

Surface Water Catchment- and Integrated Water Resources Management (IWRM) as Public policy Implementation- and Impacts determination in the Municipal Management of Merafong City Local Municipality, Gauteng Province, South Africa

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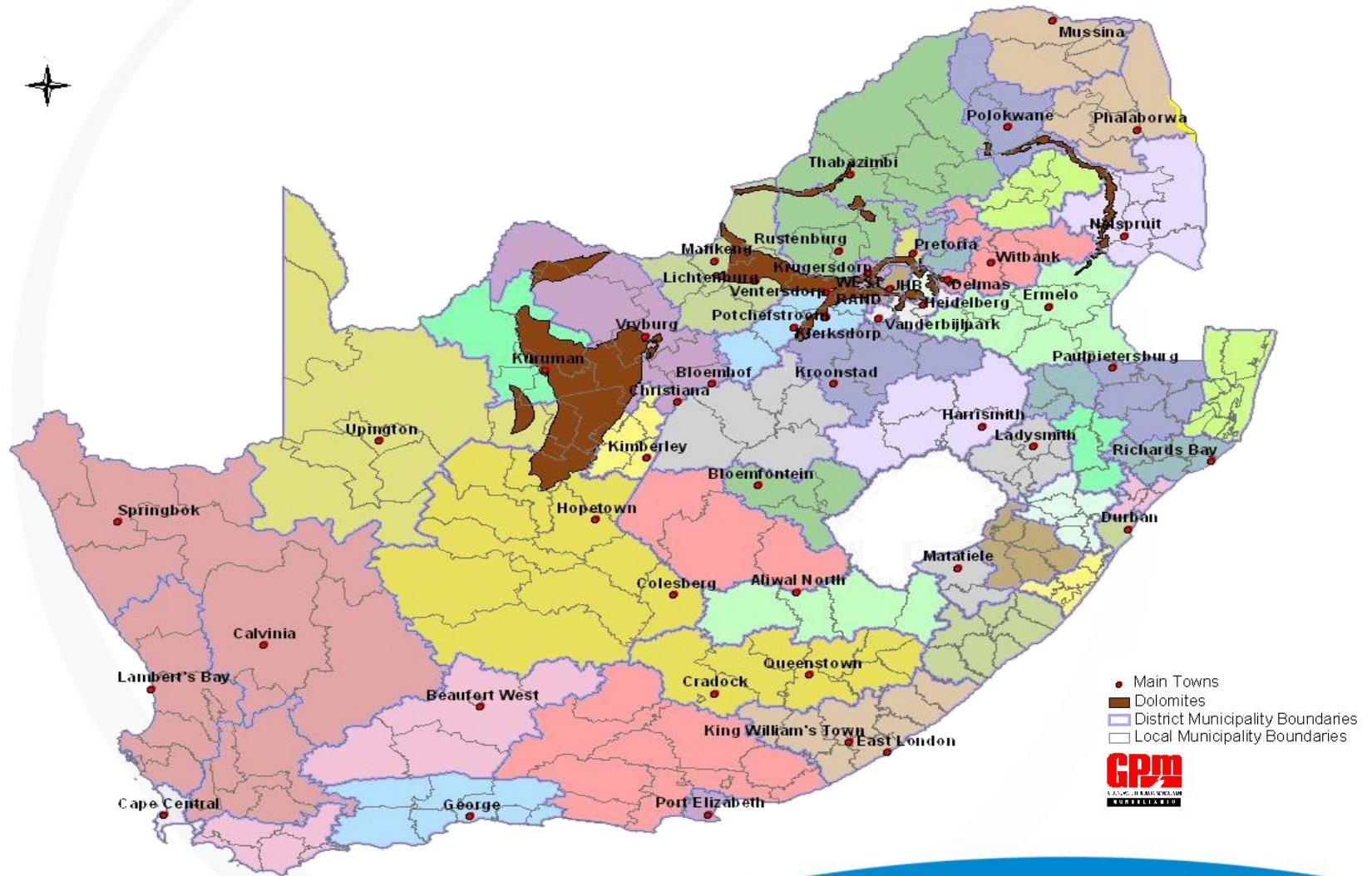
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Preview

- Nature and extent of municipal areas in South Africa
- Research methodology
- Problem statement
- Transformed local government sphere
- Definitions of surface water catchment, Integrated Water Resources Management (IWRM) and co-operative governance
- Case Study: Merafong City Local Municipality
- Conclusion
- The way forward...

Topographical map of the municipal and dolomite areas in South Africa



Research methodology

1

Archival
research

2

Literature
review

3

Supervision of
research locus and
focus of 10 master
and doctoral students
over the past 5 years

4

Involvement in
the Wonderfontein
Spruit and Mooi
River community
participation forums

5

Personal
research

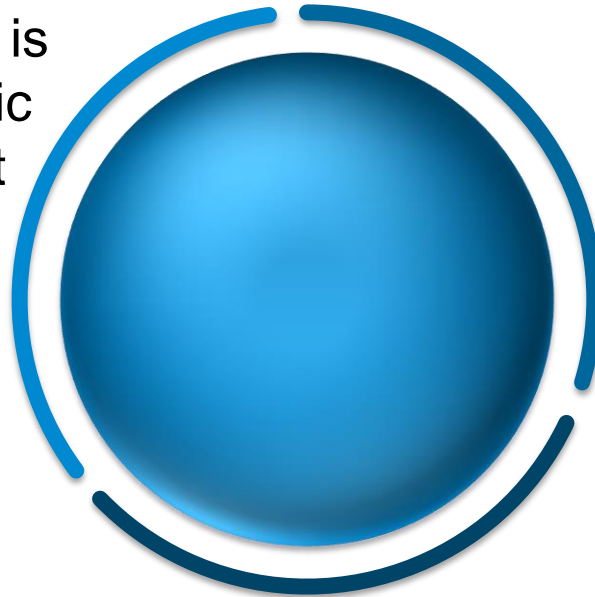
Part of the research has been part of a NWU-driven NRF-Community Engagement Project regarding the Ecohealth and Wellbeing of mining communities

Problem statement

It is unfortunate that,
in the demarcation process of the municipalities' geographical areas of jurisdiction in South Africa, the surface water catchments (river basins) identified by the then Department of Water Affairs (now Department of Water and Sanitation) (DWS),
as well as the overall geology & geo-hydrology (for example, sensitive dolomite rock in areas with geo-hydrologically unconfined groundwater aquifers)
were not taken into consideration in the planning for and facilitation of especially water, sanitation, refuse removal and human settlement services.

Transformed local government sphere of South Africa

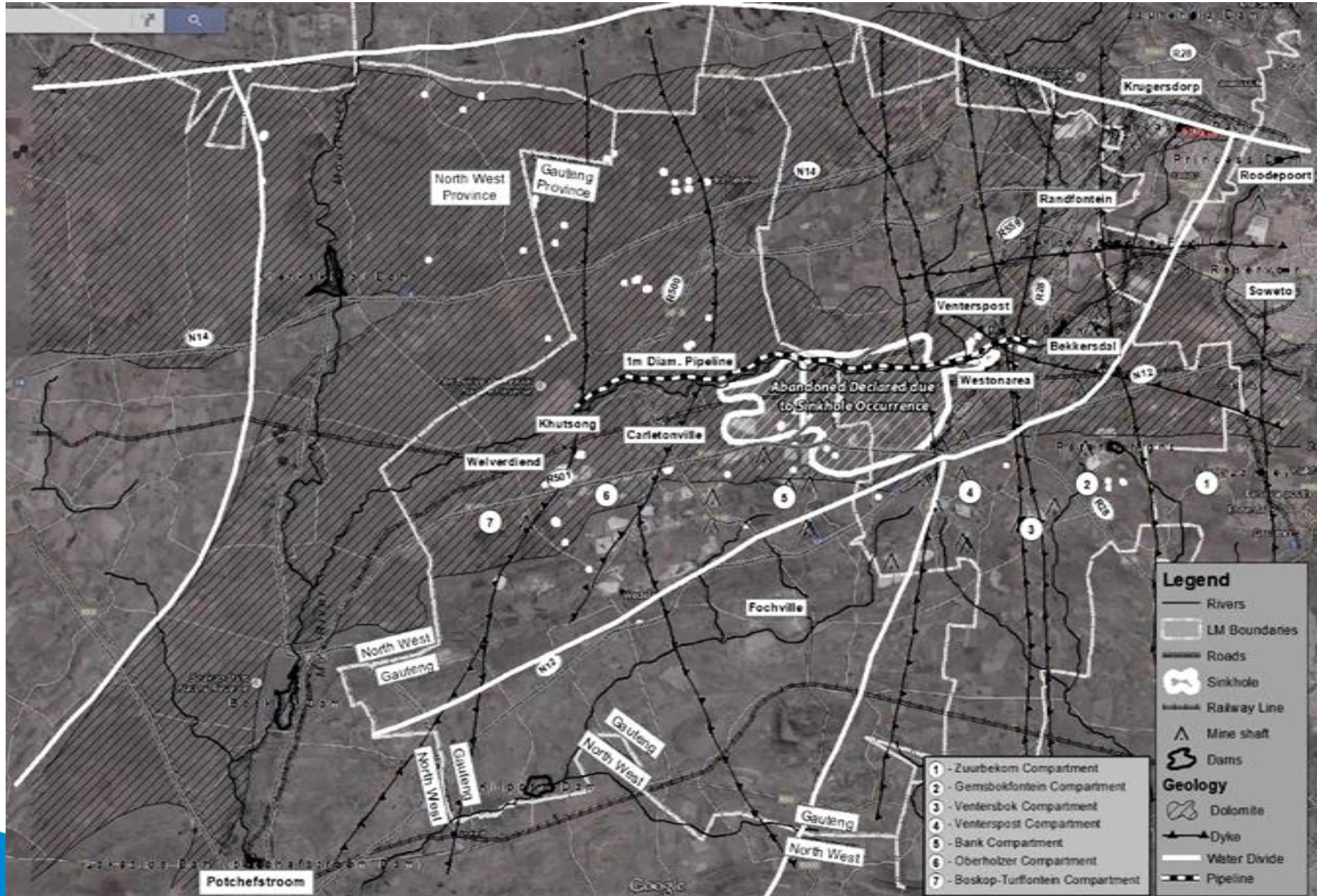
Developmental local government's main aim is to promote the economic and social development of all the communities through effective democratization and transformation of local governance (Pycroft, 1996:233)



Municipalities now tasked with functions of wider diversity and complexity (e.g. millions more clients, over longer distances and in a fast deteriorating natural- and human-changed environment)

Basic needs of municipal residents have become more sophisticated, urgent and demanding

LOCALITY MAP: Merafong Local Municipality



Photos



Photographs

Dolomite rock



Sinkhole (2006)



Carletonville



Photos of the devastated Bekkersdal environment



Examples of bad service delivery and subsequent reactions of angry Bekkersdal residents

Photo of children being exposed to toxins



Children's health at risk as they swim at the outlet of Donaldson Dam stirring up mud that contains toxic elements

Surface water catchment and divide



Latorita River,
tributary of the
Lotru River
(Drainage basin)
(PediaView, 2015: Online)

Except for a few
people staying
close the Lesotho
Highlands we all
stay in a
catchment
downstream and
upstream from
somebody else...

Surface water catchment and divide

Americans call a surface water catchment a watershed and a number of them (not Americans) make up a river basin.

“Surface water catchment is an area of land where rain and melting snow converge to a single point at a lower (Metres Above Mean Sea Level) ground surface elevation and where the waters then join another water-body such as a river, brook (spruit), lake, aquifer and ocean”

AND

“Catchment divide forms along the highest points (MAMSL)(ridge) separating two catchments from where falling rain water can flow in either direction”.

The groundwater usually mimics the gravitational flow of surface water in a catchment.

Surface water catchment and divide

(continued...)

Two common physical threads for all catchments are that

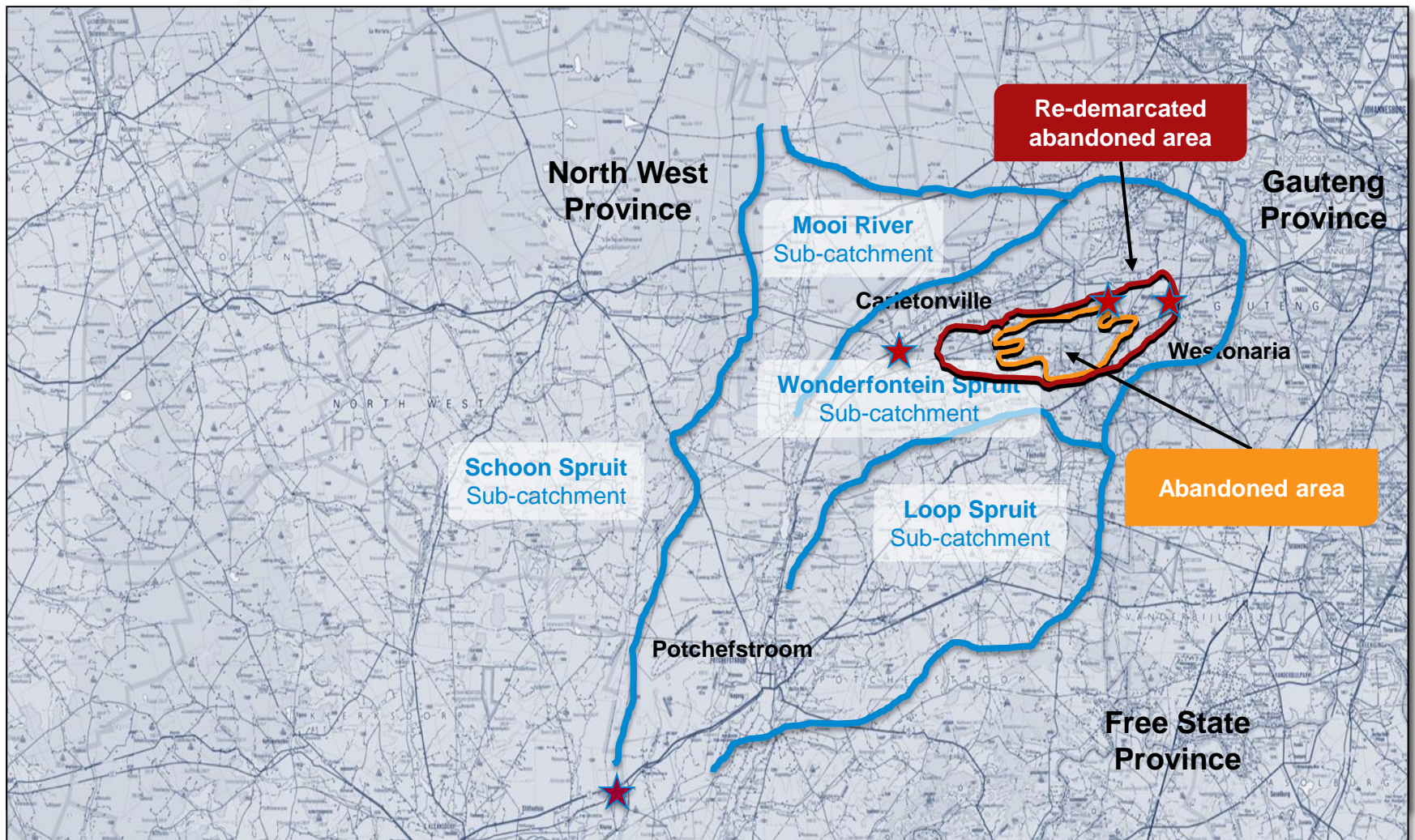
“Water flows downstream ignoring all political boundaries en route”

and

“Most of the things that people do to their land and water upstream affect the water quantity, timing of flow and quality downstream, and, as a consequence, downstream land productivity in its various forms”.

Effective management of municipal areas demarcated according to catchments (and not only politics) will facilitate IWRM and co-operative governance!

Surface water catchments with regards to Carletonville



Integrated water resources management (IWRM)

“ *A process that promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.* ”

(UN Water, 2008:5)

"Two main inputs to this process are TECHNICAL INPUTS on the one hand and POLITICAL NEGOTIATION on the other." (Gregersen et al., 2007:xi)

"... climatic regime and the vegetative, geologic, topographic and soil characteristics of a catchment determine how the hydrologic processes of the catchment respond to precipitation inputs" (Gregersen et al., 2007:xii)

Integrated water resources management

(continued...)

The institutional context for such programmes is critical. The more it realises, the more likely that there will be changes in the relationships between the public- and private institutions that determine the governance of land, water and other natural resources.

“Laws, policies, local commitment and participation, financial incentives, organisational arrangements, visible forums and willing role-players and stakeholders to act as catchment managers can lead to IWRM par excellence.”

“Note the subsequent linking of geology, hydrology, geo-hydrology, soil studies and catchment management as prerequisites for amongst other, effective and sustainable human settlements”.

Co-operative governance

The Constitution 1996 establishes a governance system that forces

“all spheres of government and all organs of state”

to co-operate with one another in

“mutual trust and good faith”.

This should therefore be taking place across and within all public sector departments, regardless of the activity, and its location in the project cycle.

Visibility, access, transparency and communication are keys to success.

New Public Administration as vehicle to strengthening of basic public services at the local government sphere

Co-operative governance (continued...)

If you fail to plan... you are planning to fail (Benjamin Franklin)

Project Management and Public Management's Body of Knowledge
(PMBOK)

Monitoring, Evaluation and Reporting systems

“We use the term catchment managers to include those with formal titles and also all the other land and water users who think of themselves in terms of a holistic management context”

E.g.: New Zealand in 1989 reorganized and consolidated its local government sphere to create 16 new regions defined by surface water catchment boundaries.

Conclusion

- 1 Surface water catchments of DWS are essential for macro-planning and organising of water related services in a municipal area
- 2 Effective partnerships (PPPs) in facilitation of IWRM and co-operative governance are needed
- 3 Knowledge about the origin of one's water, the management of the potable water and sanitation, and the destiny of the used water and effluent is essential
- 4 The nature and extent of IWRM & COG in the Wonderfontein Spruit- and Mooi River catchments between role-players and stakeholders are of a poor standard
- 5 De-politicizing of catchment management areas by having them defined by surface water catchment- rather than political boundaries, is internationally recognised as lending itself to more effective IWRM
- 6 We must think globally and act locally...

The way forward...

- All responsible actors in a municipal area should try to facilitate co-operative good governance in its physical- and human-changed environments
- The "Area abandoned due to the forming of new sinkholes" must be demarcated
- Current state of basic water services infrastructure of all municipalities must be investigated
- Demarcate the occurrence of dolomite accurately, and manage it according to established protocols in affected municipal areas
- JB Marks Local Municipality must play a more visible, dominant, leading and managerial role in the Mooi River, Wonderfontein Spruit and Schoonspruit sub-catchments' environmental aspects, water and sanitation
- Keep the municipal residents informed



**Donaldson Dam in Wonderfontein Spruit: The water is pleasing on the eye...
but deadly!**

Thank you

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