



the federation for a sustainable environment

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WRITTEN SUBMISSION ON THE DRAFT 2.6: NATIONAL WATER AND
SANITATION MASTER PLAN (NW&SMP)

In this document, the Federation for a Sustainable Environment (“FSE”) submits comments on the National Water and Sanitation Master Plan, draft 2.6 (the “draft plan”).

THE FSE:

The FSE is a federation of community based civil society organisations committed to the realisation of the constitutional right to an environment that is not harmful to health or well-being, and to having the environment sustainably managed and protected for future generations. Their mission is specifically focussed on addressing the adverse impacts of mining and industrial activities on the lives and livelihoods of vulnerable and disadvantaged communities who live and work near South Africa’s mines and industries.

In accordance with the above-mentioned mission, the FSE’s comments are limited to matters pertaining to the mining industry. The FSE’s comments will be substantiated by real examples within the scope of the FSE’s experience and our active participation in a

significant number of environmental impacts assessments, environmental management programme reports, water use license applications, environmental authorisations, steering committees, forums, task teams, teams of experts, academic research groups, boards, etc. over a period of 15 (fifteen years).¹

INTRODUCTION:

On 8 December 2017, the Department of Water and Sanitation had completed the National Water and Sanitation Master Plan. This resulted in the Department of Water and Sanitation, under Director-General Mr. Mkhize, to invite various organisations to a Departmental Cluster Working session on 2 February 2017. In terms of this invitation the FSE and the LRC will, *inter alia*, be making submission on the following issues:²

- the Ecological Reserve and the protection of ecological water structures;
- compliance and enforcement;
- the independent economic regulator;
- the role of civil society;
- the amalgamation of the WCMA into a single centralised department;
- you cannot drink paper plans;
- potential water crisis exacerbated by poor management, aging infrastructure and lack of skills in the right places;
- lack of data and information resulting from weak monitoring systems; and
- mining.

THE ECOLOGICAL RESERVE AND THE PROTECTION OF ECOLOGICAL WATER STRUCTURES:

The Ecological Reserve:

¹ Kindly note that the Legal Resources Centre assisted with this publication.

² We shall comment on each of these sections. We furthermore request that our comments be read in conjunction with the SAWC's State of the Department of Water and Sanitation's Report.

One of the founding rights in the South African Bill of Rights is the right to have access to sufficient water.³ In terms of bringing that right to fruition, the National Water Act 36 of 1998 (the “NWA”) had created a system wherein a reserve would be determined for any major water resource. The primary concern of the reserve was and still is to establish a minimum water level needed to support life (in other words providing sufficient water to the people of South Africa).⁴ The manner in which the reserve was calculated was based on two criteria, the ecological reserve and the human reserve.⁵

Although the human reserve is critical for effectuating the right to water, the ecological reserve is the quintessential component in making sure that the right to water can exist. Without measuring the capabilities of what the aquatic ecosystem can endure in terms of human and ecological consumptions will result in a system that is unsustainable and cannot function which means water cannot be supplied in terms of the Constitution. The importance of the ecological reserve has and is recognised by the Department of Water and Sanitation (“DWS”) and was highlighted as one of the first actions to be undertaken in the second National Water Resource Strategy wherein it stated that the ecological reserve and the classification of the South African rivers will be a priority.

The draft plan deals with water ecological systems under chapter 8.⁶ In terms of this chapter, the ecological reserve has only been mentioned twice and in those two instances failed to take into consideration the importance of the reserve. In terms of this, at 8.1.1 the draft plan states *“this highlights the importance of using the integrated water resources management tools provided by the NWA, including the ecological reserve, the classification of water resources and the determination and implementation of resource quality objectives.”* By reducing the ecological reserve to a management tool removes the constitutional element of having an enforceable right. The Departmental Cluster should take cognisance that this failure to elevate the ecological reserve could open the DWS to potential litigation.

The second issue pertains to the failure of the draft plan in giving a meaningful programme on how the DWS is going to monitor and evaluate the ecological reserve. Although there are

³ The Constitution of the Republic of South Africa, 1996, Section 27.

⁴ National Water Act 36 of 1998 part 3, section 16 – 18.

⁵ National Water Act 36 of 1998 definitions

⁶ See draft plan at River Systems 8.1.1 and table 14 at cluster 3

some initiatives, in the draft plan, on how the DWS is going to monitor water courses and systems it needs to undertake further monitoring and evaluation of the ecological reserve to continuously determine if the ecological reserve is sustainable.

The third issue pertaining to the ecological reserve in the draft plan, is the fact that there is such little mention of the ecological reserve are we to assume that the ecological reserve will be removed as a constitutional binding obligation in the new water bill? It must be stated in the white paper on Water, that the ecological reserve together with the human reserve are the only enforcing rights in the that paper. Once again the Department Cluster must take cognisance of the fact that the ecological reserve is an important component.

The FSE and the LRC however, welcome that there will be a concerted effort to increase the determination of the reserves of underground ground water and the estuaries.

Protection of Ecological Water Structures:

In terms of the Water use and environmental authorisations that are continuously given to mining companies, within legally protected areas (including Nature Reserves, Protected Environments)⁷, in areas of highest biodiversity such as critically endangered and endangered ecosystems, river and wetland Freshwater Ecosystem Priority Areas (FEPAs) and Ramsar Sites, is becoming a serious issue in maintaining and protecting the Ecological Water Structures. What is important to note the reason why it is becoming difficult in protecting these sensitive areas is the fact that there are a multitude of mining application being submitted on a monthly bases in a single area. The net effect is that the impact compounds the total destruction of the area due to the number of mining's companies together with the significance of the biodiversity features and the associated ecosystem services.⁸

To exemplify the above we will give two examples:

Groot Marico Region:

⁷ See the National Environmental Management Protected Areas Act 57 of 2004

⁸ Department of Environmental Affairs and Department of Mineral Resources' Mining and Biodiversity Guideline.

Environmental authorisation was recently given for the Doornhoek Fluorspar Mine project. However, there are at least 6 other mining applications for that area. To location of these applications fall under an area commonly known as Groot Marico. This area has the following important ecological water and land systems traits:

- Greenfields;
- An important ecotone with high species richness, a unique species combination, genetically unique populations and high intra-species genetic diversity;
- A highly ecologically significant aquatic ecosystem, a designated priority river system (FEPA Rivers);
- An aquatic Critical Biodiversity Area (CBA2) with the presence of the Vulnerable Marico Barb and the Near Threatened Waterberg Barb which is considered near threatened;
- The upper reaches of the Marico River, which are in a natural or near natural ecological state;
- The upper Groot Marico River and Tributaries are Fish Sanctuary Areas, which support three genetically distinct populations of the vulnerable Marico barb;
- The Klein-Marico River, which present ecological status is categorised as a Class B: Largely Natural;
- Five major wetland types;
- The Groot Marico River, which is fed by a number of springs (eyes) within the Groot Marico Dolomitic Aquifer Compartment, an which are highly sensitive from an ecological point of view considering that many red data fauna utilize this area as a source of water and habitat.
- The main rivers in the area have an ABA status, which means it is pristine water that is drinkable from the source.
- The Groot Marico river feeds the Gaborone City in Botswana;
- The area feeds the Orange River, the Limpopo River and various other small tributes. The impact of damaging this area would impact the lives of millions of people and the economy.

Mpumalanga Coal Mining:

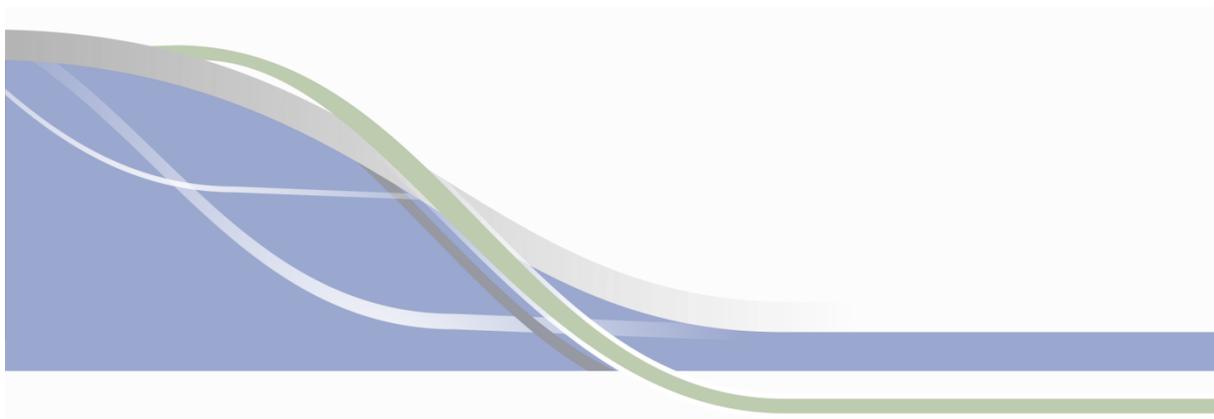


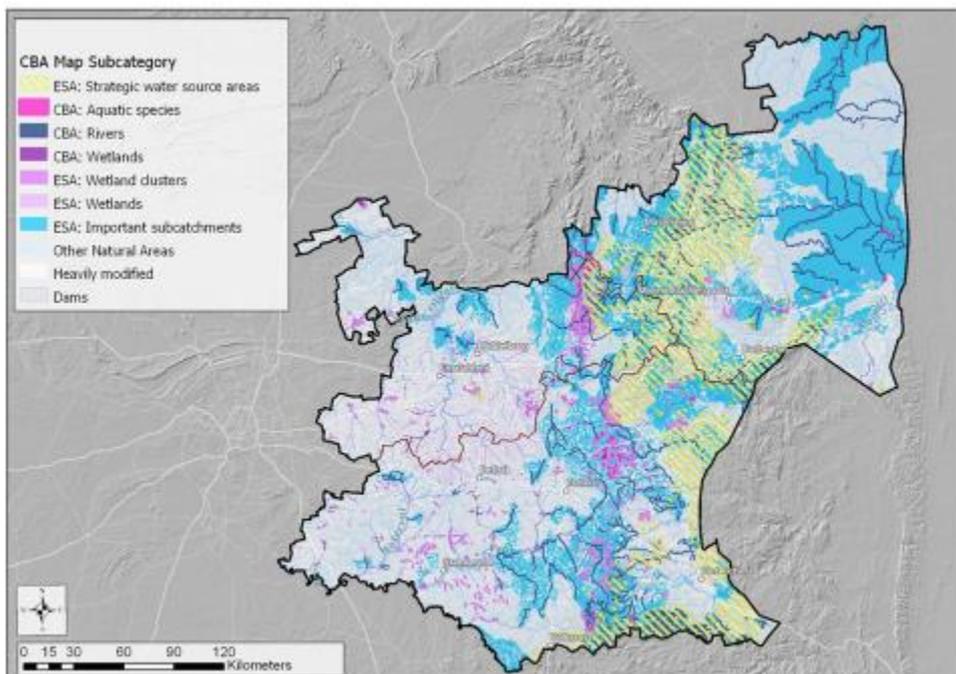
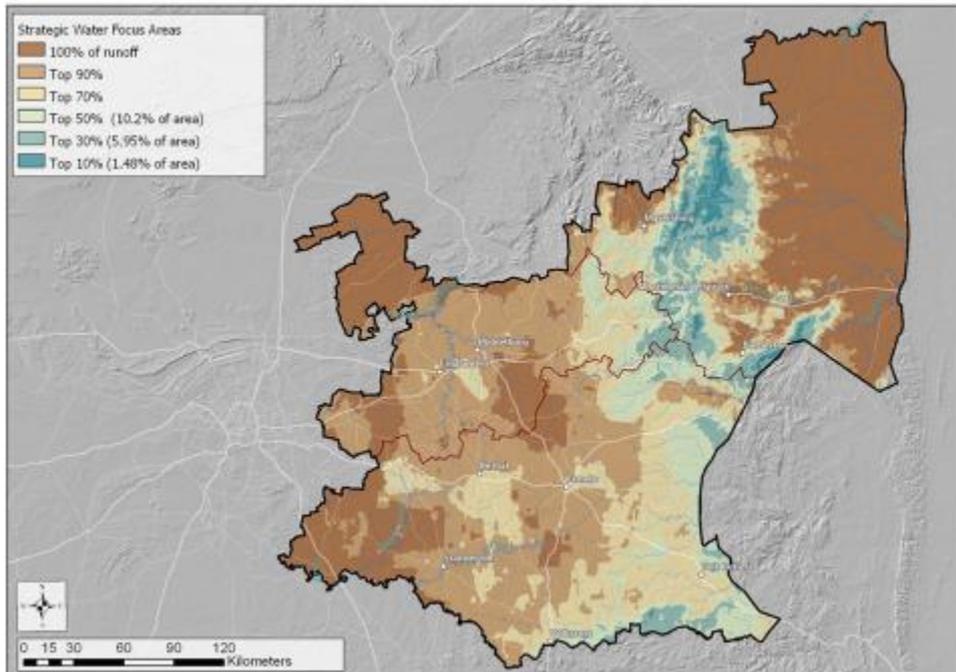
Another example is the authorisation of water use license applications and environmental applications within Mpumalanga, a region with high agricultural potential, the highest rainfall, lowest evaporation and highest precipitation in South Africa and the source of 4 major rivers except the Limpopo. The entire Upper Vaal WMA is underlain by coal with significant acid producing potential.

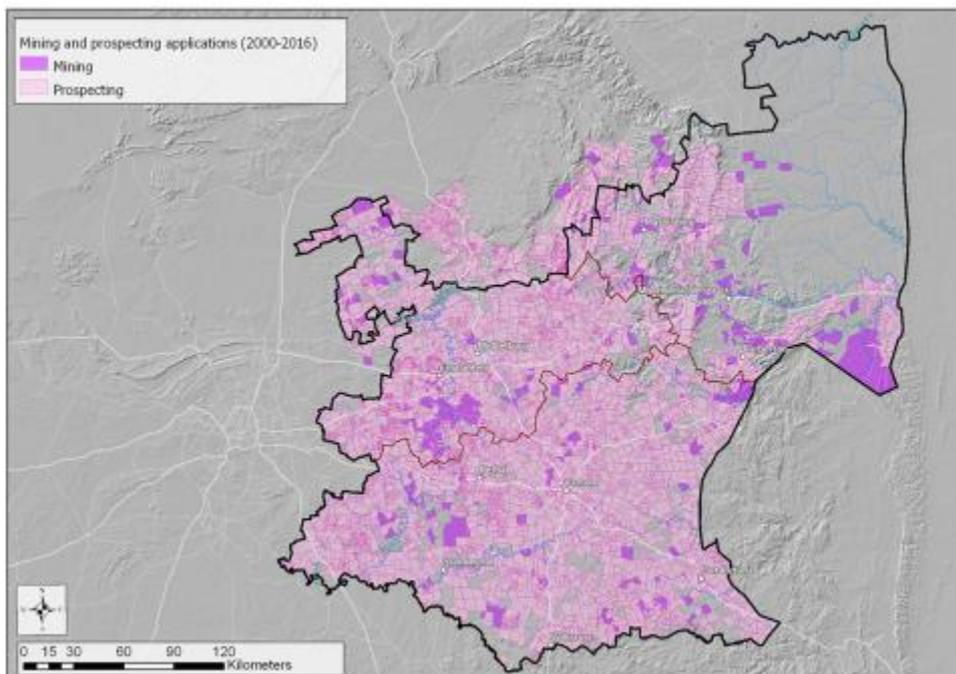
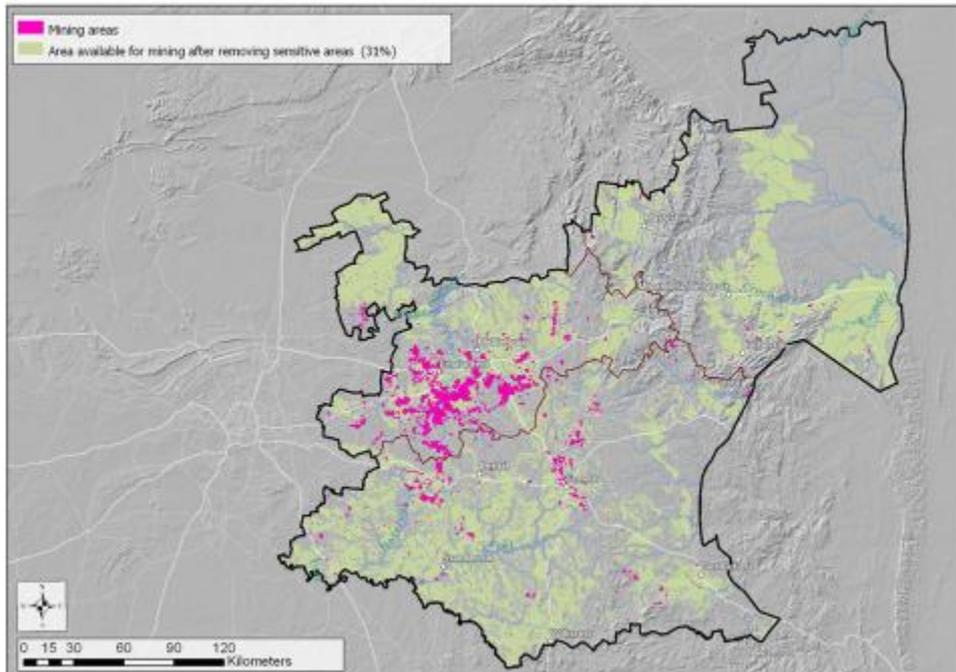
The subjoined maps show the strategic water focus areas and strategic water source areas within Mpumalanga. If these areas are declared as “no go” areas because of its water yield potential, a large area of Mpumalanga still remains to be mined (31% of the province). Please see the third subjoined map in this regard.

Notwithstanding these considerations, the fourth subjoined map shows the number of mining and prospecting applications between 2000 and 2016. It can logically be inferred from this map that the entire Mpumalanga is under either mining or prospecting applications.

The goal of the Master Plan to protect and sustainably and equitably develop water resources and “water factories” can only be realised if the DWS, in collaboration with the DEA and the DMR, declares the strategic water focus and source areas within Mpumalanga as no-go areas.







COMPLIANCE AND ENFORCEMENT

Within various chapters of the draft plan there is mention of CMEs (Compliance, monitoring and enforcement), however, there is very little detail on how the DWS will tackle the rampant non-compliance that exists within big business and residents in certain areas.

The only meaningful paragraph to deal with CME is at paragraph 10.9.1.3, operational approach, wherein it is stated that, *“a differentiated and targeted approach to regulation based on the 80/20 principle will be adopted. This will require the development of a specific suite of criteria to identify high impact users that will be the focus of CME. Also noting that due to the capacity constraints in DWS, the support of sector institutions will be required to implement these approaches and will require a coordinated sector effort that looks at raw water use and water services.”*

There are two issues with this design on how to tackle the CME issue. The first issue sits with the principle of an 80/20 criterion to determine who is to be targeted. This system will cause huge problems in trying to combat the CME issue if not applied correctly. In other words there could be a plethora of people who are not complaint but do not meet the 80/20 rule. As a result there could be a situation where the CME operation / programme is not functioning effectively due to the incorrect assumption of targeting huge users of water. For example many small-medium scale farmers do not have water use licence. However they would not be seen as the big users of water as the threshold of the 80/20 rule is not meet.

The second issue is relying on other institutions to undertake the CME programme. We cannot see how allowing other institutions will operate effectively. In particular you cannot target municipalities or other government departments such as DMR to under CME programmes when their purpose as a department is geared to polluting, albeit legally, water. CME is a critical function of any department, the DWS cannot pass the bucket and ask other non-expertise water departments to take up the work. Not to mention that there is a constitutional and power issue at play. The Department of Water and Sanitation is in charge

of the NWA and therefore they are the only ones entitled to undertake action against companies or users who are not being compliant with the Water Use Licence or the Act itself.

We also request further clarification on what is meant by the pollution register. We must remember that a WUL is a licence for water use and allowing pollution to flow into the water system, therefore what is the purpose of the pollution register, is it a register that will show who is the legal polluter or the non-complaint polluter?

In terms of the CME programme, it is stated in the draft plan that the Catchment Management Agency (together with other institutions) will be in charge. In light of the current system wherein it is noted that the problem with CME is a capacity issue and not structural issue, how will the DWS make sure that the capacity of the CME is sufficient?

In light of the above we therefore request that this section be given greater consideration in terms of how the CME programme will be rolled out.

Pre-Directives, Directives and Criminal Prosecutions

The above-mentioned goal can only be achieved if the DWS diligently and consistently enforces the non-compliance by mining companies with pre-directives and directives. Grounded upon our experience, the DWS at times issues a notice to issue a directive for pollution incidents. The pre-directive or notice infrequently translates into a directive.

If a directive is issued and there is non-compliance or partial non-compliance with the directive, there is no further action taken by the DWS notwithstanding the fact that the NWA allows for criminal prosecution.

In substantiation: The DWS has had zero convictions for criminal offences and has suspended only one water use licence since the 1st of January 2008.

The Master Plan is mostly silent on enforcement and criminal prosecution.

Retrospective Application of the Polluter Pays Principle

Furthermore, there is a reluctance on the part of the NWA and the honourable Minister of Water and Sanitation to enforce the retrospective application of the polluter pays principle. We refer e.g. to the public statement by the honourable Minister during the launch of the long term treatment of Acid Mine Drainage (AMD) that the DWS will not go on a “*witch hunt*” of the historic polluting mining companies⁹. (Interpolation: AMD has been a long recognised problem. In 1903 it was already referred to as an established phenomenon concerning pumped water on the Witwatersrand. The Council of Geosciences holds a comprehensive data base of historic and current South African mining companies).

There is no ambiguity in the Act: The NWA holds a wide pool of persons responsible and liable for pollution. Subsection (1)(c) of the NWA imposes an obligation on owners (when the pollution or potential pollution occurred or that owner’s successor-in-title); persons in control of or persons who occupy the land, persons who directly or indirectly contributed to the pollution or the potential pollution; the person in control of the land or any person who has a right to use the land at the time when the activity or the process is or was performed or undertaken, or the situation came about.

In the Gauteng High Courts, a judicial pronouncement was made in *Harmony Gold Mining Co. Ltd. v Regional Director, Free State, Department of Water Affairs and Forestry (2006) JDR 0465 (SCA)* namely that a directive issued to persons whilst they were a landholder remains valid even after such landholder has severed its ties to the land. All arguments raised by the applicant on the basis of perpetuity liabilities and unreasonableness, amongst others, were rejected.

It is clear that the prevention and remedying effects of pollution (duty of care) applies to pollution that might arise at a different time from the actual activity that caused the contamination and to pollution that may arise following an action that changes pre-existing contamination. It is therefore no defence to say that the pollution is historic, indirect or underlying – the responsibility to take reasonable steps remains.

⁹ <http://www.risefm.co.za/water-consumers-mines-to-cover-costs-of-new-acid-mine-drainage-project/>

The NWA makes provision for a CMA or the DWS to take the measures it considers necessary to remedy the effects of pollution, or to contain or prevent the movement of pollutants or to eliminate the source of pollution, and to recover the costs from polluters jointly and severally if the polluter fails to comply or inadequately comply with a directive.

The above-mentioned options, which are available to the DWS in terms of the NWA ought to be employed to reduce pollution, eliminate unlawful dumping and minimizing release of hazardous chemicals.

Regulations of Use of Water for Mining and Related Activities aimed at the Protection of Water Resources

The Regulations call for *inter alia* the confinement of unpolluted water to a clean water system, away from a dirty area and the collection of water arising within any dirty area, including water seeping from mining operations, outcrops or any other activity, into a dirty water system; prevention of erosion or leaching of materials from any residue deposit or stockpile; fencing-off of any impoundment or dam containing poisonous, toxic and injurious substances and the erection of warning notice boards at prominent locations.

The Regulations furthermore call for the ensuring that all pollution control measures are designed, modified, constructed and maintained at either the temporary or permanent cessation of operations.

The above-mentioned Regulations are routinely contravened with impunity. In substantiation we refer to e.g. the operations of Mintails SA (Pty) Ltd's and the Blyvooruitzicht Gold Mining Company.

The Master Plan is mostly silent on the above-mentioned Regulations and their enforcement.

THE INDEPENDENT ECONOMIC REGULATOR

In terms of the Draft plan at 11.3.1 read with 1.2. there is a diagram highlighting the importance¹⁰ of the Independent Economic Regulator. The main purpose, as stated in the Draft plan, of the Independent Economic Regulator is to be the responsible authority for regulating water services provision by local government and ensuring the financial technical sustainability of service provisions.

In light of the above, the draft plan must be very careful to not over step their authority. In terms of the Constitution schedule 5 read with section 155 and 156, water and sanitation services limited to potable water supply system and domestic waste-water and sewage disposal systems is an executive function of the Local Government. There is a serious possibility that either NGOs or individual parties themselves will challenge this overreach due to the perception that National Government would be over stepping into local government's jurisdiction.¹¹

If the only purpose of this branch of the department is to actually write up the regulations it would seem that this would be an over kill in that you have one department dealing with one set of regulations that could be drafted in a single government gazette.

THE ROLE OF CIVIL SOCIETY

The DWS' objectives to collaborate with civil society in addressing the water crisis, supports the National Development Plan, which states that "*active citizenry and social activism is necessary for democracy and development to flourish, to raise the concerns of the voiceless and marginalised and hold government, business and all leaders in society accountable for their actions*" (The National Development Plan 2030); Chapter 7 of the NWA which requires the Minister to establish CMAs – "*to involve local communities in the decision making process*" (Vaal Regional Steering Committee Meeting – 25 February 2014) and section 9.4.9 of the National Water Resource Strategy -2 NWRS, which encourages "*civil society ...to play a watchdog role in supporting compliance by water users with water regulation at all levels.*"

¹⁰ It sits as one of the six departments that falls under the Minister that will report directly to the Minister of Water & Sanitation.

¹¹ Please refer to the case: Maccsand (Pty) Ltd v City of Cape Town and Others (CCT103/11) (CC) [2012] ZACC 7; 2012 (4) SA 181 (CC)

However, the current initiatives and decisions by the honourable Minister of Water and Sanitation, namely to centralise the 9 Catchment Management Agencies (CMAs) into one CMA and to discontinue the Water Tribunal will frustrate the above-mentioned objectives of the National Water and Sanitation Master Plan, the NWA, the NWRS-2 and the National Development Plan. Instead of supporting civil society these decisions by the Minister will disempower communities.

It is furthermore disheartening and discouraging that preference is given to powerful well-funded NGOs¹² in the DWS' collaboration and partnerships with civil society while the comments and concerns of grassroots level civil society organisations and local NGOs, who for years – at significant financial and opportunity costs – actively participate in Catchment Management Forums (CMF), steering committees, task teams, etc. are ignored and overlooked. This has resulted in either apathy or escalation of conflicts.

THE AMALGAMATION OF THE WCMA INTO A SINGLE CENTRALISED DEPARTMENT NOT PERTAINING TO NGO AND SOCIETIES INVOLVEMENT:

The Minister for Water and Sanitation on 15 December 2017 under government notice 41321 had requested comment from the public regarding the proposal to establish a single catchment management agency wherein the boundaries of the single CMA will cover the entire nine Water Management Areas in the whole country. This was to include all the catchments and aquifer boundaries.

It was also stated that all interested persons are invited to comment in writing on the proposal within 60 days.

The first issues that this submission has against the draft plan, regarding the amalgamation, is the fact that the above public participation process, which is operating outside the draft plan process and within the confines of the old National Water Act 36 of 1998 section 77, has not yet been finalised. The draft plan therefore has already assumed and given details of how the single catchment is going to be operating without taking into consideration the outcome of

¹² In the Reference Source (Annexure 2) reference is made to World Wide Fund – South Africa on pages 145 and 147 with no reference made to any reports of local NGOs and community based organisations, or their comments.

whether this amalgamation is actually going to happen or not. There may well be a court challenge to the amalgamation or intervention by parliament. It is therefore prudent that the draft plan also looks at alternative solutions on how the management of the water catchment agencies are going to operate.

The second issue is the funding of the single water catchment agency. Previously, the funding was directed to a non-central system based on needs of the water catchment agency. However, with a single catchment agency the problem is that funding might not go to the catchments needs and be redirected to another project. We there would to find out the details on how the funding process will work under the new single catchment agency.

YOU CANNOT DRINK PAPER PLANS

Notwithstanding the large number of research and water treatment projects, policies, plans, agendas, strategies and regulations of the Department of Water Affairs and Forestry (DWAF), Department of Water Affairs (DWA) and Department of Water and Sanitation (DWS)¹³ over the years, as well as the Resource Quality Objectives, conditions in Water Use License Authorisations (WULAs), etc. these policies, plans, strategies, etc. have failed to blossom into action and enforcement. These projects, policies, strategies, regulations, etc. as well as the National Water Act (36 of 1998) exist in vain if the recommendations and findings are not implemented, and if the conditions in the WULA are not enforced.

The failure to implement and enforce the findings and recommendations of reports, plans, strategies, regulations, policies, etc. has led us into a cul-de-sac of theory and action.

To exemplify:

The Wonderfonteinspruit has been the subject of a large number of studies. The documents that hold the history of the Wonderfonteinspruit would exceed 5 m if stacked. The bibliography of relevant literature that has been compiled would, if printed, extend to nearly one hundred and twenty pages. Much of the data that was generated and recorded produced

¹³ The National Water and Sanitation Master Plan (page 9-82) advises us that there are currently 18 strategies and policies which have been compiled or are in various stages of completion.

overwhelming evidence¹⁴ of elevated levels of cobalt, zinc, arsenic, cadmium and uranium in the catchment.

Notwithstanding the inordinate amount of evidence of the concentrated metals including uranium in the fluvial sediments of the river system and within the local groundwater systems and the risks to water users in the catchment area due to uranium's chemical toxicity, and the urgency of the situation¹⁵, it is business as usual.

The recent water quality results from the DWS show uranium levels of 3100µg/l; sulphate levels of 6986, manganese levels of 3535µg/l, and a pH of 2.42 within the headwaters of the Wonderfontein spruit. This is supported by the water quality results of Mintails Mining SA (Pty) Ltd which recorded a pH of 2; conductivity of 796 mS/m, TDS of 9 250mg/l; manganese levels of 55 000 µg/l; sulphate levels of 6230 mg/l; uranium levels of 580µg/l; aluminium levels of 431 mg/l; nickel levels of 16mg/l; copper levels of 20mg/l and zinc levels of 16mg/l.

These levels not only notably exceed regulatory limits but pose significant chronic and acute health risks to communities. The Wonderfontein spruit valley is densely populated because of its agricultural value and presence of gold mines. Potchefstroom is located downstream of the Wonderfontein spruit, from which more than 400 000 people derive their drinking water via the Boskop Dam.

It follows hence that while the proposed actions and targets in the National Water and Sanitation Master Plan are laudable, grounded upon our past and current experiences, they will remain aspirations unless the lack of political will and political interference are not decisively addressed.

¹⁴ Coetzee, H. (compiler) 2004: An assessment of sources, pathways, mechanisms and risks of current and potential future pollution of water and sediments in gold-mining areas of the Wonderfontein spruit catchment WRC Report No 1214/1/06, Pretoria, 266 pp.

¹⁵ Report to Contract No RRD/RP01/2006 titled "Assessment of the Radiological Impact of the Mine Water Discharges to Members of the Public Living around Wonderfontein spruit Catchment Area", BSA-Project-No. 0607-03 prepared on behalf of the National Nuclear Regulator (NNR) April 09, 2007; 1. Department of Water Affairs and Forestry and the National Nuclear Regulator. Wonderfontein spruit Catchment Area: Remediation Action Plan. Radioactive Contamination Specialist Task Team Report on Site Visits and Recommended Actions. April 2009.

POTENTIAL WATER CRISIS EXACERBATED BY POOR MANAGEMENT, AGING INFRASTRUCTURE AND LACK OF SKILLS IN THE RIGHT PLACES:

Scarcity of water and competition for water across sectors

It is common cause that by 2025 all four international river basins will transition into Absolute Water Scarcity, which may result in economic stagnation and potential social decay (without taking into account global climate change).

The Limpopo River Basin, is already over-allocated by about 120% and is facing a 241% increase in demand by 2025. (Ref. Ashton 2009)

It is foreseen that there will be a dramatic increase in water demands¹⁶ within the Crocodile West/Limpopo WMA as a result of:

- Current mining activities and proposed mining activities
- Sasol's proposed Maphuta coal to liquid fuel projects
- The exploitation of the vast coal reserves in the Waterberg;
- The expansion of the Grootegeluk mine to supply the new Medupi Power Station with coal; and
- Matimba and Medupi - three new Eskom power stations in the future
- Implementation of the Reserve is expected to result in serious deficits in some of the main river catchments.

19 WMAs in terms of the NWRS-2 require intervention.

Notwithstanding the fact that the water demand exceeds the water supply in a number of WMAs including the Olifants, the DWS continues to authorise water use license applications.

Mining and prospecting applications abound in areas of water scarcity where water is already 'flowing' from agriculture to mining.

¹⁶ DWS' Classification of Significant Water Resources in the Crocodile (West) Marico WMA and Matlabas and Mokolo Catchments: Limpopo WMA (WP 10506) Classification Report.



The NW&SMP lists mining's use of water as only 2% but overlooks the fact that the biggest impact of the mining industry is on water quality – “a threat to the resource that cannot be brushed away.”¹⁷

In Fuel Retailers the Constitutional Court laid a solid foundation for an integrated understanding of the right to development-in-environment protected by s 24 of the Constitution, the givenness and vulnerability of the environment, the potential of irreversible and profound impacts upon eco-systems and the need to consider future generations, the recognition of ecological and developmental thresholds and imposing positive obligations on the State to take reasonable legislative and other measures to prevent pollution and ecological degradation, promote conservation, and secure ecologically sustainable development.

LACK OF DATA AND INFORMATION RESULTING FROM WEAK MONITORING SYSTEMS

Notwithstanding the fact that mine water and in particular AMD contains a wide spectrum of metals, the DWS because of capacity constraints, only tests a few variables. The DWS tests routinely for TDS, EC, pH, sulphate, iron and manganese but fails to test for metals such as aluminium, cobalt, copper, uranium, the metalloid arsenic, cyanide, lead, etc. This may result in an inaccurate assessment of the risks, including the health risks associated with mine water.

It should furthermore not be omitted that the DWS failed to do water monitoring of the Vaal River System from August 2013 to April 2016 because of the expiring of its laboratory contract.

The DWS routinely samples water once a month. In view of frequently drastic short-term fluctuations of pollution levels caused by day-night rhythms of discharging mine effluents, natural diurnal fluctuations of water chemistry as well as events such as rainstorms and spillages weekly sampling intervals are inadequate. This is illustrated by the fact that

¹⁷ DWS Business Case for the Limpopo CMA. September 2013) DWS' NWRS-2 Overview 2014 (Seef Rademeyer, Niel van Wyk – Eskom/NGO Presentation.

uranium-levels in samples used in IWQS (1999) from identical sites (normally sampled at the same day of the week and the more or less the same time of the day) at some locations fluctuate by up to an factor of 1000 (i.e. 100000%). In view of such fluctuations the temporal representation of the data used is insufficient.

Unless the above-mentioned insufficiencies are urgently addressed, long-standing water management and pollution issues will remain unresolved and risks will go undetected.

MINING AND WATER:

The economic benefits of mining, which by its definition is unsustainable since it depletes a non-renewable resource, are argued on the basis of short term employment of skilled or semi-skilled workers during the life of the mine without internalising the long term (latent and residual) environmental and socio-economic consequences after mine closure (the negative externalities). There is the near certainty of contaminated water, which will require some form of decontamination treatment for many years, after mine closure. The release to the environment of mining waste can result in profound, generally irreversible destruction of ecosystems.¹⁸

The above-mentioned impacts and risks are not considered or quantified when determining the need and desirability of a mine or if approved, when determining the financial provision. Neither is adequate consideration given to the post closure land use with associated resources such as water. While a community may benefit during the life-time of a mining project, future generations may well have their livelihood opportunities and their quality of life reduced or destroyed because of unsustainable post mining land use.

Major impacting sources include mining (acids, salts, metals and radioactivity)

“Desalination of AMD from the Wits mining basins in Gauteng (~150Ml/day),” “disposal of bine and salts removed in the treatment process, legacy issues of abandoned, derelict and/or ownerless mines, which contribute to the AMD problem.” (Delete)

¹⁸ European Environmental Bureau (EEB). 2000. The environmental performance of the mining industry and the action necessary to strengthen European legislation in the wake of the Tisza-Danube pollution. EEB Document no 2000/016. 32 p

The National Water and Sanitation Master Plan acknowledges challenges associated with Acid Mine Drainage, such as the disposal of salts removed in the treatment process.

The FSE was actively involved in raising public awareness of AMD for more than a decade and participated in the feasibility study for the long term treatment of AMD. Based on these experiences, we recommend that the following issues be addressed in the NW&SMP:

Impact Assessment and Public Participation

The current treatment of AMD by means of the high energy/high cost “pump and treat” neutralisation method was decided upon by the DWS without public participation and an environmental impact assessment.

It is common cause that the current treatment of AMD, which commenced in 2012 after 10 years of decant of raw AMD within the West Rand, is resulting in the discharge of 150Ml/day of highly saline water (between 1 500mg/l – 3 000mg/l sulphate), which is unfit for any use¹⁹, into the Vaal River and Crocodile West River Systems. The impacts of the high salinity and the disposal of metals in unlined open pits (West Wits Pit) and old shafts (Grootvlei) on groundwater and downstream water users ought to be assessed as a matter of urgency.

Salinity and Water Shortages

It is furthermore common cause that the additional salinity as a result of the current treatment of AMD and discharge of neutralised AMD creates water security risks. In order to comply with the regulatory limit of 600 mg/l sulphates, good quality water has to be released from

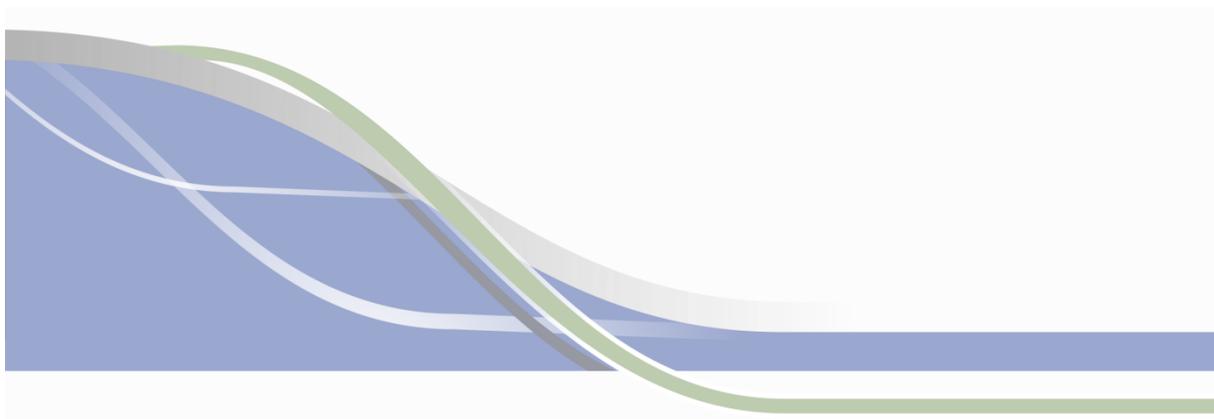
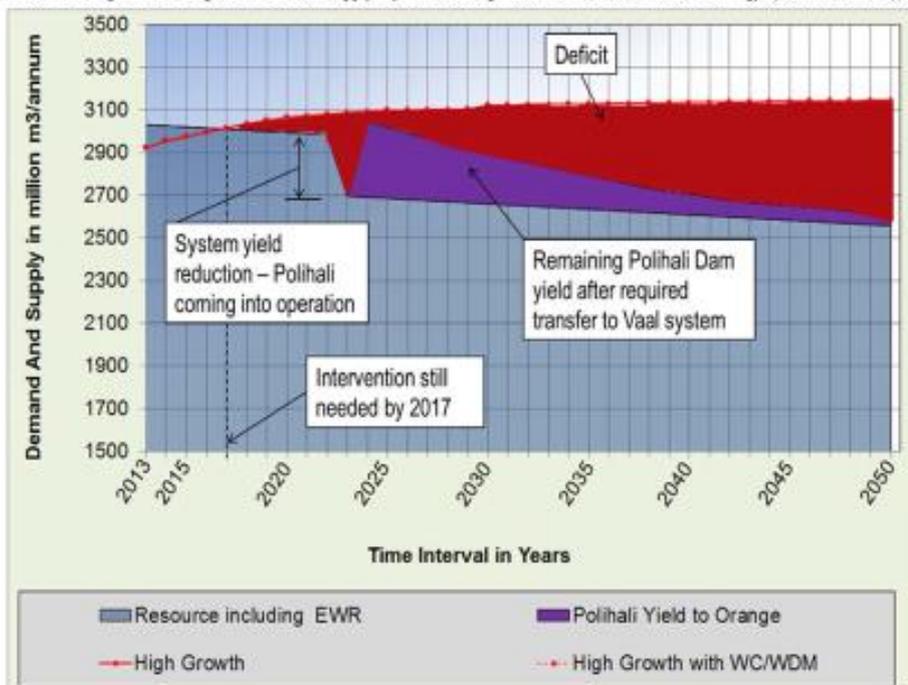
¹⁹ In livestock watering, it was found that sulphate levels above 250 mg/l sulphate suppress copper and selenium in livestock, which result in poor fertility and condition. Sulphate concentrations of 600 mg/l and more cause diarrhoea in most individuals and adaptation may not occur. Eskom’s Requirements are water with levels of 15 – 40mg/l sulphate. The DWS’ Water Resource Quality limit is 600mg/l sulphate. Elevated sulphate concentrations increase the corrosion rate of metal fittings in water distribution systems. When there are metals dissolved in the water in excessive concentrations, the corrosion and scaling effects would be increased.

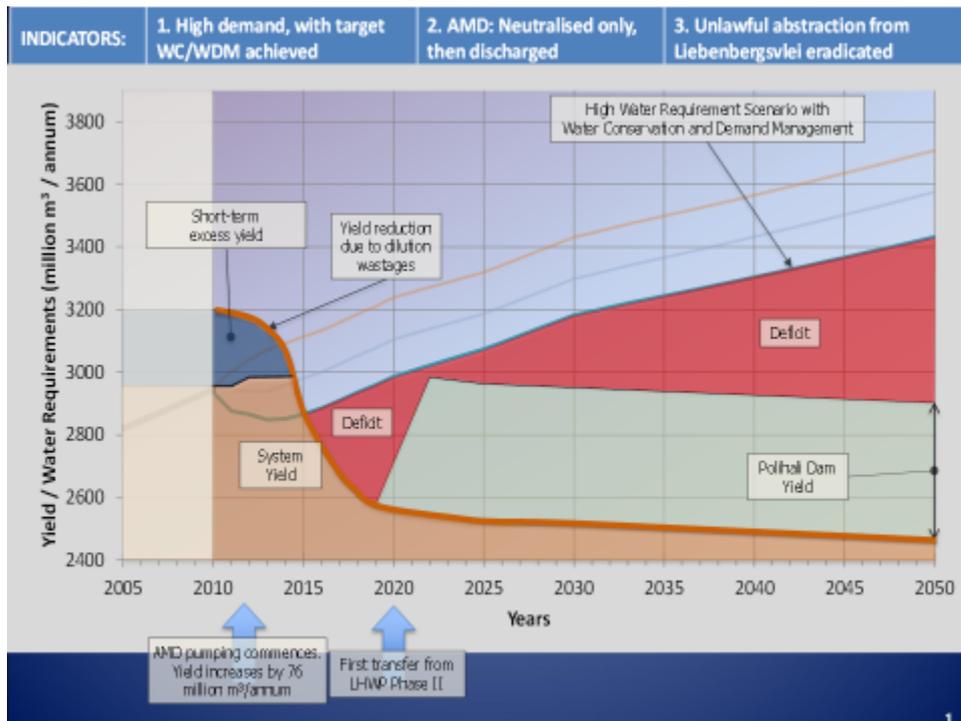
References: Harmony Environmental Impact Document titled “Impact of the discharge of Treated Mine Water, via the T weelopies Spruit, on the receiving Water body Crocodile River System, Mogale City, Gauteng Province” (DWAF 16/2/7/C221/C/24) (3 December 2006; Conservation Medicine: Toxicology. Is there a connection between acid mine drainage, acid rain, trace element nutrition of livestock and HIV / AIDS in humans on the eastern Transvaal Highveld? Jan Myburgh, Faculty of Veterinary Science University of Pretoria, Onderstepoort.

the Vaal Dam in order to ensure that the water below the Vaal Barrage is fit for use, that is, by means of dilution.

The projected demand for increased releases from the Vaal Dam of expensive Lesotho water will increase the stress upon the water supply. In terms of the Reconciliation Strategies for the Orange River and the Integrated Vaal River System (prepared in 2014) water supply shortages will be experienced by 2014. It will have significant cost implications. Please see subjoined graphs.

- Increasing salinity in the **Orange River** – growing water shortages as illustrated. (Ref. DWS Reconciliation Strategies For Large Bulk Water Supply Systems: Orange River Final Reconciliation Strategy (November 2014))





In order to address the growing water deficit in the Vaal River System, which supplies water to 60% of the economy and 45% of the population and to ensure that sufficient water of good quality is available to supply the future requirements of this important area, it was advised in the Reconciliation Strategies for the Vaal River System (last compiled in 2014) and the Orange River System that AMD be desalinated (long term treatment) by 2014/2015 and that the Lesotho Highlands Water Project (Phase II) be constructed by 2020.

At the recent launch of the long term treatment (desalination) by the honourable Minister of Water and Sanitation, the Minister announced that the long term treatment of AMD has been delayed to 2020/2021. The Lesotho Highlights Water Project (LHWP) (Phase II) has been delayed to 2025 as a result of alleged corruption.

In order to mitigate the growing deficit in the Integrated Vaal River System as a result of the increasing salinity²⁰, the long term treatment of AMD and the construction LHWP Phase II ought to be expedited and political interference in these projects must be curtailed.

²⁰ AMD contains the most concentrated salt stream.

Since the highest cost burden of combating salinity is currently being carried by the household sector and the “last men standing”, the NW&SMP should include a section on the apportionment of liability in terms of Section 19 of the NWA, Section 28 of the NEMA and the current²¹ and proposed²² regulations pertaining to financial provision for prospecting, mining, exploration and production operations, which makes provision for both ‘firms’ (including companies and partnerships) and their ‘directors’ (including board members, executive committees or other managing bodies or companies or members of close corporations or of partnerships) to be held liable, in their personal capacities, for the treatment of AMD. This personal liability also applies to managers, agents or employees who have done or omitted to do an allocated task, while acting on behalf of their employer.

The polluter pays principle is based on the internalisation of externalities and this is central to the equitable resolution of pollution costs currently being borne by the end user.²³

Diffuse- and Newly Identified Sources of AMD

The NW&SMP in its discussing of AMD, is silent on the diffuse- and newly identified sources of AMD and how it will be managed or mitigated. These sources include:

- Tailings Storage Facilities: There are 270 tailing storage facilities within the Witwatersrand gold fields, which contain 6 billion tons of iron pyrite tailings. Since these facilities cannot be maintained in a reducing or oxygen free environment, it will continue to produce AMD for centuries.
- Open Pits: The numerous open pits in the West Rand Goldfield have been identified as a source of ingress, by a study commissioned by the mining industry estimating that they contribute approximately 30% of the total ingress.
- Rock Dumps: It appears to be quite widely assumed that the larger particle size of waste rock dumps makes them a minor pollution risk. This view is erroneous as the waste rock dumps have very large inventories of fine material and they are much

²¹ 20 November 2015.

²² Published for comment on 10 November 2017 in Government Gazette 41236 under GN R1128 (Draft Regulations).

²³ R Pilson, HL van Rensburg, CJ Williams. WRC Report No 800/1/00. “An Economic and Technical Evaluation of Regional Treatment Options for Point Source Gold Mine Effluents Entering the Vaal Barrage Catchment.”

more permeable to oxygen than tailings dams. The secondary source of contaminants that remain in the soil after a dump has been removed appears to be universally ignored and it is assumed that removal of the dump removes all potential for pollution from that site. (WRC 2015. Pulles W et al)

- Reclamation: The associated contribution to ingress is likely to be considerable as old tailings are hydraulically mined using high-pressure cannons containing partially treated acid mine drainage water (Winde et al. 2011). This practice introduces air and water into anaerobic tailings, which not only contributes to acid mine drainage formation but there is also evidence for the remobilization of contaminants such as uranium and cyanides during disturbance of old tailings deposits. (Sutton & Weiersbye 2007; Winde et al. 2011).
- Unrehabilitated remaining footprints of re-processed tailings storage facilities Radiometric surveys confirm elevated levels of residual radioactivity. There is also the near certainty of long-lived cyanide metal complexes, sulphate and metal contamination of the soils and sediments.

Metals

The following determinants in the mine void water exceed the Maximum Allowable Limits (Class II) of the SABS 241 Drinking Water Standard, in many cases by several orders of magnitude: pH, EC, TDS, So₄, Fe, Mg, Ca, Mn, Al, Pb, Co, U and Ni. It can be assumed with a reasonable amount of certainty that most of the other metals would also be present in elevated concentrations.²⁴

The current treatment of AMD does not remove the metals. It merely changes the metals into a different oxidation state, which change them from a soluble form to a solid form. The process could be reversed and the contaminants mobilised, should the water become acidic.²⁵

The MW&SMP does not address the removal of these metals from wetlands, dams, rivers and rivulets (such as the Tudor Dam, Grootvlei wetland, the Lancaster Dam, the Robinson Lake,

²⁴ Harmony Environmental Impact Document titled "Impact of the discharge of Treated Mine Water, via the Tweelopies Spruit, on the receiving Water body Crocodile River System, Mogale City, Gauteng Province" (DWA 16/2/7/C221/C/24) (3 December 2006)

²⁵ Ibid

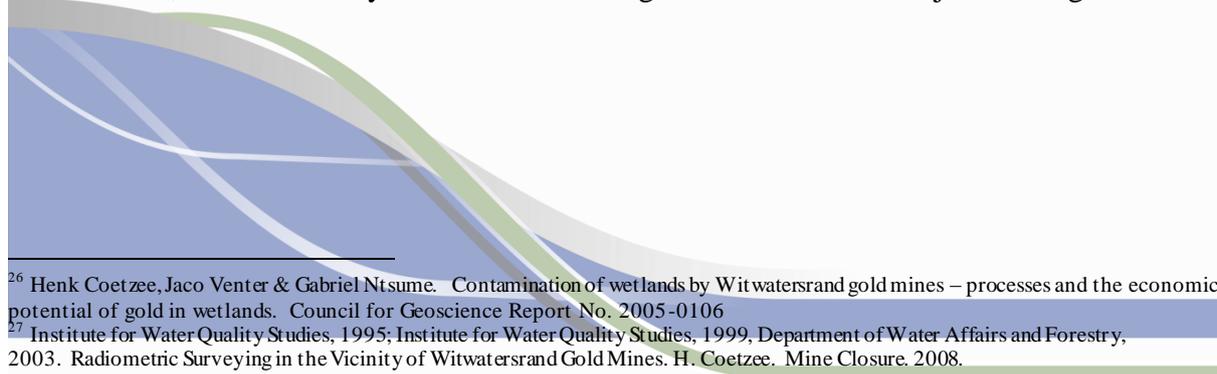
Tweelopiespruit, Blesbokspruit, the Wonderfonteinspruit and sediments in the Witwatersrand wetlands²⁶ downstream of historic and current mining activities). Wetlands have a finite capacity to assimilate pollution, and this capacity is being exceeded as a result of metal contamination.

Of relevance are the recent findings of the ORASECOM Report: ORASECOM/004/2015 titled ORANGE-SENQU WATER RESOURCES QUALITY JOINT BASIN SURVEY 2 (JBS 2) – FINAL REPORT: PERSISTENT ORGANIC POLLUTANTS AND METALS SURVEY IN 2015. It was found that:

- The rivers draining Gauteng and the gold mining areas remain an area of concern.
- The strong indications of bio-accumulation of POPs and some heavy metals (the elements of concern are Al, Cr, Cu, Bi, Sr, Sb, Au, Hg, Pb, and U) is very concerning as the biota in the arid regions of the basin is almost entirely dependent on the riverine water, and any impacts from long-range transport is a major issue.
- The high concentrations of pollutants in birds and fish may affect sustainability and ecosystem function.
- Many people depend on their food and water directly from the rivers, and may be exposed to pollutants that may be harmful.

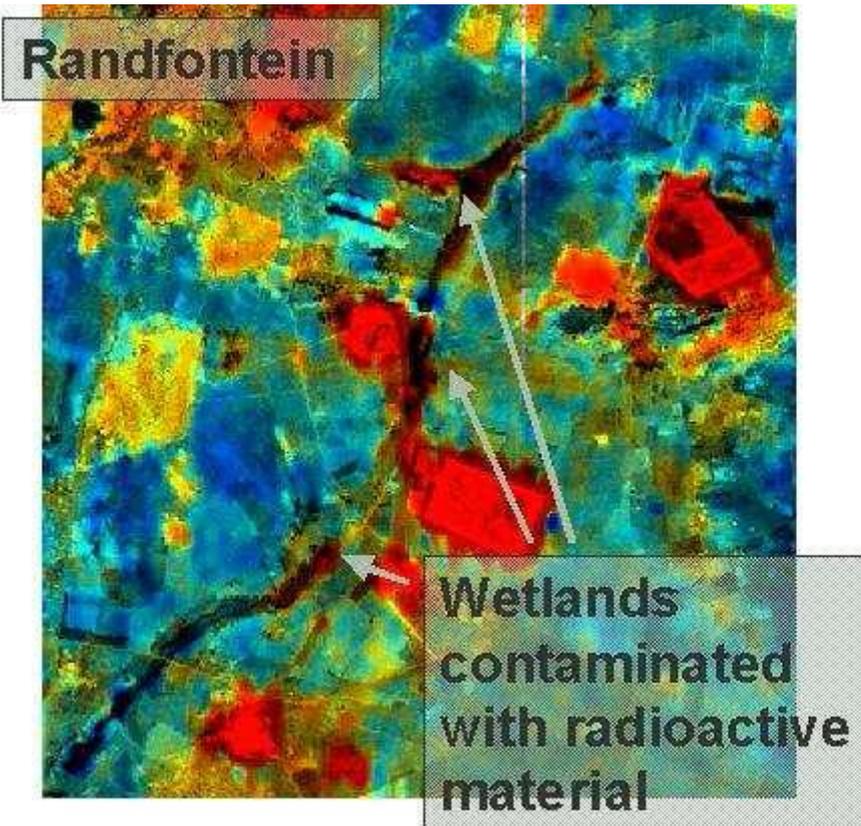
Radioactivity

Radioactivity has become an area which requires special mention in the NW&SMP since as a consequence of the uraniferous nature of the ore, Witwatersrand tailings and other mining residues often contain significantly elevated concentrations of uranium and its daughter radionuclides, with the decay series of U238 being dominant²⁷. See subjoined images.



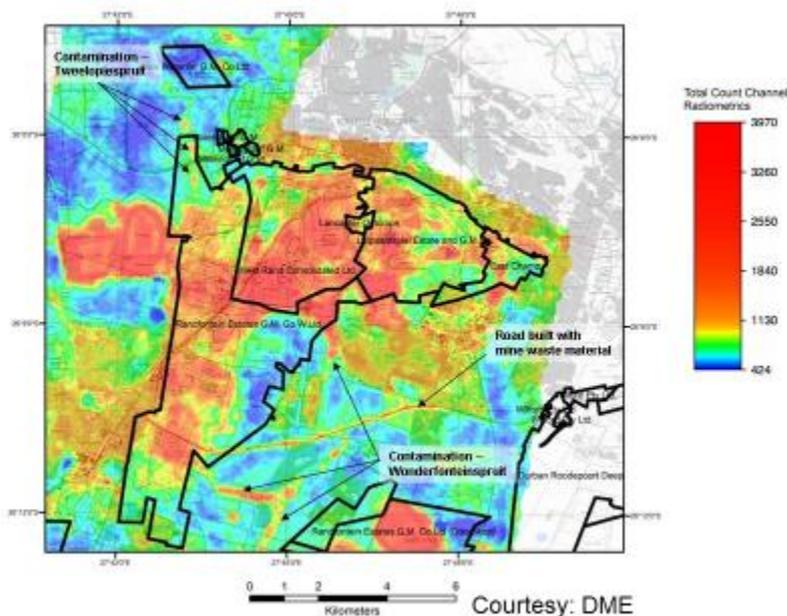
²⁶ Henk Coetzee, Jaco Venter & Gabriel Ntsume. Contamination of wetlands by Witwatersrand gold mines – processes and the economic potential of gold in wetlands. Council for Geoscience Report No. 2005-0106

²⁷ Institute for Water Quality Studies, 1995; Institute for Water Quality Studies, 1999, Department of Water Affairs and Forestry, 2003. Radiometric Surveying in the Vicinity of Witwatersrand Gold Mines. H. Coetzee. Mine Closure. 2008.



Total count radiometric image of a portion of the Wonderfontein catchment, over a Landsat image background. Red areas indicate elevated radioactivity levels. Note the elevated radioactivity in the wetlands downstream of mining areas. The presence of uranium series radionuclides implies that other metals associated with the mining waste stream are probably also present.²⁸

²⁸ Coetzee, H. (compiler) 2004: An assessment of sources, pathways, mechanisms and risks of current and potential future pollution of water and sediments in gold-mining areas of the Wonderfontein catchment. WRC Report No 1214/1/06, Pretoria, 266 pp



An airborne radiometric survey of the WR and FWR was done for DWAF. Interpretation of the data show many of the residential areas fall within areas of high risk of radioactivity contamination. Ref. DMR. RMCS. 2008

The risk posed by uranium, occurs due to both radiotoxicity and chemical toxicity with in some cases, the chemical toxicity dominating over the radiotoxicity. It is therefore necessary that an integrated approach be adopted for the management of radioactive and chemical contamination and that this be facilitated by the different government agencies and regulators involved.

The NW&SMP makes no mention of collaboration with the National Nuclear Regulator (NNR). It is important that the DWS establishes a partnership with the NNR to remediate sites which contain elevated levels of uranium such as:

- Tudor Dam (the activity concentration of uranium 238 in the soils and sediments behind the dam are high, 8000-10000 Bq/kg with radium 226 at 1700-2800 Bq/kg)²⁹,
- the wetlands downstream of Tudor Dam (uranium and radium activity concentrations are high, at 2000 Bq/kg for uranium and 1200 Bq/kg for radium)³⁰,

²⁹ Department of Water Affairs and Forestry and the National Nuclear Regulator. Wonderfontein Catchment Area: Remediation Action Plan. 2009

- Tudor Shaft Informal Settlement, which is within the headwaters of the Wonderfonteinspruit,
- Robinson Lake (Coetzee et al., 2003 report a uranium concentration of 16 mg/l after underground mine water decanting into the Tweelopiespruit was pumped into the lake)³¹,
- The 380 Mine Residue Areas, which were identified in the Gauteng Department of Agriculture and Rural Development's Report (2011).

And to recover the costs from the mining companies responsible for the pollution.

Abandoned Mines (including Closure-, Care and Maintenance-, and Liquidation Issues

In accordance with applicable legislative requirements³², a holder must apply for a closure certificate upon lapsing or abandonment of his right/permit; cessation of mining operations or relinquishment of any portion of land to which right/permit/permission relates. Only after the Chief inspector and DWS confirmed in writing that the provisions have been complied with pertaining to health and safety; management of potential pollution to water resources; may a closure certificate be issued; and may the financial contribution/ part thereof be returned.

Notwithstanding these legal obligations, a number mining companies, at cessation of their operations (e.g. Blyvooruitzicht Gold Mining Company, Galabyte, Pamodzi Gold, Mintails SA (Pty) Ltd), instead of applying for closure, simply abandon or "warehouse" the mines.

³⁰ Ibid

³¹ Coetzee, H. (compiler) 2004: An assessment of sources, pathways, mechanisms and risks of current and potential future pollution of water and sediments in gold-mining areas of the Wonderfonteinspruit catchment. WRC Report No 1214/1/06, Pretoria, 266 pp

³² A closure plan must contain the information set out in Appendix 5 to these Regulations

Content of closure plan

1. (1) A closure plan must include-

(a) details of -

- (i) the EAP who prepared the closure plan; and
- (ii) the expertise of that EAP;

(b) closure objectives;

(c) proposed mechanisms for monitoring compliance with and performance assessment against the closure plan and reporting thereon;

(d) measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity and associated closure to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development, including a handover report, where applicable;

(e) information on any proposed avoidance, management and mitigation measures that will be taken to address the environmental impacts resulting from the undertaking of the closure activity;

(f) a description of the manner in which it intends to-

- (i) modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation during closure;
- (ii) remedy the cause of pollution or degradation and migration of pollutants during closure;
- (iii) comply with any prescribed environmental management standards or practices; and
- (iv) comply with any applicable provisions of the Act regarding closure;

These mining companies leave in their wake un-rehabilitated footprints, tailings storage facilities where the reclamation has not been completed, polluted wetlands and rivulets, radioactive mine residue areas, open pits, tailings storage facilities without onramps, penstocks, stormwater management, cut-off trenches, toe paddocks, piezometers³³, etc.

The rehabilitation funds are mostly inadequate to address the current as well as the long term latent or residual impacts, including the pumping and treatment of extraneous or polluted water.

To exemplify:

- Mintails' life of mine will end in 2020. Its current environmental liabilities according to its Closure Plan and Associated Closure Costs (Report Number 1417897) (February 2016) amount to R340 million. It has in trust R25 million for rehabilitation and is currently in business rescue.
- On the 6th of August 2013 a provisional winding-up order was granted to the Blyvooruitzicht Gold Mine Company (BGMC) of which DRD Gold was the majority shareholder. BGMC left in its wake a number of un-rehabilitated footprints of reclaimed tailings storage facilities, containing toxic and radioactive water and soil, radioactive infrastructure, tailings storage facilities without vegetation, retainer walls and functional toe paddocks and penstocks, and total environmental liabilities of R891 098 234. R43 007 932 is held in trust for rehabilitation. DRD Gold EMPR 2007 promised: *"The site would be left ecologically and geophysically stable and would not pose an economic, social or environmental liability to the local community and the state now or in the future."*

Of particular relevance to the DWS is the fact that since the winding up operations of BGMC, the mine terminated its water supply to the Blyvoor Villages and the treatment of sewage from these Villages. For more than 7 years raw sewage is flowing into the

³³Regulations regarding the safety of dams in terms of section 123(1) of the NWA provides a clear basis for the operation and maintenance of all structures utilised to store water, with the primary objective of ensuring the safety of people and the environment down-stream of the dam.

Wonderfontein spruit. The DWS argues that since BGMC is in the process of liquidation, the DWS is not in the position to hold any person or persons responsible or liable.

There is a systemic failure by both the DWS and the DMR to enforce non-compliances by mining companies in this regard. We have been credibly informed that there has been no closure certificates issued for any mining company within the Witwatersrand gold fields.

The above-mentioned matters ought to be addressed in the NW&SMP.

The impacts and costs of these abandoned mines, which include polluted water, are carried by neighbouring mines, a mute environment, communities who had no share in the pollution and who did not benefit from the polluting activities, financially beleaguered local municipalities and future generations.

Fracking regulations:

At 8.4.3.1 of the Draft plan, it states that the Department of Water and Sanitation is going to finalise the regulations for hydraulic fracturing. It is unclear on how the plan is going to deal with hydraulic fracturing in light of the current mining fracking regulations declared unlawful.

Another important issue to take under advisement is the fact that fracking is a dangerous activity in terms of potential pollution of the aquifers. The draft plan is geared to protect areas of water particularly with regards to areas where water is already stressed, like in the Karoo. Undertaking and implementing the fracking regulation seems counter-productive in terms of what the draft plan wants to achieve.

SUBMITTED BY:

Mariette Liefferink

CEO: FEDERATION FOR A SUSTAINABLE ENVIRONMENT

