

TERMS OF REFERENCE FOR A SOLICITED WRC PROJECT

KEY STRATEGIC AREA **Water Use, Wastewater Resources and Sanitation Futures**

THRUST **1. WATER SENSITIVE AND RESILIENT SETTLEMENTS**

PROGRAMME ***Programme 2: Sustainable drainage futures***

TITLE An investigation and analysis of the impacts of extreme weather events and climate change on current drainage designs and land-use planning.

Objectives To investigate and analyse urban infrastructure design and land-use planning during extreme weather events.

General

South Africa has been in recent time reeling with the consequences of heavy rains and catastrophic floods, which has been affecting several cities to date. The recent flooding events in the coastal city of Durban and surrounding areas resulted in damage to infrastructure, deaths and environmental degradation. These new hydro-extreme events are being worsened by the influence of climate change, with research indicating that the likelihood of an event this severe happening more frequently because of global warming.

The latest report from the Intergovernmental Panel on Climate Change concludes that extreme rainfall is likely to intensify as the planet continues to warm. South Africa is no stranger to heavy rainfall as it is. Durban has seen several similar disasters in recent years, including a devastating series of floods and landslides as recently as 2019. Yet it is not just the severity of the rainfall that led to its devastating outcome. The deep-rooted structural inequalities in the affected areas coupled with poor landuse planning deficiencies also worsened the impact, where people most vulnerable to floods and landslides in and around Durban live in informal settlements and in homes that are vulnerable to flash flooding.

An understanding of the spatial planning and settlement pattern, as well as engineering interventions, needs to be assessed to inform how the city and other cities can plan better for such extreme events.

Specific

The specific objectives are:

- Investigating and assessing the current drainage planning and implementation and its ability to deal with extreme events (floods and droughts) in three case study areas, in eThekweni Municipality surroundings and Eastern Cape surroundings.
- Identifying key problem areas in spatial planning and management, as well as coping capacity for extreme weather events and associated flash flooding or saturated soil conditions.
- Determining a set of measures and guidelines which can be implemented to deal with such challenges in the future, and should cover among others:
 - Informal settlements
 - Spatial planning
 - Engineering and built environment interventions
 - Early warning systems
 - Awareness raising

Expected outcomes and impacts:

- Reports
- Guidelines
- Position paper
- Capture lessons in a final report.

Lighthouse:

- Water-Energy-Food Nexus
- Climate Change

Impact Areas:

- Water and the Economy; Water and the Environment; Water and Society

Knowledge Tree

- Sustainable Development Solutions

Time Frame: 2 years

Total Funds Available: R800 000.00 inclusive of VAT. (2023 – 400k, 2024- 400k,)