1.1 Water security – the Berg River Improvement Plan, an intergovernmental relations partnership

Water is the most critical natural resource in the economic sector, with communities and industry deriving goods and services from river systems in their catchment areas. The Berg River catchment is home to cultivated agricultural land, mainly vineyards, fruit trees and wheat fields. About 75% of the crop produced in the catchment is exported to the European Union and the United Kingdom (UK).

Pollution in the Berg River catchment of the Western Cape is, however, a cause of concern especially to communities, farmers and industry in the various municipalities of the West Coast and Cape Winelands regions. Various stakeholders have implemented initiatives to address the pollution concerns raised.

The Western Cape Government recently developed and endorsed the implementation of a Berg River Improvement Plan (BRIP) to address water security concerns (i.e. quality and quantity) in the Berg River catchment.

The vision of the plan is as follows, "Berg River water of acceptable quality and quantity for sustainable farming, industrial development, human consumption and recreation, as well as ecological health". The ultimate aim is to change the lives of people in the Berg River catchment through the implementation of simple interventions. The outcome will be a Berg River, where its value for ecosystem services is recognised, and its natural resource state as it relates to water quality and quantity returns, while promoting sustainable growth and development towards a green economy in the Western Cape. The plan identifies short (\leq 5 years) and long term (5 – 30 years) interventions, and its financial implications. The objectives of the plan are to:

- reduce the negative impact from Municipal urban areas, particularly informal settlements and wastewater treatment works;
- reduce the negative impact of agriculture on the Berg River's water quality to acceptable levels;
- ensure sustainable resource use efficiency and ecological integrity.

A *systems approach*, which addresses all human activities that impact on the Berg River catchment in an integrated manner, has been selected as the method of choice to achieve the objectives and benefits associated with the plan (Fig. 1). A Steering Committee, comprising of various Departments and agencies from the National (Water Affairs; Working for Water - WfW), Provincial (Environmental Affairs and Development Planning – DEADP; Local Government – DLG; Human Settlements – DHS; Agriculture – DoA; Economic Development and Tourism – DEDAT; CapeNature; GreenCape) and Local Government (Municipalities), has identified the six (6) tasks to achieve the objectives. The Steering Committee meets every fortnight to monitor and ensure the successful implementation of these tasks:

Task 1: Implement a Berg River Water Quality Monitoring Regime

Task 2: Upgrade Wastewater Treatment Works and Train Process Controllers

Task 3: Upgrade Informal Settlements

Task 4: Advocate Best Practice in Agricultural and Agro-Industrial Processes

Task 5: Riparian Zone Rehabilitation and Bioremediation

Task 6: Pricing Water Management in the Berg River Catchment



Figure 1: An overview of the envisaged management actions, tasks and benefits associated with the Berg River Improvement Plan partnership (TWQR = Target Water Quality Range).

The Tasks are at various stages of implementation (Fig. 2), particularly since Departments and Municipalities have been upgrading Wastewater Treatment Works (Task 2; WWTWs), developing plans to upgrade informal settlements (Task 3), as well as implementing projects on water use efficiency (Task 4; <u>www.fruitlook.gov.za</u>) and clearing alien vegetation in the Berg River catchment (Task 5).

The approach taken for implementing Task 1 is that of, "one can only manage if one knows its status"; therefore, to manage water quality, one has to monitor water quality if one is to address water security in the Berg River catchment successfully. The resource condition target is that "*E. coli*, suspended sediment and nutrient (dissolved inorganic nitrogen – DIN; phosphates) levels in receiving waters meet the TWQRs of the SA Water Quality Guidelines". As an initial step, the DEADP developed a River and Estuarine Monitoring Plan for the Berg River catchment, where a total of 20 sampling sites have been identified, in collaboration with DWA. Sampling sites identified will be monitored from 2013 onwards for trace metals and residuals of pesticides in water and sediment of the Berg River and Berg Estuary, as well as for *E. coli*, where applicable to Task 5. Further, the Drakenstein Municipality is implementing its recently developed Ideal Sampling Plan for Water Quality Monitoring, while the Bergrivier Municipality also monitors water quality parameters in its jurisdiction. All water quality data will feed into the existing DWA database on water quality monitoring, as part of implementing the systems approach towards managing water quality in an integrated manner in the Berg River catchment.



Figure 2: Alignment of new BRIP projects (green) and existing Departmental projects (blue) to Tasks 1 – 6.

A Genius of Place project that focuses on biomimicry (i.e. *"using nature's processes in a sustainable, efficient and powerful way to achieve environmental stewardship and benefit for all"*) has been initiated by DEDAT, as part of upgrading an informal settlement in the Berg River catchment in Task 3. This links with the resource condition target that "identified informal settlements are upgraded". Phase 1 (2012/2013) of the project focused on identifying specific interventions for implementation, based on expert opinion; while Phase 2 (2013/2014) is currently identifies the informal settlement where the Genius of Place intervention(s) can be implemented. The project is currently in its infancy and aims to use biomimicry to reduce pollution impacts on the Berg River catchment.

Alien vegetation clearing and rehabilitation of the riparian zone, key to Task 5, is currently underway through collaborative initiatives undertaken by CapeNature and WfW, as well as through DEADP and DoA. The interim management action target is to improve groundcover and riparian vegetation to reduce agricultural runoff; while the resource condition target is to reduce *E. coli*, suspended sediment, nutrients (dissolved inorganic nitrogen – DIN) and pesticide loads to receiving waters. Cleared riparian zones in the Hermon area have been replaced with indigenous vegetation collected in the catchment and grown at the Kluitjieskraal Nursery. Workers from the Hermon/Tulbagh area were appointed to propagate and plant the indigenous as part of the Expanded Public Works Programme (EPWP). Approximately 4 FTE jobs were created during 2012/2013; with this number increasing during the 2013/2014 financial year.

It was previously estimated that pollution will have a significant impact on the economy, unemployment and social services in the Berg River catchment. As such, the management action target in terms of pricing the value of water in the Berg River catchment (Target 6) is to achieve an "increased GDP in the Berg River catchment". The DEDAT and DEADP is working collaboratively to develop scenarios on the cost of pollution in the Berg River catchment, by

initially focusing on how much water is used by the region's economy, and where and how it is used. An analysis of water consumption across the economy will be linked to measures of economic productivity (i.e. water use / GDP contribution). Further, the cost of action *versus* inaction will be modeled *via* various scenarios. The ultimate aim is to design and implement interventions to alleviate the constraints in the Berg River catchment.

Overall, the lessons by following a *systems approach* in this catchment will be replicated in other catchments of strategic significance in the Western Cape.