

PART C3: SCOPE OF WORK

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C3.1 EMPLOYER'S WORKS INFORMATION

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Signature Approval

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SECTION 1

1. Description of the works

1.1 Executive overview

The Port of Richards Bay was built 40 years ago to export coal to the world. The demand to ship more commodities grew over the years and now the terminal exports over 30 varied commodities from magnetite to ferrochrome, woodchips to aluminium and steel. The port was using rail to transport cargo from or to Inland. Over the years the demand to transport cargo via the port increased resulting in some cargo transported via road transport. In order to avoid cargo theft, the terminal put more security measures of tilting the truck bins after offloading at the checkpoints and this has resulted in cargo spillages on the roads and cargo running into stormwater drains during rainy days and blocking them.

Currently the port of Richards bay has ramp up its operation to meet the customer's requirements of loading and offloading vessels in time. Our operation is causing more spillages on the road, rail and quayside into stormwater drains then to the sea. This is an environmental issue and poses a threat to the business.

The RCB Storm water system seems no longer adequate to operate effectively given the current conditions within the terminal. Over and above this challenge, the storms water and cleaning water that does through the system find itself all on the Bay. A recent study has highlighted that the water. Marine has high levels of pollution as the result of the contaminated storm water that is disposed into the Bay.

Considering the problem statement above, TPT requires an Engineering consultant to conduct an assessment and a hydrological study on the Terminal Stormwater system. Thereafter propose customised and economical solution that can address the current stormwater challenges. The consultant must also provide possible solutions to be considered to address these challenges, as well as the scope of work and cost estimates to design and implement the recommended solution.

1.2 Employer's objectives

The *Employer's* objective is to conduct hydrological study within the port of Richards Bay and provide solution to prevent contamination of the sea. The scope covers all the stormwater drains starting from the rail system, roads, quayside, and stockpile area.

1.3 Interpretation and terminology

The following abbreviations are used in this Works Information:

Abbreviation	Meaning given to the abbreviation
AIA	Authorised Inspection Authority
BBBEE	Broad Based Black Economic Empowerment
CEMP	Construction Environmental Management Plan
EO	Environmental Officer
HAW	Hazard Assessment Workshop
HAZOP	Hazard and Operability Study
HSSP	Health and Safety Surveillance Plan
INC	Independent Nominated Consultant
IP	Industrial Participation
IR	Industrial Relations
IPP	Industrial Participation Policy
IPO	Industrial Participation Obligation
IPS	Industrial Participation Secretariat
IRCC	Industrial Relations Co-ordinating Committee
JSA	Job Safety Analysis
CIRP	Contractor's Industrial Relations Practitioner
Native	Original electronic file format of documentation
PES	Project Environmental Specifications
PHA	Preliminary Hazard Assessment
PIRM	Project Industrial Relations Manager
PIRPMP	Project Industrial Relations Policy and Management Plan
PLA	Project Labour Agreements
PSIRM	Project Site Industrial Relations Manager
PSPM	Project Safety Program Manager
PSSM	Project Site Safety Manager
ProgEM	Programme Environmental Manager
ProjEM	Project Environmental Manager
QA	Quality Assurance
R&D	Research and Development
SANS	South African National Standards
SASRIA	South African Special Risks Insurance Association
SES	Standard Environmental Specification
SHE	Safety, Health and Environment
SHEC	Safety, Health and Environment Co-ordinator
SIP	Site Induction Programme
SMP	Safety Management Plan
SSRC	Site Safety Review Committee

2. Engineering and the *Contractor's* Scope

The scope of work will cover the following work.

The appointed service provider shall execute the following tasks:

Data Collection and Desktop Study

- Acquire and analyse existing hydrological and meteorological data from relevant South African institutions, such as the Department of Water and Sanitation (DWS), the South African Weather Service (SAWS), and the Water Research Commission (WRC).
- Conduct a review of relevant legislation, including the National Water Act (Act 36 of 1998) and any applicable provincial or local by-laws.
- Obtain and analyse topographic maps and digital elevation models (DEMs) of the project area to delineate the catchment boundaries.
- Source aerial photography and satellite imagery to identify land use, vegetation cover, and potential water-related features.

Field Investigation

- Conduct a site visit to verify desktop findings.
- Record relevant field observations, including existing infrastructure (dams, weirs, boreholes), flow conditions, and geomorphological features of the river system.
- Install any necessary temporary monitoring equipment, if required and specified by the client.

Hydrological Analysis

- **Catchment Hydrology:** Analyse historical rainfall data to determine the frequency and intensity of storms. This includes calculating rainfall statistics for different return periods.
- **Flow and Runoff Analysis:**
 - Estimate mean annual runoff (MAR) and other flow statistics using accepted hydrological models (e.g., ACRU, Pitman Model) or regional methods for catchments without flow gauging stations.
 - Assess low flows and determine the baseflow component of the catchment.
- **Flood Analysis and Modelling:**
 - Perform peak floods estimates and flood level events calculations for various return periods.
 - Conduct floodline modelling to determine the 1:50 and 1:100-year floodlines.
 - Generate a detailed flood risk assessment.
- **Water Balance Assessment:** Calculate a comprehensive water balance for the catchment, accounting for all inputs (rainfall), outputs (evaporation, runoff), and storage (dams, groundwater).
- **Water Quality:** A high-level assessment of water quality based on available data. If a detailed analysis is required, this should be scoped as an optional extra.

- **Water Use Assessment:** Identify and quantify existing legal and illegal water use within the catchment. This includes domestic, agricultural, and industrial water use.

Impact Assessment and Recommendations

- Evaluate the potential impacts of the proposed project on the catchment's hydrology.
- Assess the potential for flooding, erosion, and changes in water availability.
- Formulate a strategy for sustainable water management, including potential water conservation measures.
- Develop recommendations for the design and sizing of stormwater management infrastructure, if applicable.

Deliverables

The service provider must submit the following documents:

- **Inception Report:** A brief report outlining the proposed methodology and work plan.
- **Draft Hydrological Report:** A comprehensive report detailing all findings, calculations, and analyses.
- **Final Hydrological Report:** The final report, incorporating feedback from the client, including all necessary maps, graphs, and data tables. This report must be signed off by a professionally registered engineer or scientist.
- **Floodline Mapping and Zoning:** A detailed map showing the delineated **1:50 and 1:100-year floodlines**, clearly indicating areas at risk.
- **Presentation:** A final presentation to the client or relevant stakeholders, if requested.

Professional Requirements

The lead professional responsible for the study must be a professional ECSA registered Hydrologist or a professional registered with the Engineering Council of South Africa (ECSA) or the South African Council for Natural Scientific Professions (SACNASP) in a relevant field. The final report, and particularly the floodline assessment, must be signed off by an ECSA-registered professional. The service provider must provide the registration number of the lead professional in their tender submission.

Professional Title	Registration Body	Key Responsibilities in the Study
Professional Engineer (Pr. Eng)	Engineering Council of South Africa (ECSA)	Floodline Modelling & Calculations: Performs peak flood estimates, flood level event calculations, and hydraulic modelling Engineering Design: Provides professional sign-off on flood-related work as required for safety and legal compliance

		Stormwater Management: Designs and recommends engineering solutions for stormwater and flood control.
		Catchment Hydrology: Analyses rainfall data, runoff, and completes the overall water balance for the catchment. Scientific Interpretation: Interprets the hydrological data and its environmental implications
Professional Natural Scientist (Pr. Sci. Nat.)	South African Council for Natural Scientific Professions (SACNASP)	Reporting: Prepares the bulk of the hydrological report, focusing on the scientific analysis and findings.

Role of the Environmental Specialist

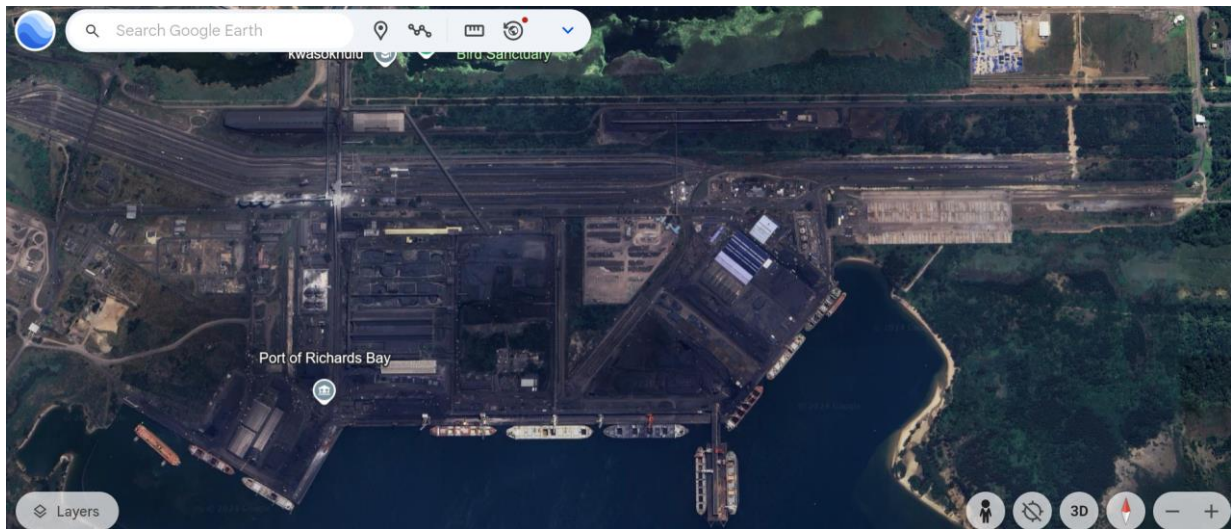
An environmental specialist, typically a **Professional Natural Scientist** (Pr. Sci. Nat.) registered with **SACNASP** in a relevant field like Environmental Science or Aquatic Ecology, would be responsible for the following tasks:

- **Environmental Impact Assessment (EIA):** The specialist conducts a formal assessment to predict and evaluate the potential environmental impacts of the project on the surrounding ecosystem. This includes looking at impacts on flora, fauna, soil, and aquatic habitats.
- **Specialist Studies:** The environmental specialist coordinates and integrates other specialist studies, which can include:
 - **Aquatic Assessments:** Evaluating the health of river and wetland ecosystems, often using standard assessment tools.
 - **Wetland Delineation:** Identifying and mapping wetlands, which are legally protected watercourses in South Africa.
 - **Biodiversity Studies:** Assessing the impact of the project on plant and animal species.
- **Legal Compliance:** The specialist ensures that the project complies with South African environmental legislation, such as the National Environmental Management Act (NEMA) and the National Water Act (NWA). They are responsible for preparing and submitting the necessary documentation to the relevant authorities, such as the Department of Forestry, Fisheries and the Environment (DFFE) and the Department of Water and Sanitation (DWS).

Relationship with the Hydrological Study

The hydrological study is often a specialist report that forms a critical part of the environmental specialist's work. The environmental specialist relies on the data and findings from the hydrologist (e.g., floodlines and flow data) to assess the environmental impacts, such as how changes in water flow might affect a downstream ecosystem or how a proposed dam might impact a nearby wetland. The environmental specialist's final report will then integrate the hydrological data and provide recommendations for mitigation and management.

Appendix 1 – Port Map



TPT RICHARDSBAY TERMINAL