TERMS OF REFERENCE FOR A SOLICITED WRC PROJECT

THEME:	**Water Availability**
TITLE:	**Enhancing water security in SA water resource types through mapping and remotely monitoring of the riparian vegetation and associated buffer zones.**
TOR NUMBER:	

1. Rationale for the Study

The DWS, way back in 1995, realised the impact of alien invasive woody plants on baseflow affecting the downstream water availability for all forms of water demands, both by the society and environment. The realisation of the impact led to the establishment of the working for water unit, which later moved to DFFE under the natural resources management branch. This resulted in co-management of riparian vegetation and broader invasive plants management in the landscape. While the River Health Programme (now called REMP) uses riparian vegetation on a site basis in the reserve determination projects, and DFFE led the efforts to clear invasive plants, there is no coordinated effort to monitor the changes caused by the woody invasive plants clearing or further degradation through re-invasion, yet the downstream set environmental flow requirements are increasingly unmet with ecosystem services declining further. The remote sensing tools on a case-by-case studies (…00427, 00901, TT 715/1&2) have proven the feasibility of remote monitoring in all surface water resources, which provides more coverage than a site visit and observation. Site specific information remains important in licensing of developments and EIA. With climate change, the expansion of the invasive woody plants is making the loss of baseflow worse, as experienced in the rivers and estuaries impacting on biodiversity services. Increasing temperatures calls for ecosystem-based adaptation to protect theses ecosystems, particularly outside protected areas. Hence, the aim of this project is to map, develop, test, and train the practitioners and managers on remote monitoring of riparian and buffer zones in the country with the prioritisation of strategic water resource areas as key ecological infrastructures. A link must be made with existing earth observation monitoring developments, such as wetlands.

2. Main Objective

Working in a partnership with these two DWS and the DFFE identified a need for a riparian vegetation detailed mapping and development of a water security monitoring programme covering but not limited to the following objectives:

1 Develop a comprehensive synthesis of the science/state of knowledge related to riparian areas.
2 Mapping of riparian areas and inventories for South Africa, to enable the determination of trends in riparian area losses or gains.
3 Explore various tools that can complement each other in aerial/earth observation space to generate a complete and up-to-date state/trends of riparian and buffer zones.
4 As evidence based, generate water losses or baseflow reduction estimations due to alien invasive plants expansions in the riparian and landscape.
5 Design a monitoring programme using remotely sensed data that equips the decision makers involved in environmental impact assessment, reserve determination and licensing processes.
6 Train the practitioners and managers involved in riparian vegetation and buffer zone management.
7 Empower citizens on the roles to play in the complete management of alien invasive plants, particularly in riparian areas.

3 **Deliverables:**

Key deliverables and outputs expected include the following:

- A report synthesising the latest cutting edge research and Indigenous knowledge on Riparian Areas developed in a consultative manner with peers and partners.
- Map of riparian areas and buffer zones key in water security, in the landscape, including their impacts on baseflows.
- A pilot tested riparian vegetation monitoring framework incorporating practical tools in a complementary and integrative approach.
- Trained managers, practitioners and citizen scientists on best management of the riparian vegetation for water security and ecosystem-based resilience.
- Print-ready final report.

Budget: R2 000 000

Year 1: R500 000

Duration: 3 years