

## TERMS OF REFERENCE

### COMMISSIONING OF ENVIRONMENTAL SPECIALIST STUDIES FOR RBIDZ PHASE 2A

#### 1. The RBIDZ Background Information

The strategic intent of the Richards Bay Industrial Development Zone Company (RBIDZ) is to realize the fundamental objectives as set out by the Cabinet upon creating the IDZ Programme in September 2000, namely:

- Develop and establish a purpose built world-class industrial park incorporating a delimited Customs Controlled Area and linked to the Richards Bay International Port;
- Provide quality infrastructure including ICT and transport infrastructure, business and utility services;
- Attract foreign and local investment projects which:-
  - a. create jobs
  - b. export led
  - c. sustainable
- Make arrangements for and mobilise financial, human and other resources for the development of the RBIDZ;
- Promote, foster and mentor BEE and SMME business opportunities in and around the zone.

#### Key objectives of the programme

- Attract foreign direct investment (FDI);
- Attract advanced foreign production and technology methods in order to gain experience in global manufacturing and production networks;
- Develop linkages between domestic and zone-based industries;
- Provide world-class industrial infrastructure.

It is expected that this development will trigger a large flow of foreign and domestic investment in IDZ infrastructure and productive capacity, leading to generation of additional economic activity and creation of employment opportunities. It is with these objectives in mind that the development of the “**RBIDZ Phase 2A**” project is being pursued as a matter of urgency.

## **2. Overview of the works**

The Richards Bay IDZ has earmarked Phase 2A, which measures approximately 1000 hectares in extent, for future industrial development. The entire area is under eucalyptus plantation at the moment, but the conversion from agriculture to industrial has to be preceded by specialist studies in order to determine the suitability of the land for the development intended.

The RBIDZ seeks to appoint a Consortium that will encompass the following skills and expertise:

- Geo-technical Assessment
- Wetland Assessment
- Heritage Assessment
- Biodiversity Assessment
- Floodline Assessment and
- Geo-hydrological Assessment

### **2.1 Geotechnical Scope**

The work has to be carried out by experienced and professionally registered earth scientist.

The scope of work for the geotechnical investigation will be to:

- Determine the soil and rock profile across the site and evaluate its engineering properties and influence on the design of industrial structures;
- Establish depth to bedrock where not exposed;
- Evaluate the workability of the site materials with regard to excavation and compaction;

- Comment on predicted safe bearing capacity values, expected heave and settlement of the different potential founding horizons and recommend founding depths;
- Assess the seasonal and peaks of groundwater conditions, including surface run-off, ponding, seepage and perched or permanent water tables ; and
- Demarcate the site into various geotechnical zones with applicable NHBRC site classes and Building procedures.

## 2.2 Wetland Assessment Scope

The work has to be carried out by experienced and professionally relevant scientist.

The scope of work for the wetland assessment will be to provide a:

- Desktop biodiversity assessment of the study area. This will cover the development footprint in relation to available ecological information related to wetland and riverine ecosystems functioning within the region;
- A map demarcating the relevant local drainage area of the respective wetland/s, i.e. the wetland, its respective catchment and other wetland areas within a 500m radius of the study area. This will demonstrate, from a holistic point of view the connectivity between the site and the surrounding regions, i.e. the zone of influence;
- Maps depicting demarcated wetland areas delineated to a scale of 1:10 000, using Department of Water Affairs and Forestry (DWAF) (2005) guide, "*A practical field procedure for identification and delineation of wetlands and riparian areas*", together with a classification of delineated wetland areas, according to the methods contained in the Level 2 WET-Health methodology and WET-EcoServices (Kotze et al. 2005) methodology and the latest National Wetland Classification System (2010);
- The evaluation of habitat integrity or application of the index of habitat integrity (IHI) methodology;
- The determination of the present ecological state of any wetland areas, estimating their biodiversity, conservation and ecosystem function importance with regard ecosystem services;
- Recommend buffer zones and No-go areas around any delineated wetland areas based on the relevant legislation or best practice; and

- Assess the potential impacts, based on a supplied methodology, depicting the total areas to be conserved due to wetlands presence vs developable area in hectares.

### **2.3 Heritage Assessment Scope**

The work has to be carried out by experienced and accredited heritage practitioner.

The Heritage Impact assessment must address the following issues, namely, the:

- Identification and mapping of all heritage resources in the area;
- An assessment of the significance of such resources in terms of standard heritage assessment criteria;
- An assessment of the impact of the development on heritage resources;
- An evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
- Conduct consultation with local structures regarding areas of social and cultural significance within the study area.
- Results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
- If heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- Plans for mitigation of any adverse effects during and after completion of the proposed development.

### **2.4 Biodiversity Assessment Scope**

The work has to be carried out by experienced and professionally relevant scientist. The terms of reference for the biodiversity assessment calls for a survey of the fauna and flora on the study area and a complete assessment of the impact of the proposed industrial development on the ecology.

This study has to include the following:

- A survey to provide details on any listed or threatened species likely to be found in the study area. For all such threatened species, the following is required:
  - The national, provincial and local status of such species
  - Details of likely population status and size, and likely impacts of the proposed development
  - The geographic location of any species that may be considered to constitute a fatal flaw to the project;
  - Recommended process to follow with relevant departments in dealing with identified threatened species.

### **2.5 Flood-line Assessment**

The work has to be carried out by experienced and professionally registered engineers. Contour survey report will be provided by RBIDZ to assist in determining the floodline.

The terms of reference for the flood-lines assessment calls for a study to determine the 1:50 and 1:100 year flood-lines for watercourses / river reaches flowing through the development site. The flood-line will be used to determine if the proposed development of infrastructure is above the 1: 100 year recurrence interval flood-line.

This study has to include the following:

- The site visit to assess the site specific hydrological conditions;
- Delineation of the catchment areas of the proposed development area based on acceptable scale on the topographical map ( 1: 30 000 scale recommended)
- Conduct flood peak analysis to determine the different recurrence interval flood peaks for watercourses within the proposed development area acceptable methods and advanced modelling software for storm water management.
- Use acceptable programs to determine the surface water elevations for the 1:50 and 1:100 year floods peaks

- Plot the flood-lines using the acceptable mapping software
- Provide engineering recommendations and mitigation measures to reduce the flooded area on site where 1 in 100 year recurrence interval flood-line exists,

## **2.6 Geo-hydrological Assessment**

A baseline geo-hydrological assessment will be required to describe the baseline groundwater conditions for both shallow and deep aquifers in order to quantify the pre-development status quo. It is envisioned that a construction and post-construction ground water management programme will be implemented, and the pre-development status condition will form the basis against which changes in ground water condition; which may result from the general industrial development anticipated for RBIDZ Phase 2A; are compared and from which mitigation of identified can be developed.

## **METHODOLOGY**

The study must include field work investigations including geophysics, soil sampling and analysis, a hydro-census, borehole drilling, water sampling and analysis to determine aquifer parameters, including inorganic, organic, trace elements, radioactivity, stable isotopes, biological and toxicity.

### ***Data Review and Desk Top Study***

- Review of existing reports and any information available for the proposed development, as well as the undertaking of a desktop review of available publications and geohydrological data for the study area and its surrounds

### ***Site Investigation & Hydrocensus***

- Undertaking of a site walkover to gather site-specific geohydrological information as well as conducting of a hydrocensus to locate any existing monitoring wells / boreholes and surface water bodies in the study area including:
  - location, depth, yield, abstraction equipment , amount and use of groundwater
  - location and use of any surface water sources within the proposed development footprint, including streams and rivers

- If no suitable existing monitoring wells are identified during the site walkover, the service provider will have to install a maximum of fifteen (15) temporary monitoring wells across the study area, for the collection of groundwater parameters and groundwater sampling. (This will however be subject to the desktop findings and recommendations.

### ***Groundwater & Surface Water Monitoring & Sampling***

- Groundwater monitoring and sampling including:
  - recording of static water levels in the proposed monitoring wells
  - undertaking of the collection of surface water and groundwater field parameters (pH, electrical conductivity, temperature, ORP and redox) testing on site
  - collection of five (5) groundwater samples from the completed monitoring wells for submission to a SANAS-accredited laboratory for Abr. SANS 241:2011 analysis, as well as analysis for any additional determinants listed in the Department of Water Affairs (DWA) Wastewater Limit Values Applicable to Discharge of a Wastewater into a Water Resource.
  - collection of surface water samples from all surface water bodies identified on the site for submission to a SANAS-accredited laboratory for Abr. SANS 241:2011 analysis, as well as analysis for any additional determinants listed in the Department of Water Affairs (DWA) Wastewater Limit Values Applicable to Discharge of a Wastewater into a Water Resource.

### ***Data Evaluation and Reporting***

- Basic desktop assessment to confirm the location of any other previously installed boreholes / monitoring wells in the study area, and the location of any subsurface features / formations in proximity to the site which may allow for rapid groundwater migration
- Preparation of a geohydrological investigation report, where the following will be included:
  - field investigation methodologies and applicable principles
  - results of the hydrocensus, including the position of, and distance to, identified groundwater and surface water sources as well as the gathered pertinent groundwater and surface water field characteristics
  - consequent position of, and distance to, proximal groundwater and surface water sources

- inferred geohydrology of the area, through the inclusion of gathered field data, sample analysis results and their comparison to appropriate limits, and the integration of available published information
- possible impacts of the proposed development on the water resources in its vicinity, and any existing geohydrological constraints
- qualitative geohydrological risk assessment, based upon gathered receptor information
- monitoring and sampling recommendations during construction and operation of the proposed development, if required