

Ecosystem services mapping in the uMngeni catchment



Institute of
Natural Resources

Background

- Fill ecosystem services gaps resulting from 2015 Green-Fund project between UKZN and SANBI
- Outputs of Green Fund project could be enhanced by the mapping and inclusion of other ecosystem services
- Understand NRM presence in uMngeni catchment based on ecosystem service priority map

Approach to ecosystem services mapping

- Critical issue in respect of ecosystem services is **supply of** and **demand for** services
- Supply of ecosystem services may be influenced by the type, extent and condition of the ecosystem
- Demand for ecosystem services relied on socio-economic information gleaned from various sources
- Mapped services:
 - Biodiversity (habitat)
 - Ecotourism and outdoor recreation
 - Flood attenuation
 - Carbon sequestration and storage (National Terrestrial Carbon Sinks Assessment (NTCSA))

Methodology

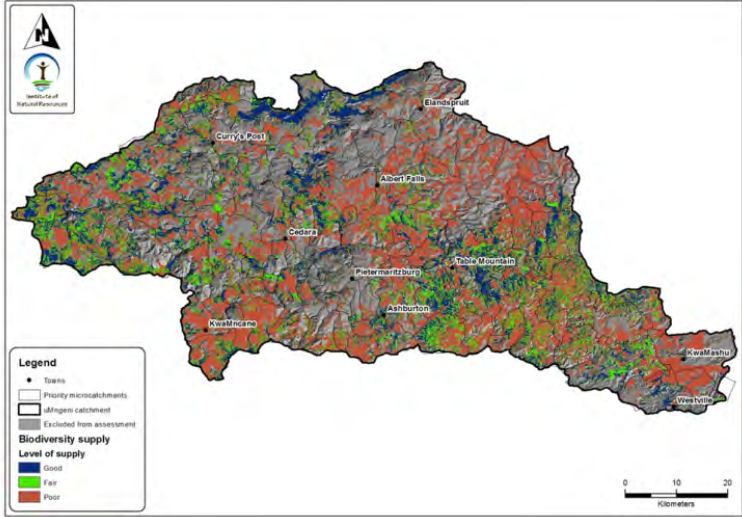
- Important supply areas for selected ecosystem services derived based on land cover maps, available data sets and expert judgment
- Likely level of service delivery scaled according to ecosystem type, condition and extent
- Ecosystem service delivery areas were identified for each service by integrating the supply and demand maps
- Data was aggregated and prioritised to a **micro-catchment** level



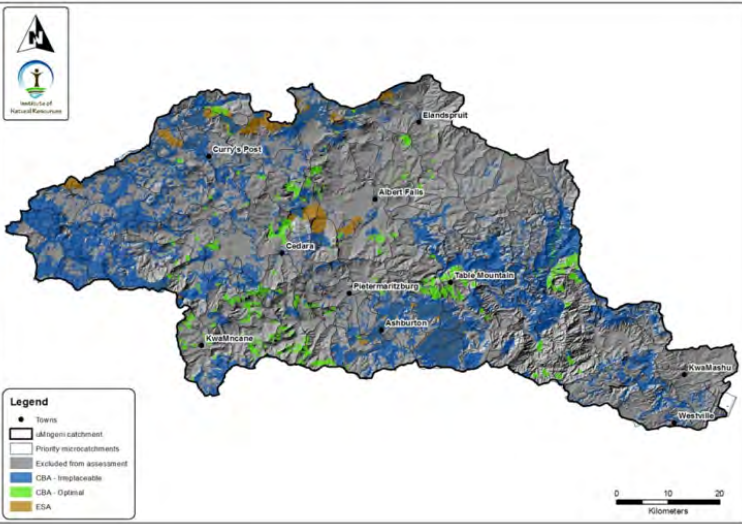
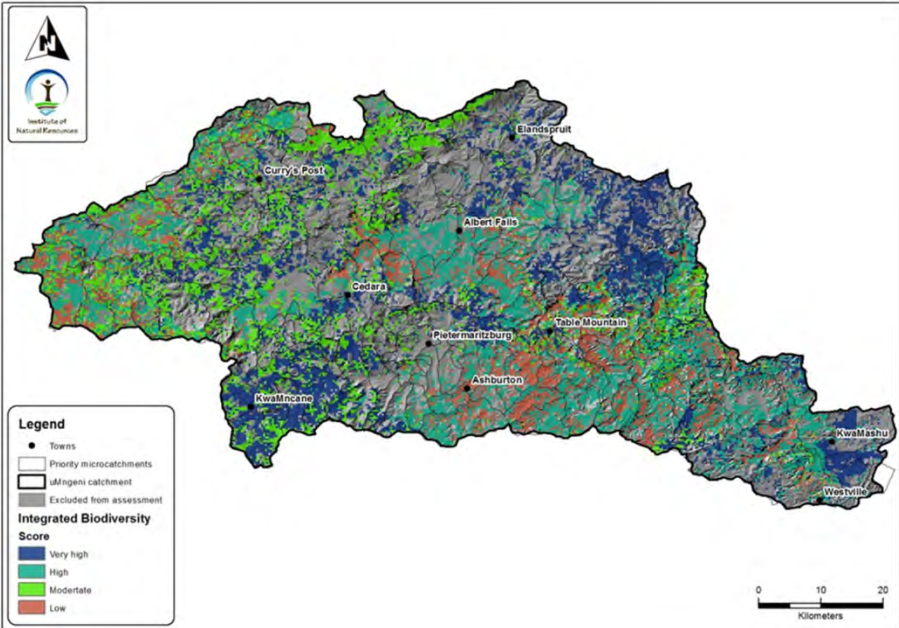
Biodiversity example

- Only factor affecting the supply of this service is the condition of the ecosystem
- Condition layer developed and used to represent the **supply** of intrinsic value of biodiversity (**NDVI** as a surrogate for condition)
- Critical Biodiversity Areas (CBAs) - **Demand**

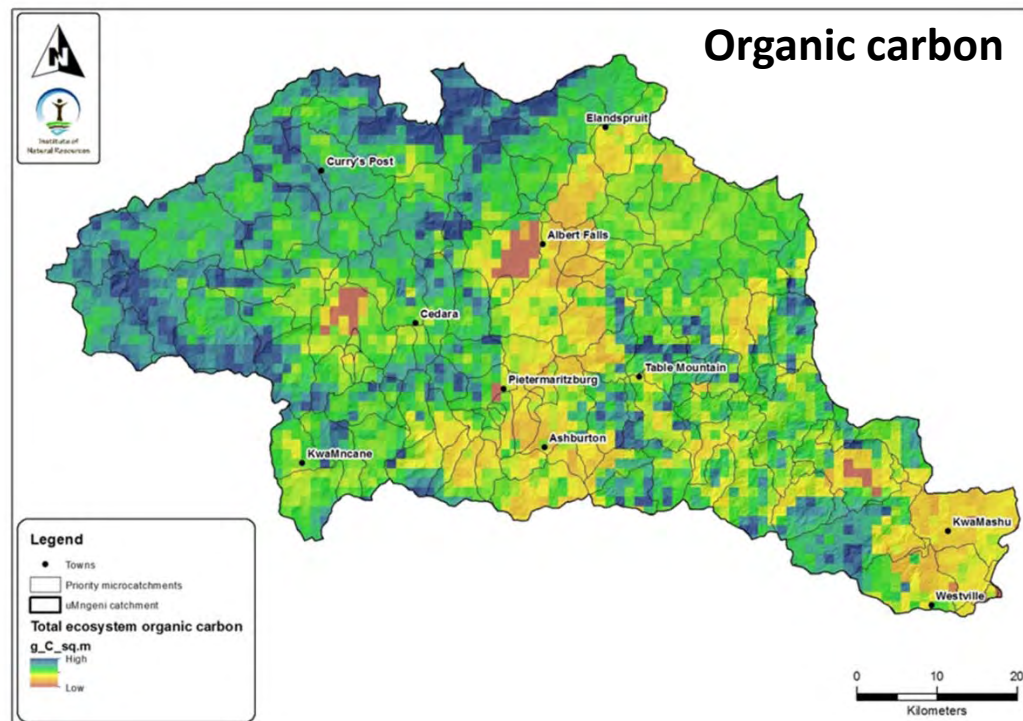
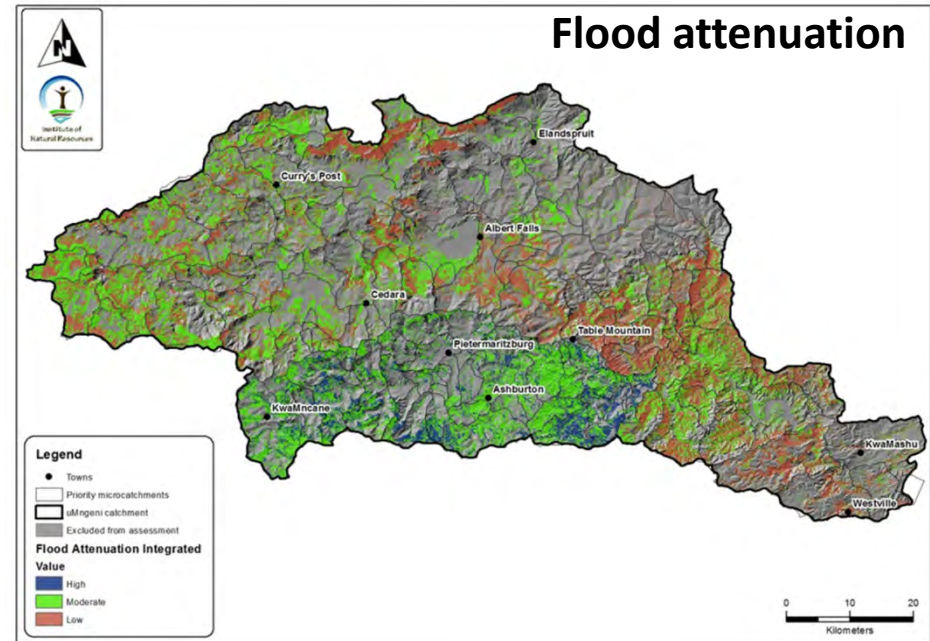
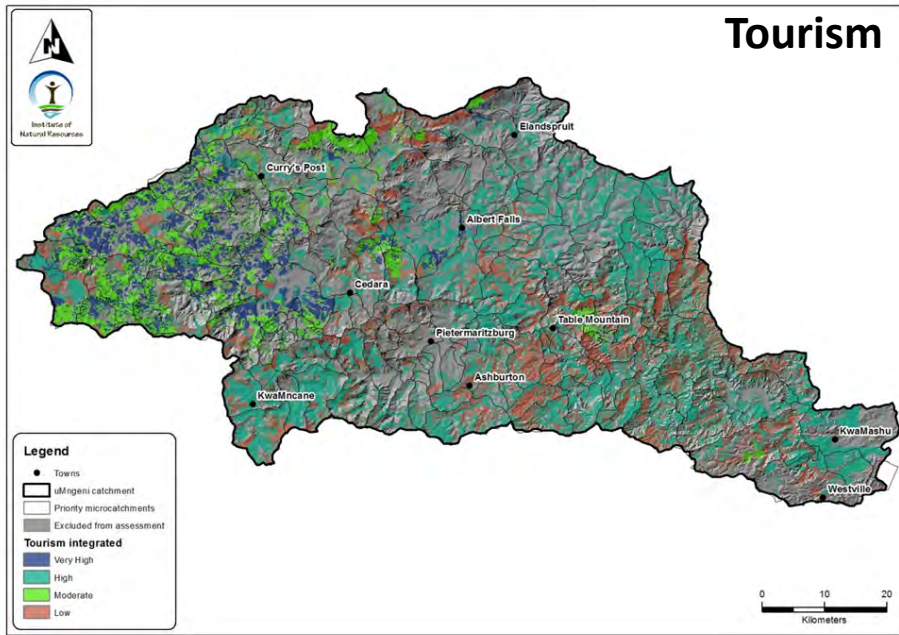
Condition layer = Biodiversity supply



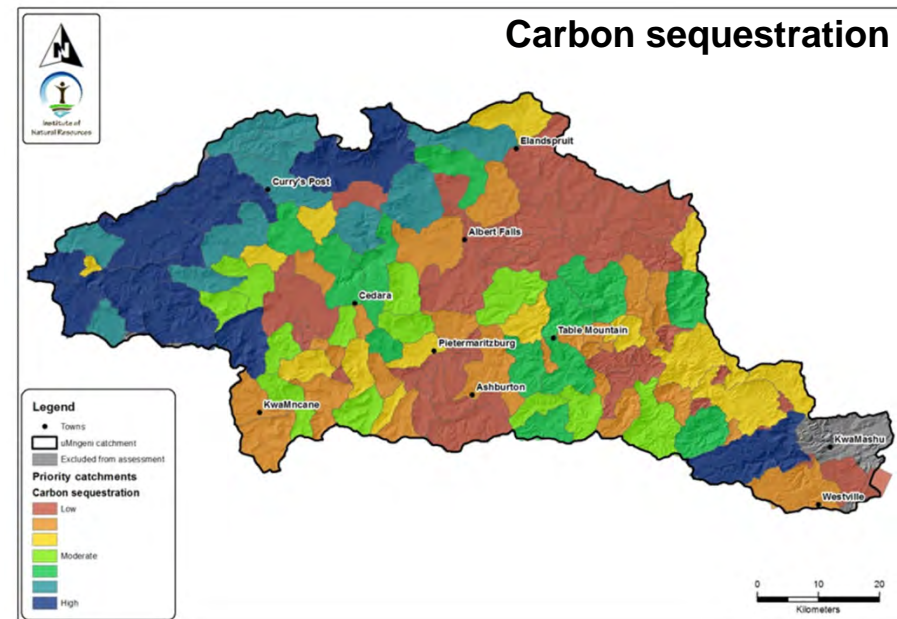
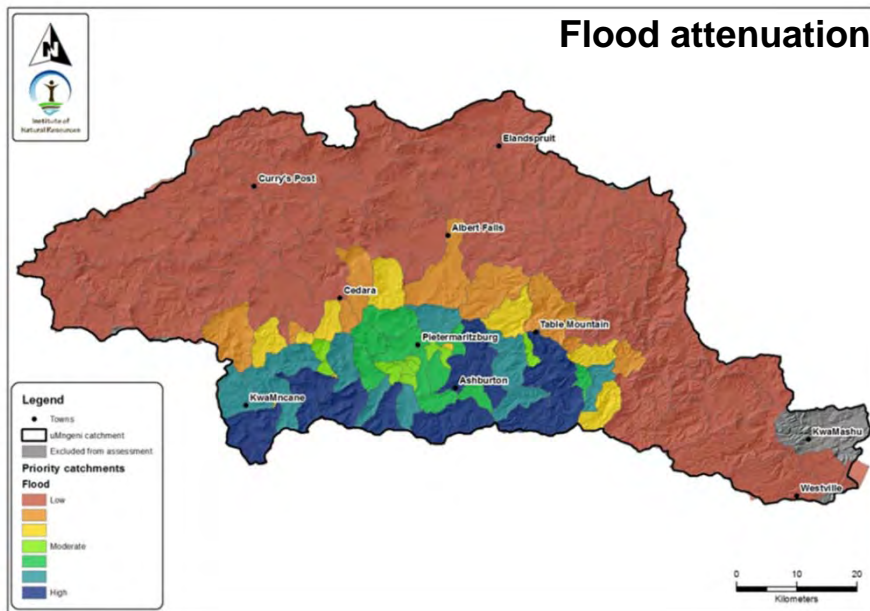
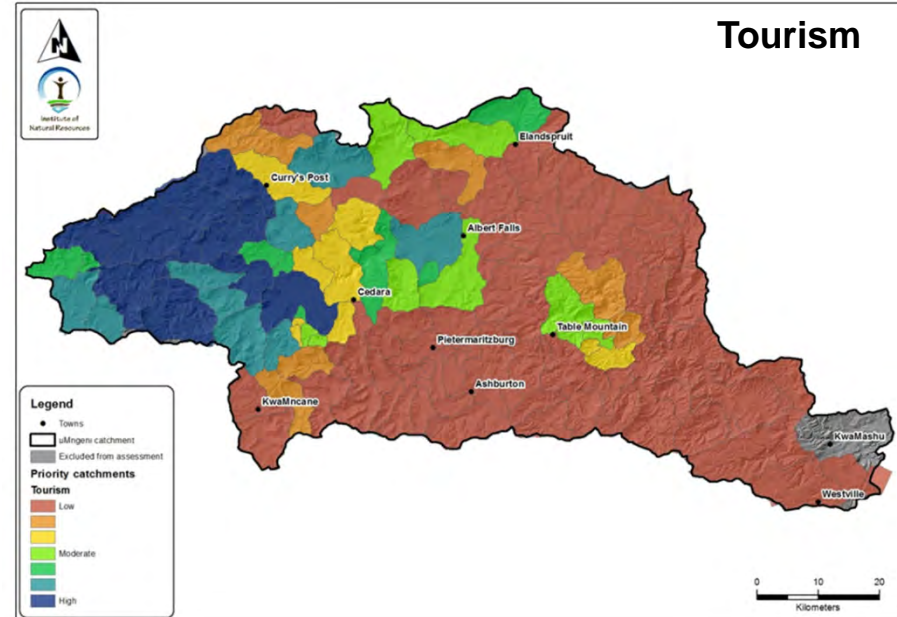
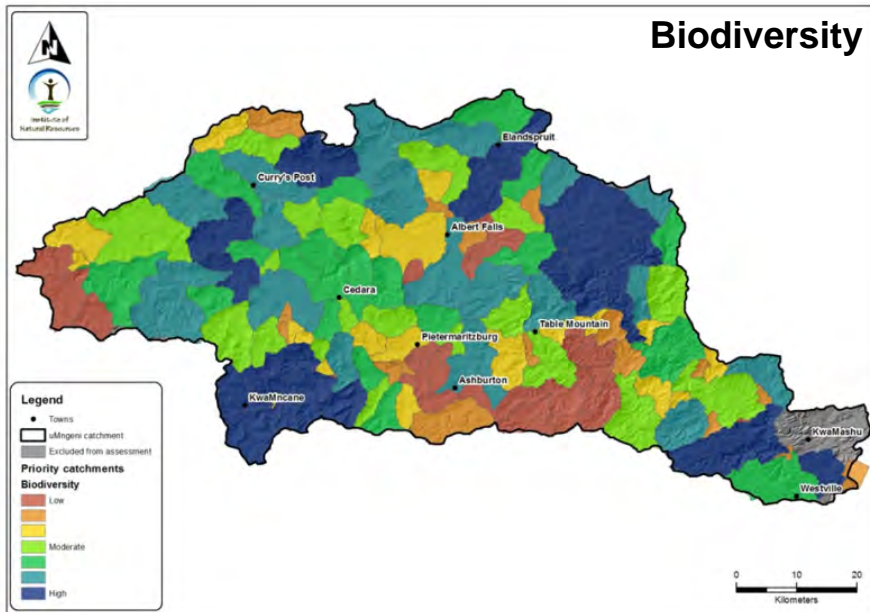
Integrated biodiversity layer



CBAs = Biodiversity Demand



Priority catchment ES maps

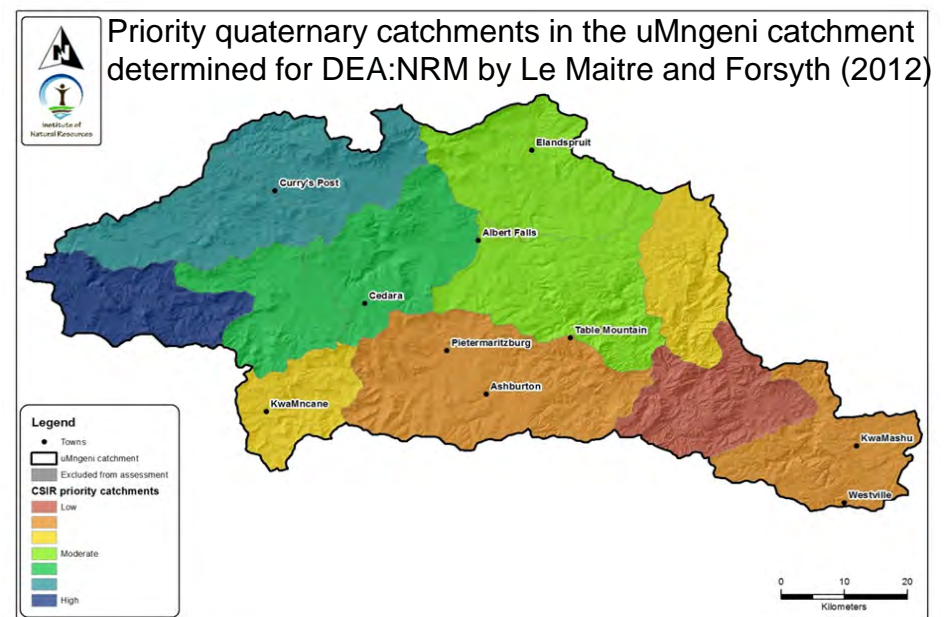
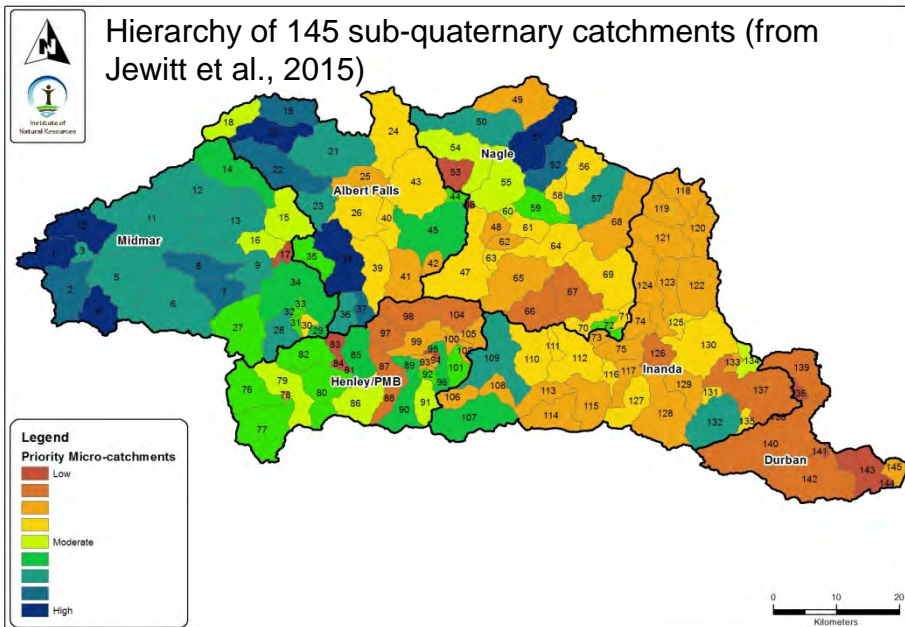
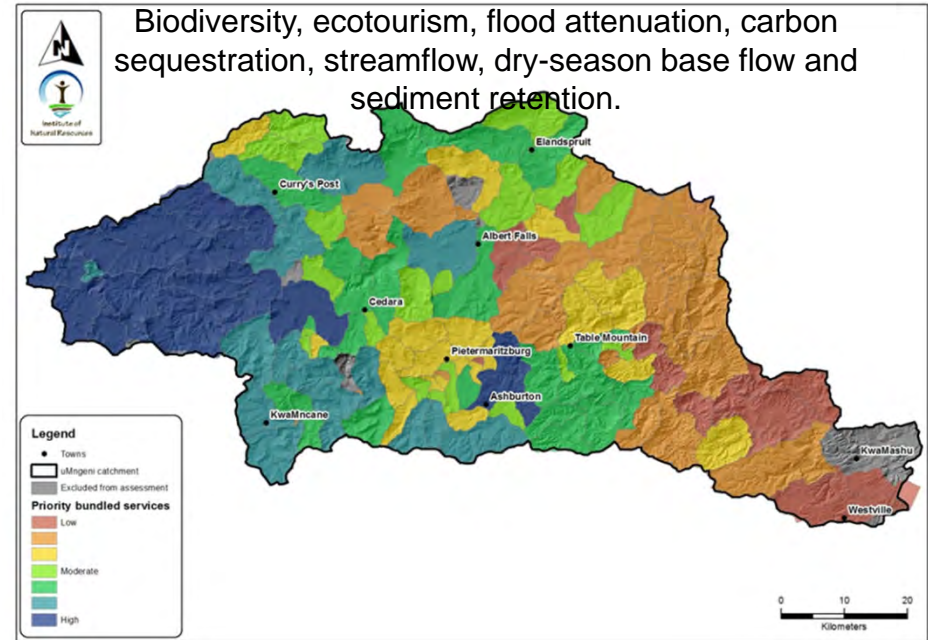
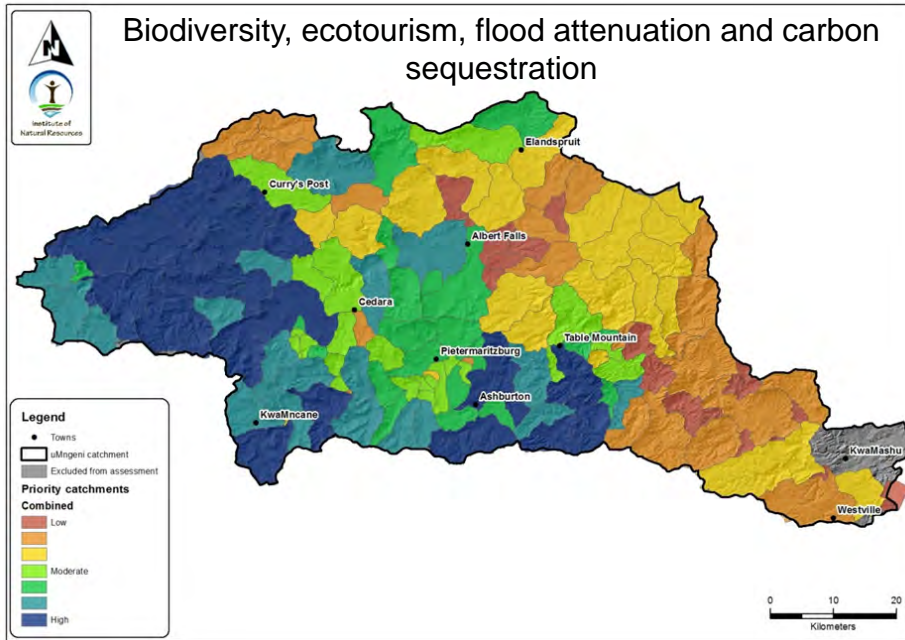


Comparison of priority areas

- Density of high potential areas used as surrogate for areas which should be rehabilitated to enhance the respective ecosystem services



Combined priority catchments



Comparison between priority catchments identified in all assessments

- Across prioritization processes the upper catchments of Lions River, Midmar and Impendle feature strongly
- Several micro-catchments also score highly in all four prioritization processes



Conclusion and recommendations

- Identified priority micro-catchments for range of ecosystem services and compared them with priority areas identified in other prioritization processes
- Some alignment between priority areas determined through different processes, elevating the importance of micro-catchments which feature in all processes
- Some NRM activities located in priority catchments, particularly Impendle, other NRM activities occur in low priority areas
- To better achieve the overall goal of the NRM programmes, activities should be concentrated in catchments which deliver multiple ecosystem services