Discussion Document:
Keurbooms Catchment Management Programme

(Prepared by Plettenberg Bay Community Environment Forum)

March 2025

From a financial perspective, the opportunity cost of invasive alien plants are: (a) the lost value of production due to a reduction in water resources, and (b) the increased requirement for water supply augmentation schemes, and the earlier development of such schemes. Economically speaking, the impacts of invasive alien plants are much broader because they have an impact on ecosystem functioning, processes, biodiversity, and every aspect of human life and livelihood that depends on them and is affected by them.

From: Biological Invasions in South Africa.
Editors: Brian W. van Wilgen, John Measey, David M. Richardson, John R. Wilson, Tsungai A. Zengeya
Invading Nature - Springer Series in Invasion Ecology, 2020

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1. Proposition

To establish an ongoing invasive alien clearing operation in the Keurbooms River Catchment that is:

- funded/financially supported through innovative funding mechanisms to ensure ongoing viability,
- that demonstrates positive freshwater outcomes for the people and biodiversity of the region,
- that contributes to fire management issues
- that creates jobs and small industries (SMME's).

2. Extent of Area/Reach

The project focus area is the Keurbooms catchment (see map below). However, the reach in terms of benefits would include:

- communities and stakeholders in the Bitou Municipal area and those living adjacent to the catchment,
- the health of the biodiversity and wildlife of the area

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COMMUNITY ENVIRONMENT FORUM

1. Rationale

Fire Management and Safety

In 2017, fires raged through the Garden Route, resulting in loss of lives, livelihoods, homes and belongings. The fires were fuelled by invasive alien plants, increasing fire loads through their combustible oils and profusion of plants.

Investigations and discussions following this included a strong focus on the need for management of invasive plants and access routes to fires.

Water

Water resources for the communities of Plettenberg are increasingly cause for concern. Plettenberg Bay has high development demands and an increasing population growth: "*The population of Bitou is 69 321 people in 2021, making it the most populated municipal area in the Garden Route District (GRD). This total is expected to grow to 77 243 by 2025, equating to an average annual growth rate of 2.7 per cent*." (Western Cape Government: Socio-Economic Profile, 2021). The latest IDP states: "*Bitou's population was estimated to be 65240 in 2022, which makes it the most populous municipality in the Garden Route District (GRD). The population is expected to increase to 80,260 by 2027, representing an average annual growth rate of 2.5%*." While the figures between these two statements may not align, the general trend is clear .... we can anticipate population growth that exceeds other town in the Garden Route.

As stated in the latest IDP, our water catchment system (the Keurbooms Catchment) is impacted through land transformation, alien invasive plant infestation resulting in loss of biodiversity and there are currently no formal catchment management plans being implemented. Thus a decrease of raw water quantity and quality will lead to an ongoing reduction in water security as Bitou faces the largest population increase on the Garden Route.

Job Creation, Skills, Small Industry

Bitou has the highest unemployment rate in the Garden Route, with referenced figures showing in excess of 30%.

The extensive and expanding infestation of alien invasive species in the Keurbooms Catchment, as well as in the Bitou Municipal area in its entirety, provides great potential for job creation and skills development, with resulting jobs working on the management of invasive plants and rehabilitation of transformed areas. Additionally, through the use of by-product from these activities, small industries can be established, with supportive business strategies (organizational structures, strategies, good marketing) in place.

3. Programme Facets

The financial sustainability of the past clearing programmes has resulted in programmes being finite with follow-up maintenance and clearing being halted. It is understood that financial models need investigating and research to determine the real cost of water and opportunities for the payments of these costs. A cost/benefit analysis is needed.

In order for the programme to be ongoing and considering the need for financial, social and ecological sustainability, the following facets will need to be incorporated into an organisational structure to be defined (the programme; the financial/economic model; the job/training/business creation establishment):

- Programme Facets: invasive alien plant and rehabilitation activities (including appropriate training); research for monitoring (water flow and quality, cleared areas and rehabilitation) and economic models; establishment of small industries (including training) and monitoring impacts of job creation/small industries.

4. Existing Baseline Information & Gaps

Needed:

- Updated mapping & prioritisation of areas
- Water abstraction points and amounts from the Keurbooms system (DWA)
- Water demand and supply prediction figures (DWA/Bitou Municipality, EADP)

- Important lessons from previous programmes to be researched and mitigations to be incorporated into programme planning and development (E2A, KEWIIG)
- Land Use map of focus area
- Programme funding:
    - Invasive alien clearing funding
    - Research funding
    - Programme management, coordination and admin funding
    - Training (the business of by-product) funding
    - Business development, strategy and marketing plans that nurture the businesses associated to small industries to a point of self sufficiency

5. Programme Implementation Outline

(Assumed: Funding is forthcoming, possibly through a phased approach with Phase 1 including the programme development and set up and Phase 2 being implementation and Phase 3 being phased handover to future management authority of a Water Fund)

PHASE 1: SET-UP & DEVELOPMENT

- Research stakeholders* (See appendix 1)
- With stakeholders, establish stakeholder and organisational structure for the programme (*See appendix 7)
- Identify management requirements for programme facets
- Liaise with research institutions to investigate research potentials, needs and opportunities
- Design implementation plan
- Funding application (*See appendix 2: Notes on Finance Models)
- Identify coordinator, clearing team structures, approaches and timelines (*See appendix 4)
- Draw up implementation plan including mapping of priority areas for water and fire (*See appendix 3)
- Identify and confirm site appropriate methodologies of clearing required.

PHASE 2: IMPLEMENTATION OF 3 FACETS IN PARALLEL

1. Invasive clearing in the catchment as per prioritisation and mapping. Teams managed by coordinator with reports to the stakeholder/advisory committee
2. Research economic models that include real costs of water (source to tap) and that incorporate the economic value of community benefits (water access, health, job creation, recreation and well-being), economic benefits (tourism, biodiversity and fire management) (*See appendix 5)

3. Research and development of small industry opportunities, skills transfer and training and supported establishment, implementation and business skills. (*See appendix 6)

PHASE 3: PHASED TRANSER TO A WATER FUND MANAGEMENT AUTHORITY

This will be researched as part of the economic facet of the programme with the objective of designing a water fund model that can carry the catchment management into the future providing water from source, contributing to fire management, providing job creation and the materials (by-product) for small industries. (*See appendix 5).

Appendix 1: **STAKEHOLDERS**

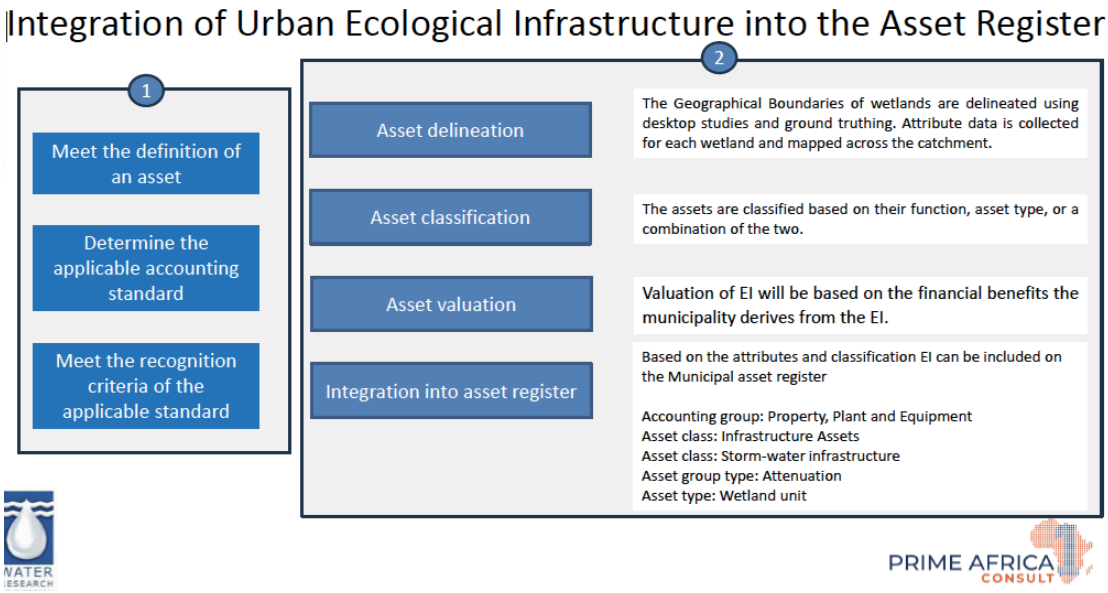
Stakeholders to include (acknowledging that this list may be incomplete and will need to be researched further and updated):

- Government conservation agencies:
  CapeNature, SANParks, Estuary Advisory Forum, Dept Forestry, Fisheries, Environment; Department of Water Affairs
- Environmental NGO's
  Garden Route Biosphere Reserve, Plett Enviro Forum, NVTrust, FMU's, SEDA (Small Enterprise Development Agency), Support Centre for Land Change (SCLC), SAFCEI, Eden to Addp, Conservation Outcomes, The Nature Conservancy (Water Funds for Africa), Guy Preston
- Private Landowners
  Upper, middle and lower Keurbooms, MTO
- Government
  Bitou Municipality, District Municipality, Environment Affairs & Development Planning
- Ratepayers
- Research Institutions
  NMMU, Sustainability Institute, Rhodes (environmental economics), Business School (GIBS, Rhodes, UCT, Stellenbosch, etc)

Appendix 2: **FINANCE MODELS, FUNDERS, CONSULTANTS, RESEARCH PARTNERS**

Finance Models:

- Green Finance Institute (HIVE): Work with the Cape Town Water Fund looking at finance models. Guidebook – Revenues for Nature
- The Price & Value of Water – An Economic Review 2023: Cambridge
- Cape Town Water Fund Model
- Ecological Infrastructure Investment Framework
- Water Neutrality: Nel & Revenues for Nature Projects (HIVE)
- Conservation Alpha: Water security bonds. Michael Muirhead
- Forvis/Mazars: Taskforce on Nature-Related Financial Disclosures
- Prime Africa: Municipal Asset Registers. Dineo Makate



- Payments for Ecosystem Services: Myles Mander

Case Studies:

- Hermanus
- Cape Town
- Drakensberg

Livelihoods & Industry:

- Toolkit approach: Myles Mander
- Sustainability Institute
- Business Schools: Stellenbosch, Rhodes, UCT, etc
- Marketing/Ad agencies/SEDA
- Working for Water / Guy Preston

Appendix 3: **MAPPING PRIORITY AREAS FOR WATER & FIRE**

Water:

- Mapping
- Priority areas
- Riparian areas
- Access (roads)
- Monitoring and adaptation: Monitoring plan to be developed and to include reported feedback and required adaptations
- Reporting mechanisms
- Research: Identify knowledge gaps and needs
- Follow up: Follow-up plans to be incorporated

Fire:

- Mapping: FMU's / Municipality / EADP / SANParks / CapeNature / MTO
- Priority areas: FMU's / MTO / SANParks / Bitou Municipality
- Firebreaks: FMU's/ MTO / SANParks / Bitou Municipality
- Access: FMU's / MTO / SANParks / CapeNature / Bitou Municipality
- Monitoring firebreaks, access points, threats
- Reporting: FMU's / SANParks / MTO / CapeNature / EADP / Bitou Municipality
- Research: Knowledge gaps and needs

Appendix 4: **FIELD TEAMS ORGANISATION, STRUCTURE & APPOINTMENT**

- Identify responsible organisation
- Organisational structure of field teams
- Appointment processes
- Labour law requirements
- Equipment, vehicle and gear requirements

Appendix 5: **WATER COSTS & FUND MODEL**

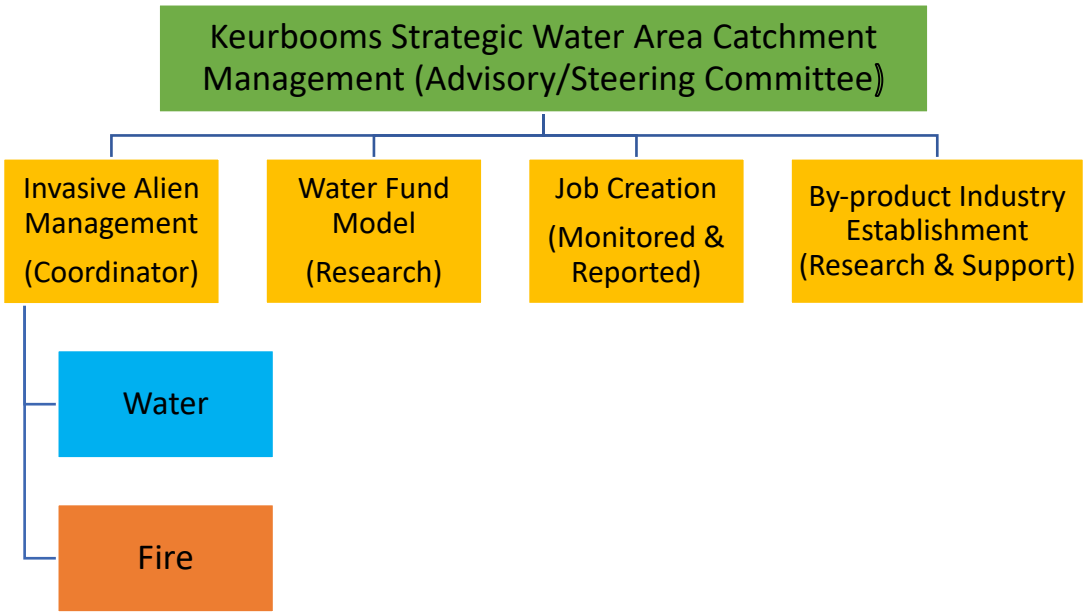
- Costs (real) and benefits of managing IAP's
- Economics: Existing frameworks for water fees. Real costs and benefits of water (catchment to tap)
- Cost-benefit study that incorporates all aspects of the project:
    - Value and timeline of water made available
    - Value and timeline of jobs and small industries created
    - Value of biodiversity re-established
    - Value of fire threat management
    - Future value of water, industries, biodiversity
    - Costs and timeline of clearing (labour, equipment, travel, etc)
    - Costs of project (management, travel, meetings, consultants, etc)
    - Costs of small business training and set-up
    - Future (ongoing) costs of clearing
- Comparative (and equal) cost-benefit study of alternative water supply mechanisms
    - Value and timeline of water made available
    - Costs of established "sources" (dam, pipelines, desalination, etc)
    - Value and timeline of jobs created
    - Ongoing costs (labour, maintenance, etc)

Appendix 6: **THE INDUSTRY**

Jobs & Industries Using By-Products

- Sustainability Institute to be consulted: To look at research into innovative industries (use of by-product for construction, nappies, fabric, paper, etc).
- Rhodes, Stellenbosch, UCT (etc): Business Schools to be consulted
- Biochar, parquet flooring, desks, ceiling board, fire-retardant bricks/slabs, interior counter tops, fibre-fabrics (like hemp but with wattle/other), firewood: Research and development required. Speak to Guy Preston?
- Voluntourism: Link with volunteer tourism organisations to include hacking activities as part of awareness, education and buy-in
- Aviation fuel / bio-fuel: Contact Steve du Toit from Gouritz Cluster Biosphere

Appendix 7: **DRAFT PROGRAMME STRUCTURE**



Reference Documents and Websites:

1. https://www.conservationalpha.com : Michael Muirhead
2. Biological Invasions in South Africa (e-book): https://link.springer.com/book/10.1007/978-3-030-32394-3
3. Progress towards the Control of Invasive Alien Species in the Cape Floristic Region's Protected Areas, 2024. Brian W. van Wilgen, Nicholas S. Cole, Johan Baard, Chad Cheney, Karen Engelbrecht, Louise Stafford, Andrew A. Turner, Nicola J. van Wilgen, Andrew M. Wannenburgh (https://doi.org/10.1007/s10530-024-03459-3)
4. The Greater Hermanus Water Conservation Programme. National Water Conservation Campaign, Department of Water Affairs & Forestry, Greater Hermanus Water Conservation Programme
5. Greater Cape Town Water Fund: Business Case, Summary of Findings, August 2019. The Nature Conservancy & Water Funds for Africa. (*Shared document)
6. Integrating Green Infrastructure Into Formal Urban Asset Management Systems, 2024. Prime Africa Consult with the Water Research Commission.

   From presentation by Dineo Makate from Prime Africa Consult.
7. Greater Cape Town Water Fund, Sustainable Funding Strategy, 2021: The Nature Conservancy – Justus Raepple, Louise Stafford, Sophie Tremolet, Richard Bugan. (*Shared document)
8. WWF-SA, Justin Smith: Water Source Partnerships, 2024: Presentation (Plettenberg Bay)
9. Restoring and managing natural capital towards fostering economic development: Evidence from the Drakensberg, South Africa, 2010. James Blignaut, Myles Mander, Roland Schulze, Mark Horan, Chris Dickens, Catherine Pringle, Khulile Mavundla, Isaiah Mahlangu, Adrian Wilson, Margaret McKenzie, Steve McKean
10. Outenique & Tsitsikamma Strategic Water Source Areas, 2023. Garden Route Biosphere Reserve.
11. Revenues for Nature Guidebook Series: Nature-based Models for Unlocking Private Investment into Water Quality and Availability Part 1, 2024. UNDP, Biofin, Green Finance Institute.
12. The price and value of water: An Economic Review, 2022: Rupert Quentin Grafton, Ana Manero, Long Chu and Paul Wyrwoll.
13. Water neutrality: A First Quantitative Framework for Investing in Water in South Africa, 2008. D.C. Nel, C. Marais, J.N. Blignaut