technical representatives from the Dam Safety Surveillance.

Project Contact person is **Mr. John Kgopiso**

Contacts Details

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Thank You.

