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Project Country Report

Water Permit Systems, Policy Reforms and Implications for Equity in South Africa

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1. Brief history and context of water sector

1.1 Physical and hydrological conditions

South Africa is situated in the high-pressure belt of the middle latitudes of the Southern Hemisphere. High pressure systems, unfavourable to the formation of rain, dominate the weather over large parts of the country. Rainfall is also influenced by the warm Agulhas current along the east coast and the cold Benguela current along the west coast. The land rises steeply from the eastern and southern coastline to mountains that form the edge of a large interior plateau. This also affects rainfall patterns.

Most of the country experiences summer rainfall, with winter rainfall along the west coast and a region of the south coast where rain falls throughout the year.

Rainfall across the country decreases in a westerly and northerly direction as shown in Figure 1. Potential evaporation is extremely high, particularly in the north western areas (around 1500 mm per year in the east and south to as high as 3000 mm per year in the western desert areas cf Figure 1 and 2). Around sixty-five percent of South Africa receives less than 500 mm of rain per annum (average), with around twenty percent in the far western parts being classified as desert conditions with less than 200 mm per annum (average)year with desert conditions on the far western parts (DWA, 1986).

This spatial variation in rainfall is exacerbated by large temporal variations, with the least variation between years in the eastern and southern coastal areas and the largest variation towards the dry western areas. The country is vulnerable to long periods of drought, as well as floods.

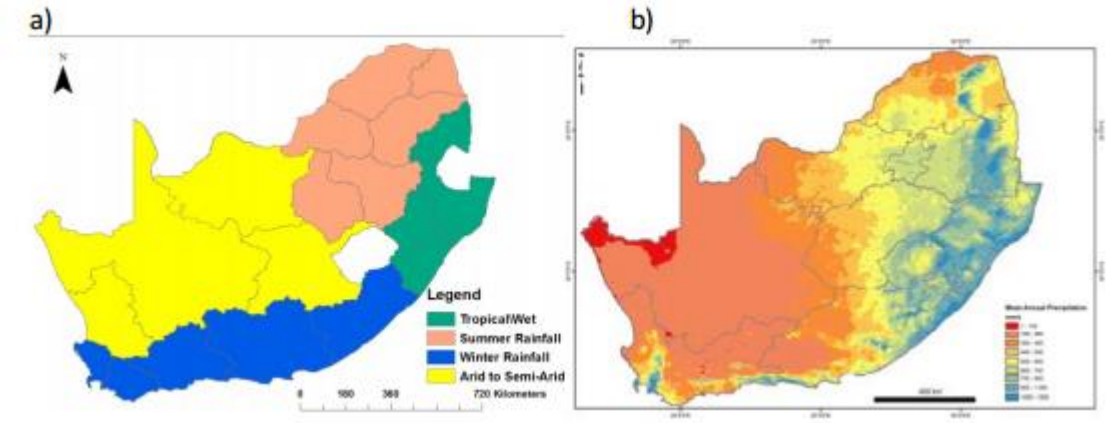

Figure 1: a) Climatic regions of South Africa delineated based on Water Management Areas (South African Department of Water Affairs and Forestry; DWAF, 2004); b) mean annual rainfall for the period 1960–2014 (Lynch and Schulze, 2006; Jovanovic et al, 2015).

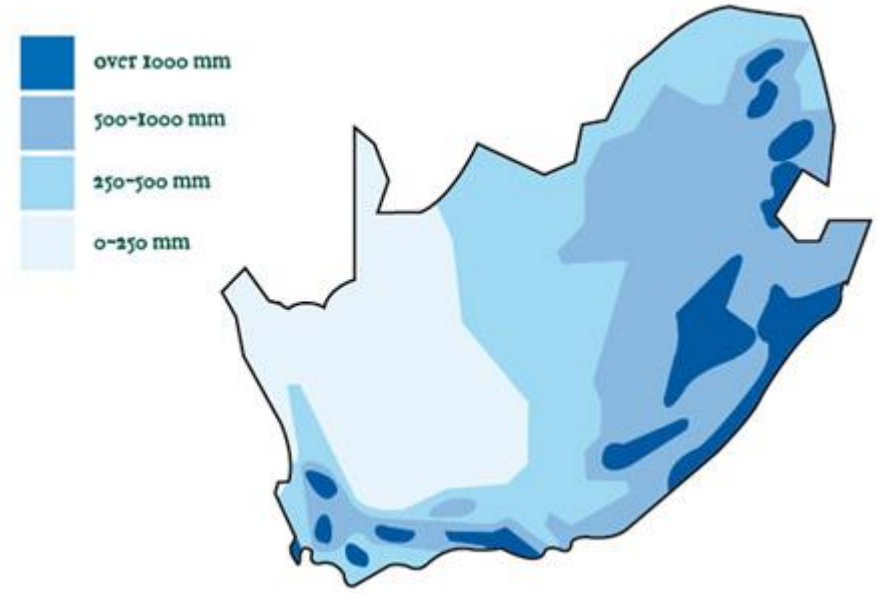

Figure 2: Distribution of mean annual rainfall in South Africa

The high variation in rainfall causes even larger river flow variations since soil moisture must be replaced before significant run-off occurs. This can extend low river flow levels for some years beyond the return of normal rainfall after a drought.

Water storage in dams is needed to store water for the dry season, but also to ensure water security during droughts. South Africa has the most highly developed water storage (dams) system in Africa.

An illustrative figure of R131-billion (US$17-billion) was calculated as the estimated replacement cost of water resource infrastructure in 2007, with a further R185-billion (US$23-billion) for water services infrastructure (DWAF, 2008b, SAICE, 2007). The surface water infrastructure provides a highly developed network of storage systems and inter-basin transfer schemes so that several catchments are linked, more so than in most parts of the world. This engineering programme has provided a high degree of water security relative to available resources, so that South Africa can claim to have 'structurally-induced relative water abundance'.(Turton, 2000).

Groundwater occurs mainly in hard rock aquifers that limit the quantity practically available for use. There are areas where groundwater occurs in dolomitic and sand aquifers which provide water for irrigation. The deep fracturing in the sandstones of the Cape Fold mountains has been identified as a possible source of large quantities of unutilised groundwater.

Water resource quality is declining across the country and has been significantly impacted on by human activities, including mining, agriculture, industrial development and dense human settlements/urbanisation.

South Africa shares four of its major river systems, draining about 60% of the land area, with neighbouring countries. The Orange, Limpopo, Nkomati and Usutu/Pongola/Maputo Rivers are shared

with Lesotho, Botswana, Namibia, Zimbabwe, Mozambique and Swaziland. These rivers contribute about 40 per cent of the runoff in the country and support approximately 70 per cent of the gross domestic product. One of the biggest challenges is not the scarcity of water, but the distribution of water and the lack of access to water for productive purposes by a large sector of the rural population in particular. Access to water in South Africa remains deeply skewed by the history of racial capital that played out prior to 1994.

1.2 Water law prior to liberation

Before 1998, there was a plural patchwork of riparian rights, private rights to groundwater, forestry permits, scheduled rights in irrigation systems, state control of Government Water Control Areas, and living customary rights in former homelands where riparian rights did not apply to land users as ownership of the land was vested in the state. Government Water Control Areas with full state control were declared in parts of the former homelands. This was controlled by the Water Act of 1956 which pertained in white South Africa and in all so-called homelands except Bophuthatswana which promulgated its own water legislation.

In 1998, the South African government changed the nature of this patchwork by introducing the concept of public trusteeship over all water resources with related water use authorisations either under licences, existing lawful use, general authorisations or schedule 1 use. Unlike most other African countries, the entitlement to use water under the existing lawful use clause[1] continued to be lawful until it replaced by a licence after an area-, resource- or user-specific project of compulsory licensing.

When the new legislation was promulgated, lawful water use entitlements under previous legislation continued as Existing Lawful Use (ELU) under the National Water Act (1998) (NWA). Most of this water use was not recorded, unless the subject of an order from the Water Court, or a waste discharge activity which was done under a permit from the Department of Water and Sanitation[2].

Several tens of thousands of irrigators were using water under the ELU provision, which was intended as a transitional provision until water use licenses could be issued. In reality, however, ELUs are still the predominant form of water use across the country.

Under the NWA, all ELU was to be registered in the Water Authorisation and Registration Management System (WARMS). Much of this registration was incorrect or incomplete, and a resource intensive process of checking the registration of ELU is being conducted across all of the water management areas (WMA) in the country to check both the correctness of the registration and the lawfulness of the water use.

[1] In the National Water Act of 1998, prior lawful water uses continued to be recognized as lawful.
[2] The current Department of Water and Sanitation has changed its name from Department of Water and Forestry (1994), to the Department of Water Affairs, and finally to the Department of Water and Sanitation. It is referred to by this latter name for simplicity.

Table 1: Registered water uses for South Africa(As registered in WARMS, June 2006) (Source Cullis and van Koppen 2008)

Water Use Sector	Volume of annual allocation (Mm^3/a)	Number of allocations	Average allocation (Mm^3/a)
Agriculture: General	10,198	49,449	0.21
Agriculture: Irrigation	1,104	5,149	0.21
Agriculture: Watering Stock	9	761	0.01
Agriculture: Aquiculture	1	9	0.11
Industry (Non-urban)	285	810	0.35
Industry (Urban)	2,980	1,341	2.22
Mining	329	1,074	0.31
Recreation	78	155	0.50
Schedule 1	119	7,048	0.02
Water Supply Services	1,935	2,673	0.72
Power Generation	10	9	1.11
Urban (Excluding WSS)	4	66	0.06
Total	17,057	68,544	0.25

2. Legislative Status

2.1 1956 Water Act

The first piece of water legislation covering the whole country was the 1912 Irrigation Act, passed shortly after the creation of the Union of South Africa in 2010. This was followed by the 1913 Land Act, which dispossessed black South Africans of their right to land. The latter Act is particularly important in the saga of access to water in the country as, until 1998, access to water was tied to access to land, which was predominantly in the hands of the white minority due, in large part, to the 1913 Land Act.

The National Party (NP) came to power in 1948 and introduced apartheid and the concept of 'separate development' which saw, over time, the introduction of the so-called homelands which were areas reserved for black South Africans. The NP government developed a number of large water projects to encourage economic development for white South Africans and NP supporters in particular (Turton et al., 2004). In 1956 the Water Act (Act 54 of 1956) was passed, at least part in order to respond to the increasing industrialisation in the country. It replaced the Irrigation Act of 1912. According to the Department of Water and Affairs and Forestry (DWAF, 1986), the Act aimed to:

'... ensuring equitable distribution of water for industrial and other competing users, as well as to make possible strict control over abstraction, use, supply, distribution and pollution of water, artificial atmospheric precipitation and the treatment and discharge of effluent (DWAF, 1986, p. 1.9).'

The Irrigation Department was renamed the Department of Water to reflect its broadened scope. The Act gave the Minister of Water a large measure of the control of public water through the principle of government control areas.

The key principles of the 1956 Act remained riparian ownership but with final control of water resources vested in the state. Groundwater remained essentially a private use right except in areas declared groundwater control areas by the state.

The Act allowed the government to declare 'control areas' where the control of water use was desirable in the 'public' or 'national' interest – these could cover surface or groundwater. This was as a result of increasing demand on limited water resources. The use of raw water for industrial purposes was subject to the permission of a water court or the Minister (s11 (1)). Measures were also introduced to control water pollution through waste discharge permits.[3]

Access to water was tied, under the 1912 Irrigation Act and the 1956 Act, to access to land, effectively excluding black South Africans from access to water for productive purposes, even in the homeland areas, made up of 4 allegedly independent and autonomous states and 6 self-governing territories. These territories and states had legislative power to repeal, amend or replace the 1956 Act but only Bophuthatswana made any changes to the Act in 1988. Land ownership in the homelands was vested in the state, but in practice largely governed by living customary law which also covered access to water (except in public irrigation schemes). This customary water law has not been recognised in any of the water legislation in South Africa till today. If black farmers' water entitlements were defended, it was, at best, by (white) officials of the Departments of Native Development (Rensen, 2016).

2.2 National Water Act 1998

The National Water Act of 1998 repealed over 100 Water Acts and related amendments (NWA 1998, Schedule 7). It made the state the trustee of water resources, to be managed for the benefit of all (NWA, 1998 s3). The purpose of the Act is to ensure that water resources are protected, used, developed, conserved, managed and controlled in ways which take into account the following (NWA, 1998 s2):

- Meeting the basic needs of present and future generations
- Promoting equitable access to water
- Redressing the results of past racial and gender discrimination
- Promoting the efficient, sustainable and beneficial use of water in the public interest
- Facilitating social and economic development
- Providing for growing demand for water use
- Protecting aquatic and associated ecosystems and their biological diversity
- Reducing and preventing pollution and degradation of water resources
- Meeting international obligations
- Promoting dam safety,
- Managing floods and droughts

[3] ibid

The Preamble to the Act:

- Recognises that water is a scarce and unevenly distributed natural resource which occurs in many different forms which are all part of a unitary inter-dependent cycle
- Recognises that while water is a natural resource that belongs to all people, the discriminatory laws and practices of the past have prevented equal access to water and use of water resources
- Acknowledges the National Government's overall responsibility for and authority over the nation's water resources and their use, including the equitable allocation of water for beneficial use, the redistribution of water, and international water matters
- Recognises that the ultimate aim of water resource management is to achieve the sustainable use of water for the benefit of all users
- Recognises that the protection of the quality of water resources is necessary to ensure sustainability of the nation's water resources in the interest of all water users
- Recognises the need for the integrated management of all aspects of water resources and, where appropriate, the delegation of management functions to a regional or catchment level so as to enable all to participate (Thompson, 2006 p. 199)

The NWA (1998) makes provision for the following:

- The establishment of a National Water Resource Strategy (NWRS) and the development of catchment management strategies (Chapter 2)
- Protection of water resources through the classification of water resources, the determination of resource quality objectives, and the determination of a Reserve (Chapter 3)
- The establishment of a system of water use authorisation (Chapter 4)
- The pricing of water use and provision for financial assistance (Chapter 5)
- Creation of catchment management agencies (CMAs), water user associations (WUAs), and advisory committees (ACs) (Chapters 7-9)
- Establishment of bodies to implement international agreements (Chapter 10)
- Construction and control of water works and storage, and dam safety (Chapters 11-12)
- Access to and rights over land (Chapter 13)
- The establishment of a national monitoring and information system (Chapter 14)
- Appeals and dispute resolution, offences and remedies (Chapters 15 and 16).

The National Water Act removes the previous distinction of surface water as public water and groundwater as private water, treating all water the same way. It removed the riparian principle. It also recognised the need for redress in access to water to address the inequalities created by apartheid. It is based on the principle of integrated water resource management.

Water use, which is controlled by the Department of Water and Sanitation (or its agencies) is defined as (Section 21, Chapter 4 of NWA, 1998):

- Abstracting water from a water resource (s21 (a))
- Storing water (s21 (b))
- All aspects of waste disposal which impact water resources (s21 (f) and (g) and (h))
- Removing, discharging or disposing of water found underground (s21 (i))

- Making changes to the physical structure of watercourses (s21(c) and (j))
- Some activities such as stream flow reduction activities (s36, s37 (1), s38 (1))
- Water for recreational use (s21 (k))

2.3 Water Use Authorisation

The Act regulates water use and makes provision for authorisations of water use in 3 ways:

- Schedule 1 authorisations
- General authorisations
- Water use licences

Figure 3: Allowable water use Categories -NWA

Schedule 1 Use

Schedule 1 use is exempted from any requirement for authorisation from the Department. It covers allows for a person to:

- (1)(a) take water for reasonable domestic use in that person's household, directly from any water resource to which that person has lawful access;

- (b) take water for use on land owned or occupied by that person, for -
  - (i) reasonable domestic use;
  - (ii) small gardening not for commercial purposes; and
  - (iii) the watering of animals (excluding feedlots) which graze on that land within the grazing capacity of that land, from any water resource which is situated

on or forms a boundary of that land, if the use is not excessive in relation to the capacity of the water resource and the needs of other users;

(c) store and use runoff water from a roof;

(d) in emergency situations, take water from any water resource for human consumption or fire-fighting;

(e) for recreational purposes -

(i) use the water or the water surface of a water resource to which that person has lawful access; or

(ii) portage any boat or canoe on any land adjacent to a watercourse in order to continue boating on that watercourse; and

(f) discharge -

(i) waste or water containing waste; or

(ii) runoff water, including stormwater from any residential, recreational, commercial or industrial site,

into a canal, sea outfall or other conduit controlled by another person authorised to undertake the purification, treatment or disposal of waste or water containing waste, subject to the approval of the person controlling the canal, sea outfall or other conduit.

An entitlement under this Schedule does not override any other law, ordinance, bylaw or regulation, and is subject to any limitation or prohibition thereunder.

General Authorisation

A general authorisation conditionally allows limited water use without a licence as follows:

(1) A responsible authority may, subject to Schedule 1, by notice in the Gazette -

(a) Generally;

(b) In relation to a specific water resource; or

(c) Within an area specified in the notice,

authorise all or any category of persons to use water, subject to any regulation made under section 26 and any conditions imposed under section 29.

(2) The notice must state the geographical area in respect of which the general authorisation will apply, and the date upon which the general authorisation will come into force, and may state the date on which the general authorisation will lapse.

(3) A water use may be authorised under subsection (1) on condition that the user obtains any permission or authority required by any other specified law.

(5) An authorisation to use water under this section does not replace or limit any entitlement to use water which a person may otherwise have under this Act.

Water Use Licence

Any water use that exceeds a Schedule 1 use, or that exceeds the limits imposed under general authorisations, must be authorised by a licence. A water use licence is valid for specified time period (not exceeding 40 years) with conditions and must be reviewed by the responsible authority at least every 5 years (DWAF, 2004; DWS, 2013).

Water Use Licences are issued by the Department of Water and Sanitation, with the processing of the Water Use Licence Application (WULA) by CMAs or proto-CMAs.

The law permits/enables those affected by decisions regarding licensing to voice their opinions, and gives them the right to be provided with reasons for a licensing decision. It also gives them the right to appeal against a decision that might be unfavourable towards their interests.

In 2014 an amendment to the NWA was made to ensure alignment between the authorisation processes of the Departments of Environmental Affairs, Water and Sanitation and Mineral Resources, as follows:

> ''(5) The Minister must align and integrate the process for consideration of a water use license with the timeframes and processes applicable to applications for—
>
> (a) licences, permits or rights for prospecting, exploration, mining and production in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002); and
>
> (b) environmental authorisations in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) or any specific environmental management act.
>
> (6) Notwithstanding the provisions of section 148, any applicant for a water use licence arising out of the integration process contemplated in subsection (5), who is aggrieved by a decision of the responsible authority, may lodge an appeal to the Minister against the decision''.

Table 2: The number of water use authorisations granted from 1998 to 2016

Year	Agriculture	SFRA	Mining	Local gov. & Development	Industry	Total
1998 - 2010	1427	761	118	227	82	2615
2011	292	871	97	132	66	1458
2012	90	9	59	67	37	262
2013	78	37	36	60	11	222
2014	100	15	28	87	26	256
2015	275	3	96	205	57	636
2016	109	50	118	152	78	507
Total	2 371	1 746	552	930	357	5956

Source: Department of Water and Sanitation 2017[4]

The table shows that the number of registered water authorisations granted seem to fall short of the potential and actual number of water users. This might be owing to the on-going verification and validation process that might set in motion the need for compulsory licensing, where existing lawful uses (ELUs) might have to apply for licences depending on Water Management Area and CMAs.

2.4 Protection of small users

The National Water Resource Strategy second edition (NWRS2[5]) makes provision for protection of small users. It states that the Department of Water and Sanitation 'will continue to have a significant role in ensuring that the voices of small users and disadvantaged communities are heard and in ensuring that the CMAs address redress and equity as priorities' (NWRS2:65). The strategy further stipulates that water allocation reform (WAR) plans must be formalised and rolled out in selected areas that are prioritised according to water stress and opportunities for the re-allocation of water to historically disadvantaged communities and individuals. Moreover, there have been some ad hoc activities that have protected small users during drought, ensuring that their water allocation is not reduced or is reduced proportionally less than that of commercial farmers, but there is no specific protection offered to small users.

[4] The information in the table was provided by DWS staff at the project workshop on January 30th 2017.
[5] DWS 2013 National Water Resource Strategy - Water for an Equitable and Sustainable Future. Second Edition.

In fact, the recent revision of the General Authorisation for the Taking and Storing of Water (notice 538 of 2016) risks impacting even more negatively on the water use of small water users. The impact of this, compared to the earlier GA (2004), is as follows:

- The volume of surface that may be abstracted has generally been increased from nothing to 2000 m^3 per annum;
- The volume of water to be stored is a maximum of 80 000m^3 on each property or by each person on communal land (however, the maximum storage varies by Water Management Area, catchment and quaternary catchment);
- The volume of groundwater that may be abstracted has generally been reduced, but in some cases it has been increased.

In addition:

- Surface water may only be taken if the water resource is ***on*** or ***adjacent*** to your land – thus there is need for modalities to cross someone else's land to get to it as stipulated under section 1.6 of the GA (definitions) which seem to clarify that 'lawful access of property includes but not limited to ownership, lease agreement (or any other agreements), servitudes and certificates of occupation';
- Under section 3.1 (Specific conditions), the GA stipulates that 'the surface water taken on a property or piece of land in terms of this authorisation may be used on another property or piece of land';
- On communal land, storage and surface water volumes are specified as being per person on – it is not clear whether this refers to per person working the land, or per person living on the land.
- The revised General Authorisation gives 6 months for people who will be losing their access to water under the change in the GA to apply for licences. However, it is unclear whether any of the affected people have been informed of this requirement, and whether DWS has the capacity to process a large number of licences applications arising from the change to the GA.

The reality is that the change in the GA has formally declared tens of thousands small- and micro-scale users abstracting surface water, using groundwater or storing over 2000m3 of water illegal unless they apply for and are granted a licence. And it is unclear what, if any, communication with small users has been put in place to inform them of this matter. At the same time, even with the earlier GA that was considerably higher than Schedule 1, the NWRS-2nd edition already admitted that "license systems are not accessible to many South Africans".

Protection of small users in times of drought

It is general practice from DWS to restrict commercial farmers during times of drought but to avoid restricting the water use of small farmers because of their lack of access to resources such as savings

and insurance to carry them through a period of no productivity. However, it would appear that this is a practice rather than a formal policy position. When a drought occurs, DWS prioritises water supply according to the different water-use sectors' requirements to ensure sustainability of the resource (Meissner and Jacobs-Mata, 2016[6]). Water-use priority is given to basic human needs and the water requirements of strategic users, such as power stations and major industries. Urban water users are curtailed less than the agriculture sector (ibid). Usually, each specific system will have different levels of curtailment, according to the profile of water users reliant on the system.

2.5 Status of customary law

- No formal recognition of customary water law in South Africa, but there is recognition of communal land tenure in the GA[7], and the licences and GAs require access to the land on which the water is to be used, not ownership of the land;
- Relating to collective permits, Van Koppen (2016) noted that there is a very confusing situation in smallholder irrigation schemes where it was observed that the DWS pushes DAFF to organize licenses and even sign 'on behalf of the farmers' (to speed up) while DAFF seeks to involve the involved farmers, in any case their 'leadership' – whoever the leader is. However, in all this, the composition of farmers and land tenure is not formally known. In doing so, DWS tries to curtail earlier lawful allocations. However, there are some reported cases of irrigation boards that had an amount allocated to the IB which they then allocated to farmers in the IB. Whether the practice still happens no one can tell. The same can be said of the allocations made to WUAs for small farmers, it is not entirely clear whether such allocations are collective or individual allocations.

2.6 Regulations

What regulations are in place to operationalise/implement the permit systems?

- General authorisations – 2004, 2016,
- NWRS 2 is legally binding;

Delegations of powers and duties in terms of regulation NO R. 1352 dated 12 November 1999 requiring that a water use be registered in terms of the National Water Act - 1998, 22 December 1999

Draft Regulations for the registration of Waterworks and Process Controllers (Government Gazette 28557, Regulation Notice No. R. 181), 24 February 2006

[6] Meissner, R and I Jacobs-Mata 2016 South Africa's Drought Preparedness in the Water Sector: Too Little Too Late? Policy Briefing No. 155. South African Institute of International Affairs.

[7] It would seem the GA 2016 stipulates that communal land "occupied or used by members of a community subject to the rules or custom of that community".

Draft Regulations for the Use of water for Recreational Purposes generally and in respect of a government waterworks and surrounding state-owned land (Government Gazette 29413, Notice 1188), 1 December 2006

Draft Regulations Regarding the Safety of Dams under Section 123(1) of the National Water Act, 1998 (Sepedi)

Invitation to submit written comments on the proposed regulations required that a water use be registered (Government Notice 879), 16 July 1999

Regulations on Financial Assistance to Resource Poor Farmers (Government Gazette 30427, Notice R 1036), 31 October 2007

Regulations on use of water for mining and related activities aimed at the protection of water Resources (Government Gazette 20119, Notice 704), 4 June 1999

Regulations relating to access and use of government waterworks and surrounding state-owned land for recreational purposes in terms of the national water act, 1998 (act no. 36 of 1998), 30 October 2015

Regulations requiring that a Water use be Registered (Government Gazette 20606, Notice 1352), 12 November 1999 (English)

Regulations requiring that a Water use be Registered (Government Gazette 20606, Notice 1352), 12 November 1999 (Afrikaans)

DRAFT REGULATIONS REGARDING THE PROCEDURAL REQUIREMENTS FOR LICENCE APPLICATIONS IN TERMS OF SECTION 26(1) (k) OF THE NATIONAL WATER ACT, 1998 (ACT NO. 36 of 1998): (NOTICE 126 OF 2015)

2.7 Key Dates

The new authorisation system came into effect with the promulgation of the Act in 1998. Compulsory licencing was meant to be rolled out much earlier than it has been, leaving ELUs in existence well beyond the intended time;

The requirements for application for water use authorisation for new water uses - see draft regulations of 2015 and DWS application guide (2007)

- Application forms to be completed (moving to online system with support from ROs to complete)
- Consultation with stakeholders in some cases

2.8 Prioritisation

The NWRS2 sets out the following prioritisation in terms of allocation of water:

- Under the NWRS 2, the following general guide on priorities for water use, in order of declining priority:

    1) Provision for the Reserve;

    2) International agreements and obligations;

3) ***Water for social needs, such as poverty eradication, primary domestic needs and uses that will contribute to maintaining social stability and achieving greater racial and gender equity.***

4) Water for uses that are strategically important to the national economy

5) Water for general economic use, which includes commercial irrigation and forestry.

However, in terms of actual water use authorisation, water use under a licence has the highest legal status, followed by existing lawful use. Schedule 1 and water used under a general authorisation have secondary status in law.

NWRS2 not operationalised…the licensing system has not yet been adopted to give force to the NWRS2

3. Implementation Status

3.1 Is there a formal or informal strategy on the rolling out of permit systems?

- Currently the focus is on validation and verification of ELU across the country; there is a strategy for water allocation reform in terms of water use authorisation where the initial targets are still valid.

3.2 What is the status of implementation of the law?

- Ostensibly fully rolled out across the country
- In reality
    - validation and verification of water use only now being finalised across the country – due to be finalised by first half of 2017
    - ELUs still exist in most of the country and the only requirement is that these get registered on the WARMS. However, the ELU status can only change if and when a validation and verification process is completed, and it is found that compulsory licensing is needed. Only then, are ELUs obliged to apply for a licence.
    - Compulsory licencing has only been implemented in two small catchments
    - Water use is still primarily in the hands of the white minority. Even out of new license allocations since 1998, only 1.6 % is for HDIs.

3.3 Is there a prioritisation in issuing permits (both formal and informal)

- The official priorities are not only ignored, but with the new GA, small-scale users are even criminalized. In practice , mining has a high priority, as does water for municipalities;

3.4 What has been the number of applications over the years, and total now?

This will be requested from the relevant officials at the workshop as the information was not readily available during the drafting of the paper.

3.5 How are applications categorized (e.g. mining, industry, municipal, agriculture etc); data can be included in 'raw' form (e.g. excel sheets).

- Mining, irrigation, municipal (often called domestic, incorrectly), industry, SFRA
- Irrigation – difference between commercial users and small scale irrigation

3.6 Is Compliance monitoring and enforcement (CME) happening?

- To some extent – challenges? See Vaal farmers; mine pollution.
- Difficult to assess impact due to the nature of reporting which is on input into the CME processes not on outcome. Cf table that follows:

Table 3: CM targets & achievements 2014/15

CM Targets & Achievements 2014/15

Sector	Complaints Reported (14/15)	Investigations Conducted (14/15)	Non-compliance Letters*	Notices issued*	Directives	Criminal Cases Opened
Agriculture	75	75	54	59	15	1
Government (National/Prov)	32	32	8	7	7	0
Industry	23	23	0	7	6	3
Local Government (WSA/WSP)	39	38	2	11	4	0
Mining	90	89	2	46	21	8
Private Use	3	2	0	0	0	0
Tourism	7	7	0	2	1	1
All sectors	269	266	66	132	54	12

3.7 How were (which) water users informed/awareness creation about the laws/permits?

- You and your water rights document in 1997

- Community reps invited to conference on developing the law – very consultative process
- Little communication in recent year to small users, but outreach to DAFF and DRDLR about obligations. Formal initiatives to support small-scale users (government, NGOs, SADC (e.g. in Vhembe), corporate sector's social responsibility, etc) have been seriously delayed and sometimes cancelled altogether because of the obligation to obtain a license. Also, smallholder NGOs complain. In particular, the disconnection between land and water sectors has implied many cases in which owners hived off the water rights from land that was put under claim. There is a short period between such declaration of land under claim and the lawful possibility to sell the water entitlements (or take out the infrastructure). The DWS' policy 'use it or lose it' is to also avoid this.

3.8 What is estimated number of actual water users that are formally obliged to apply for a permit but have not been reached as yet? Which users are that in particular?

- Impact of general authorisations on a whole bunch of small users?
- ELU not yet obliged to apply for a licence – there were approximately 55 000 commercial irrigating farmers in 2005. The number has since dropped due to various reasons including land claims through the land reform programme. The ELU users' key obligation is to ensure that they are registered on the WARMS.

4. Fees (or levies, tax)

4.1 Pricing Strategy and application fees

The National Water Act also provides for a pricing strategy for all water uses defined under Section 21. Three types of water charges are provided for by the Act. These include: water resource management charge, water resource development charge, and an economic charge for the value of water to particular users (DWAF, 2004 p. 83). The first 2 charges – management and development – are financial charges which are directly related to the costs of managing water resources. The 3rd, economic, charge is to usher efficiency in water use across various types of water uses.

- Charges
  - one related to the costs of state infrastructure (dams etc) (rands per m3) – only paid by people who use water from this infrastructure;
  - WRMC – water resources management charge (in cents per m3) – to pay for costs of managing the catchment – specific to each WMA
  - WRC levy for research
  - Waste Discharge Charge ready for implementation

4.1 Revenue collection and use

- How much fees per user/applicant (monthly/annual/once-off)? (registration, annual water charges (for what purpose?), collection rates
- What is the estimated total revenue/year; and
- Where does the revenue go to and for what?
    - WRMC is meant to go to the WMA that it comes from to pay for management costs in that WMA
    - WRI charge goes into the infrastructure trading account – complex calculation of who pays what, but meant to pay for full O&M on state infrastructure, and in some case goes towards capex and loan repayment (especially through TCTA)

Table 4: Revenue projections

REVENUE PROJECTIONS										
DOMESTIC & INDUSTRIAL			IRRIGATION			FORESTRY			Total Projected Revenue	
Charge	Billable Volumes	Projected Revenue	Charge	Billable Volumes	Projected Revenue	Charge	Billable Volumes	Projected Revenue		
(c/m³)	R'000	R'000	(c/m³)	R'000	R'000	(c/m³)	R'000	R'000	R'000	
0.019	48 469	**919.28**	0.019	532 632	**10102.099**	0.009	1 460.00	**13.376**	**11 034.756**	11034756.18
0.031	41 869	**1 317.20**	0.018	406 638	**7469.940**	0.011	36 044.00	**392.519**	**9 179.658**	9179657.96
0.018	246 745	**4 441.90**	0.018	670 418	**12068.854**	0.008	12.00	**0.092**	**16 510.845**	16510845.4
0.023	322 257	**7 383.34**	0.016	677 644	**10571.246**	0.009	25 738.00	**219.257**	**18 173.847**	18173846.73
0.016	184 227	**2 901.90**	0.013	1 058 677	**13272.735**	0.008	252 765.00	**2062.991**	**18 237.621**	18237621.06
0.010	336 656	**3 402.70**	0.008	632 668	**5181.232**	0.005	349 231.00	**1611.381**	**10 195.317**	10195317.03
0.008	166 403	**1 337.31**	0.008	175 106	**1407.257**	0.005	30 258.00	**145.903**	**2 890.474**	2890474.095
0.021	1 923 840	**40 313.11**	0.014	426 636	**5951.056**	0.010	12.00	**0.120**	**46 264.281**	46264280.92
0.025	318 485	**7 962.13**	0.019	278 960	**5411.824**	0.000		**0.000**	**13 373.949**	13373949
0.014	120 153	**1 670.00**	0.010	581 701	**5915.460**	0.000		**0.000**	**7 585.460**	7585460.028
0.021	568 769	**12 158.78**	0.021	235 855	**4852.409**	0.012	209 606.00	**2560.470**	**19 571.656**	19571656.23
0.023	159 122	**3 726.73**	0.020	123 333	**2491.177**	0.012	49 700.00	**583.152**	**6 801.062**	6801061.986
0.008	98 324	**742.78**	0.004	796 626	**3425.492**	0.000		**0.000**	**4 168.271**	4168271.019
0.014	81 385	**1 104.69**	0.009	925 193	**8049.710**	0.000		**0.000**	**9 154.401**	9154400.524
0.023	158 547	**3 614.87**	0.011	1 009 363	**11194.348**	0.007		**0.000**	**14 809.220**	14809220.03
0.031	67 293	**2 099.54**	0.014	386 907	**5223.820**	0.007	10 971.00	**81.116**	**7 404.478**	7404477.793
0.023	15 385	**350.01**	0.013	410 857	**5150.954**	0.007	117.00	**0.865**	**5 501.824**	5501823.768
0.033	47 173	**1 551.99**	0.011	873 882	**9972.717**	0.005	5 304.00	**23.871**	**11 548.579**	11548579.25
0.041	371 290	**15 037.25**	0.014	355 493	**4799.684**	0.010	4 161.00	**40.128**	**19 877.058**	19877057.82
									252 282.757	**252 282 756.812**

The revenue projections should be read within the context of the total budgeted as illustrated in the table below for all the catchments.

Table 5: Total budget for all catchments

WMA's Budget summary - 2011/12								
#	WMA's	Budget '10/11	Actual Expenditure 2010-11	Actual Revenue 2010-11	Total Projected Revenue (10%)	Augmentation Allocations 2011-12	Prelimenary Budget Allocation 2011-12	Budget inputs (Full Cost) '11/12
1	Limpopo	25 283 000	19 679 000	9 867 864	11 034 756	14 965 244	26 000 000	30 723 523
2	Livhubu Letaba	17 563 000	15 966 000	9 191 834	9 179 658	10 139 642	19 319 300	22 513 991
3	Crocodile Marico	33 370 000	20 756 000	16 098 482	16 510 845	20 196 155	36 707 000	51 786 864
4	Olifants	22 415 000	15 783 000	19 863 785	18 173 847	6 482 653	24 656 500	33 187 717
5	Inkomati	15 450 000	10 631 000	18 354 858	18 237 621	1 762 379	20 000 000	28 122 336
6	Usuthu Mhlathuze	13 312 000	18 309 000	8 722 136	10 195 317	4 447 883	14 643 200	15 102 911
7	Tugela Vaal	12 928 000	5 705 000	2 742 444	2 890 474	10 312 334	13 202 808	13 202 808
8	Upper Vaal	53 593 000	43 808 000	37 539 856	46 264 281	13 735 719	60 000 000	75 565 500
9	Middle Vaal	5 663 000	2 010 000	12 952 678	13 373 949	-1 569 459	11 804 490	11 804 490
#	Lower Vaal	12 658 000	6 200 000	8 091 038	7 585 460	5 072 539	12 657 999	12 657 999
#	Mvoti Mzimkhulu	22 792 000	12 497 000	17 514 684	19 571 656	5 499 544	25 071 200	25 101 385
#	Mzimvu Keiskama	28 730 000	26 604 000	6 083 128	6 801 062	23 198 938	30 000 000	35 723 471
#	Upper Orange	16 675 000	6 229 000	5 099 377	4 168 271	11 765 006	15 933 277	15 933 277
#	Lower Orange	11 135 000	7 815 000	9 499 924	9 154 401	1 745 732	10 900 133	10 900 133
#	Fish Tsitsikama	22 851 000	15 732 000	12 804 573	14 809 220	10 326 880	25 136 100	28 141 493
#	Gouritz	7 156 000	4 757 000	7 021 459	7 404 478	1 595 522	9 000 000	14 958 160
#	Olifants Doorn	8 862 000	5 559 000	4 709 147	5 501 824	4 246 376	9 748 200	11 734 569
#	Breede/Overberg	9 034 000	5 768 000	7 591 864	11 548 579	-548 579	11 000 000	37 217 622
#	Berg	11 781 000	6 609 000	19 042 231	19 877 058	331 492	20 208 550	32 852 383
TOTALS		**351 251 000**	**250 417 000**	**232 791 366**	**252 282 757**	**143 706 000**	**395 988 757**	**507 230 631**

5. Institutional Arrangements

5.1 Institutional arrangements

The hierarchy of water management institutions in the country is thus comprised of 3 levels:

- Minister of Water Affairs and Forestry at the national level
- TCTA, KOBWA (infrastructure related agencies)
- Catchment management agencies
- Water user associations (now to be transformed into some other format) (Irrigation Boards also still exist although they were meant to be transformed within 6 months of the legislation being promulgated)

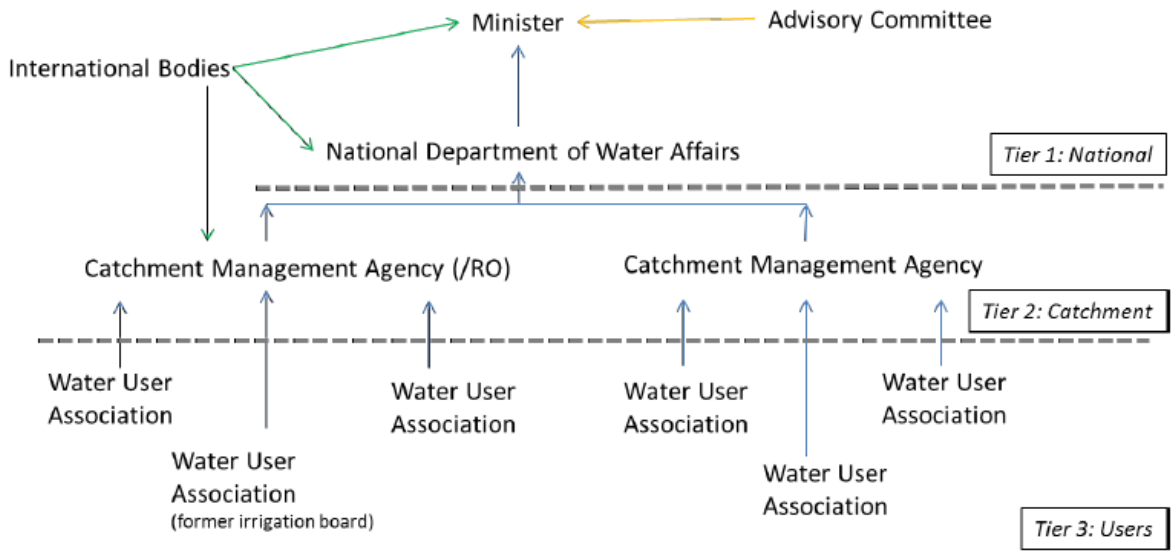

Figure 4: Water management institutions in South Africa

After country-wide consultation, some 19 water management areas (WMAs) were established in the country. This was subsequently reduced to 9 for efficiency gains and to align better with provincial boundaries.

Catchment management agencies (CMAs) are statutory bodies with jurisdiction in a defined WMA. Integrated water resource management is to be done in South Africa on a catchment basis. The efficiency aspect is further strengthened by decentralisation of decision making to the catchment level, through the catchment management agencies (CMAs). Only two CMAs have been fully established. The others exist as proto-CMAs in DWS.

Each CMA is to develop a catchment management strategy for managing water in its WMA. At a later date, the CMAs may be given the financial and administrative responsibilities for setting and collecting water user charges (Tewari and Kushwaha, 2007).

Functions to CMAs have been delegated and withdrawn and limited functions re-delegated. There is an internal DWS document setting out the functions of CMAs (see annex A).

The proposed size and structure of CMAs is represented in Figure 5 below

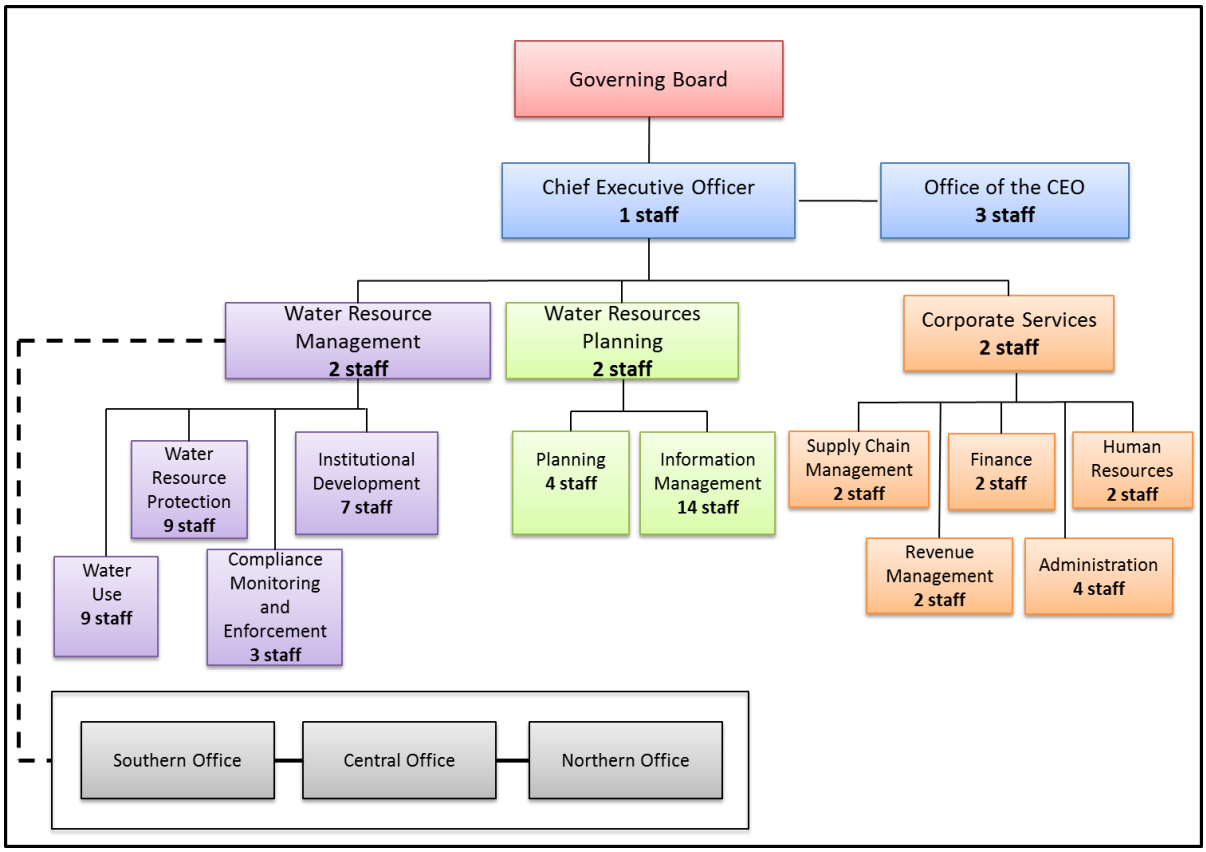

Figure 5: Proposed size and structure of CMAs

5.2 Water use licence applications

The process of applying for a licence to use water in South Africa otherwise known as the Water Use Licence Application (WULA) process is placed on the role of CMAs and proto CMAs and how these WULA processes can be improved. The Business process map developed by DWS outlines the generic process and highlights the role players at different stages within the process. While the process does not clearly differentiate between broader phases, it is easy to assume that it can also be adopted to fit into four categories. There entire process of water use licence application (WULA) represented in the Business process below may be broken down into the following phases with indicative timeframes:

- Phase I : Pre- Application Consultation or Needs Assessment
- Phase II : Application and information gathering should a water use licence be required
- Phase III: Legal and technical assessment, evaluation and input;
- Phase IV: Assessment review, recommendation and decision, and appeal (if required)

The generic flow diagram of the broad steps expected from the WULA process is outlined in Figure 6 below.

Water Use Authorisation Business Process- SA.

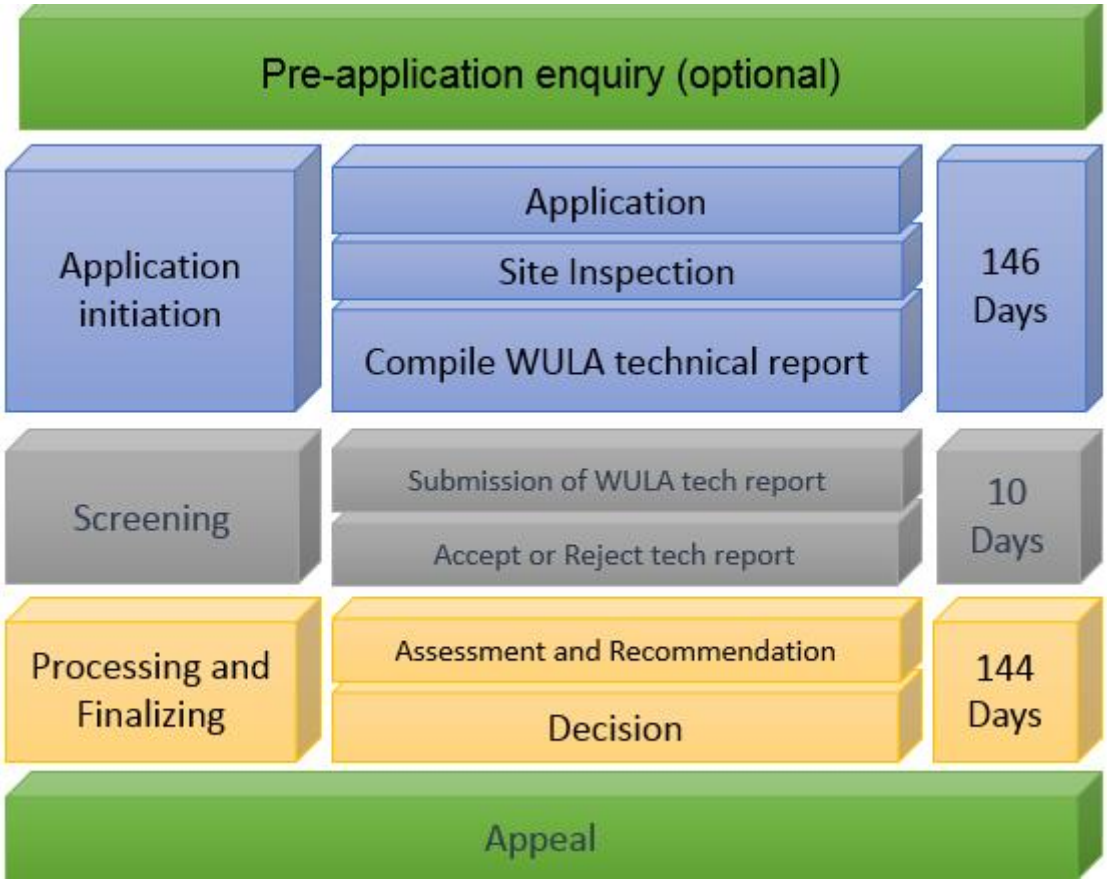

Figure 6: Water use authorisation business process

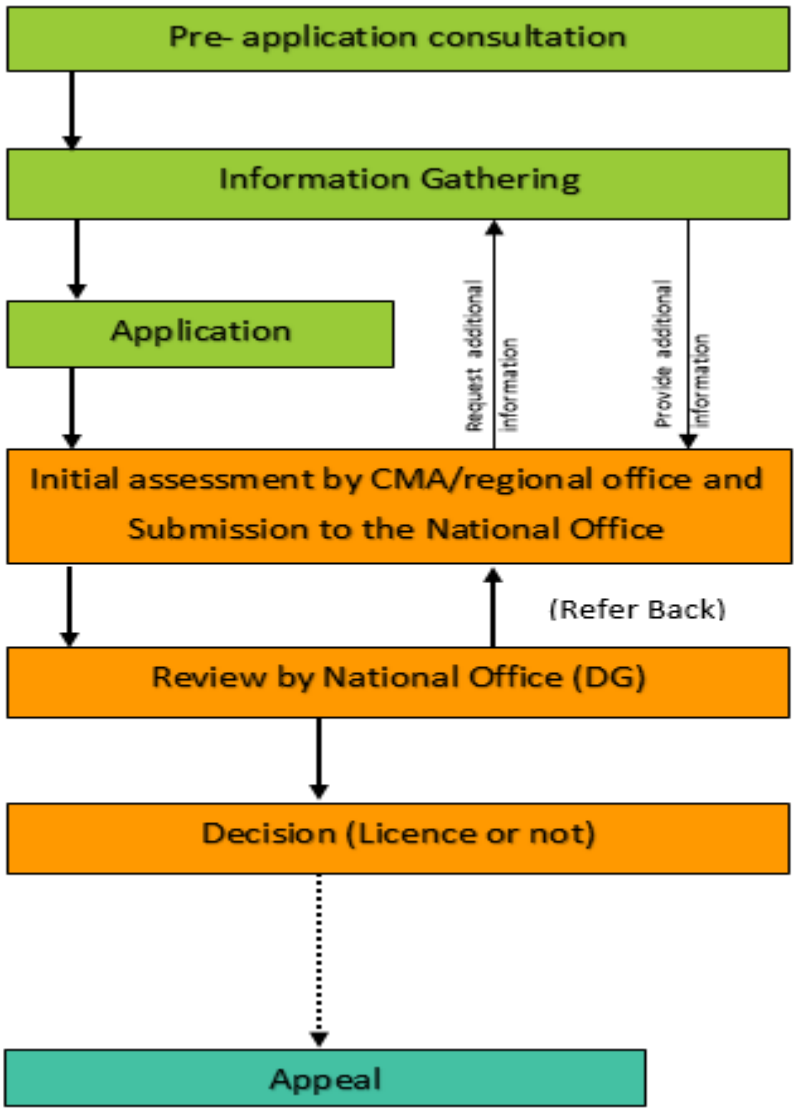

Figure 7: Flow diagram of Water Use Authorisation

Detailed Business Process

Table 6a: Detailed business process steps in WUA application (Initial process)

Main step	Sub-step	Days
1. Pre-application enquiry	Pre-application enquiry	0
2. Application submission	WULA submitted	1
	WULA received	

3. Acknowledgement	Acknowledgement	10
4. Site inspection	Arrangement and confirmation	5
	Site inspection	20
	Site inspection report and letter of information requirements	5
5. Compile and submission of water use technical report	Compile water use technical report	104
	Applicant submit water use technical report	1
	Department receives water use technical report	

The time line for finalising the water use licence is a period of nine months (207 working days) provided the applicant provides all the requisite information the department needs to make the necessary assessment (DWS, 2015). However, this period has most of the time not been met due to a number of reasons such as the applicant not submitting all the required information, a lack of sufficient personnel to assess water use applications, uncoordinated requirements from other departments that is those with related regulatory mandates, and unrefined business process for water use (DWS, 2015).

DWS has established the Chief Directorate: Water Use Authorisation located in the National Office, and which shall also have fully fledged structures in the provincial offices (as these offices are entry points for all water use license applications and will thus be responsible for similar functions). To this end, DWS has finalised its comprehensive wall to wall business process of water use licensing. This has reduced the timeline of finalising water use licence applications from nine months (207 working days) to seven months (153 working days)[8]. The business process is envisaged to result in a reduction of 54 working days, which amounts to 26% improvement on the licensing turnaround time. The new business process now provides for a pre-application stage that is well mapped-out to provide site visits, advise the prospective applicant about the feasibility of the water use undertaking, and provide full briefing on the application requirements. This process takes a maximum of 47 working days and thereafter an applicant is afforded 100 days to submit a water use licence application (ibid). The pre-application process takes a total of 147 working days and plus the 153 days of processing the

[8] DWS communication and discussion with the Mr Anil Singh: Deputy Director-General (DDG) for Regulations, Compliance and Authorisation (https://www.dwa.gov.za/stories/Processes%20of%20applying%20for%20a%20waters%20%20use%20licenses.pdf).

application within the Department, which process is legislated at a maximum of 300 working days as outlined in the table below.

Table 6b: Detailed business process steps in WUA application (Final process)

Main step	Sub-step	Days
6. Accept or reject WULA technical report: close application or proceed	Technical report screening	5
	Letter of rejection or acceptance	5
7. Assessment	Initial assessment	12
	Specialist input	67
	Final assessment and recommendation	44
8. Decision	Approval by responsible authority	11
9. Administration and communication of decision to applicant	Application recorded at head Office and dispatch to Proto CMA / CMA	5
	Application recorded at Head Office and dispatched to Head Office	5
Total		300

The department has formalised engagement fora with related State Owned Enterprises, mining houses and other big industries. The purpose of these engagements is to remove possible bottlenecks in the water use application process and also to support future development plans of these institutions and therefore forge the type of water use support required from the department. An agreement was reached between DWS, the Department of Environmental Affairs (DEA) and the Department of Mineral and Energy (DMR) to streamline regulatory requirements relating to licensing specifically of mining related applications. These regulations were legislated in June 2014, with consequent amendments to the department's enabling legislation. The three departments are finalising each of their draft regulations that shall serve to enhance efficiency in their regulatory regime, and eliminate any possibility of duplication of functions and/or any linear approaches to licensing.

6. What are the challenges

Also to be discussed at the workshop.

- Slow processing of licencing and lack of technical staff so wrong conditions on licences etc
- Reallocation and compulsory licencing

- Weakness in CM&E – shortage of capacity in government, lack of delegations to CMAs and to and from on their functions, need to use a slow and overburdened judicial systems
- General authorisations – secondary status changed at the stroke of a pen – small scale users are cut back while large scale users continue to expand and some continue to steal water
- Challenges of informing small scale users of their rights (to access to water, fair process) and obligations
- Lack of co-ordinated (mutually contradictory) licencing and support to small scale farmers.

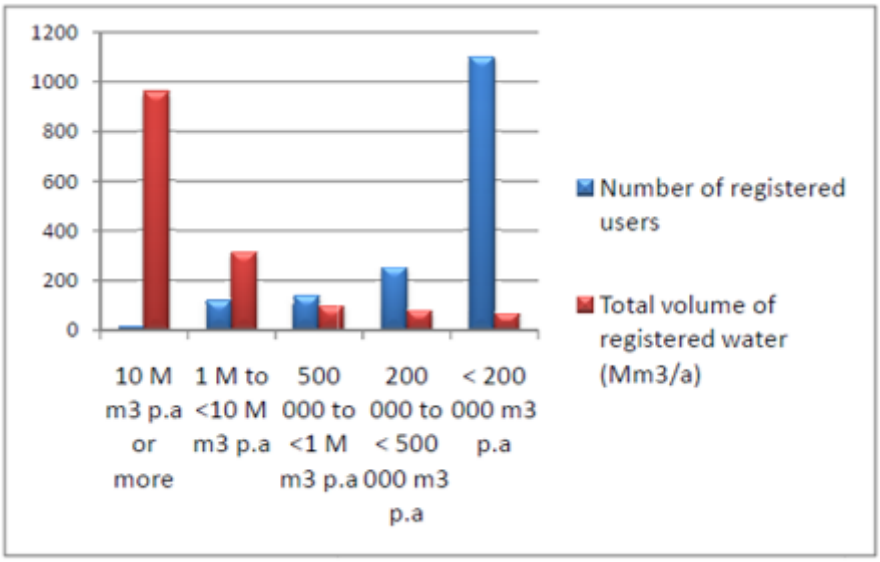

Figure 8: Distribution of registered water use in the Inkomati Water Management Area

Broadly, the strength and weaknesses of the legislative arrangement for permitting in South Africa can be summarised in the table below, as shared by the Department of Water and Sanitation during the workshop.

Table 7: Strength and weaknesses of the legislative arrangement for permitting in South Africa

STRENGTH	WEAKNESSES	OPPORTUNITIES	THREATS
The NWA is a progressive legislation that balances socio economic development with environmental considerations	It does not have definite timelines for the phasing out of historical entitlements	There is legislative review which provides for further refinement of the Act	Slow implementation which could erode public confidence and affect transformation imperatives
The NWA vests the ownership of water resources to the public which gives the State sound regulatory footing	There are no visible and immediate sanctions for transgressions	Use of NWRS as a mechanism to guide both the implementation and content enhancement of the Act	Inadequate integrated planning across Departments aimed at alignment of natural and other physical resources
The Legislation provides several permitting instruments based on the impact to the resource	Due to deep effects of the past discrimination the content of the Act remain unknown to most of HDIs	Less expensive and quicker lawful access to water use by small scale water users	Status quo maintained due to lack of information and participation

7. References

List of references and literature cited in the report

Turton, A.R. 2000. 'Precipitation, People, Pipelines and Power: Towards a 'Virtual Water' Based Political Ecology Discourse'. In Stott, P. & Sullivan, S. (Eds.) 2000. *Political Ecology: Power, Myth and Science.*

Meissner, R and I Jacobs-Mata 2016 South Africa's Drought Preparedness in the Water Sector: Too Little Too Late? Policy Briefing No. 155. South African Institute of International Affairs.

Annex A: Document outlining what WRMC can cover

Functional area	Abstraction related WRMC	Waste discharge related WRMC
Investigate and advise interested persons	On water resource protection, use, development, conservation, management and control	
Develop policy and strategy	Long-term strategic planning for the CMA (including climate change) Resource studies, investigations and integrated strategy development Develop and or revise catchment management strategy (CMS) Develop WMA specific rules for water use Engage with NWRS development and implementation	
	Develop allocation plans Reconciliation of water availability and requirements	Develop water quality management plans
Co-ordination	Of the related activities of water users and of the water management institutions within its water management area Of CMS implementation with the implementation of any applicable development plan established in terms of the Water Services Act, 1997 (Act No. 108 of 1997)	
Promote community participation	In the protection, use, development, conservation, management and control of the water resources in its water management area	
Resource directed measures	Reserve determination, classification & determination of Resource Quality Objectives. Monitoring of reserve implementation	
Support institutions	Creation of non-statutory consultative and participative bodies or forums Coordination of the activities and relationships of WMIs in the WMA Fostering cooperative governance and creating partnerships Building capacity in WMIs and forums Resolution of conflicts Supportive or emergency organisational interventions Ensuring appropriate stakeholder participation in these bodies	
Regulate water use	Registration and verification of water use Authorisation of water use (licensing) Setting, billing and collecting water use charges Ensuring compliance (including enforcement) Negotiation of co-regulation and cooperative agreements Implement compulsory licensing	
	Ensuring dam safety and dam zoning Abstraction & stream flow reduction activities control & monitoring Compliance monitoring and enforcement with regard to dam safety regulations (non-DWA dams)	Waste discharge & marine outfall licensing Waste discharge and marine outfall control & compliance monitoring
WRM programmes	Control of water weeds	
	Planning and management relating to control of invasive alien plants with acknowledged negative impacts on	Pollution incident planning and response (management)

	water resources; e.g. riparian zones, mountain catchment areas, wetlands and in areas where there could be an impact on aquifers Provision of technical support to and monitoring of water conservation and water demand management (WCWDM) interventions Rehabilitation of water resources (such as wetland or riparian zones) Flood and drought management	Waste discharge programmes [e.g. cleaner technology, dense settlements, waste discharge strategies]
Manage information	Monitoring water resources (collect, source and capture data) Development and maintenance of databases (including quality control) Development and maintenance of information management/evaluation systems Conducting research on water resources Performance of needs assessments and water resource problem identifications Communication with stakeholders and collection of anecdotal information	
Audit WRM	Development and maintenance of indicators for auditing Performance of financial and organisational audits of WMIs Performance of functional performance audits Performance of water resources audits against specified objectives Proposition and facilitation of corrective action	
Geohydrology and hydrology	Monitoring groundwater yields and compiling of maps and yield information Extending and maintaining the hydrological database and compilation of information	Water quality monitoring and compilation of information
Administration and management	Financial and business planning for the CMA Training and capacity building of staff	
Equipment and rental	Office accommodation Replacement and upgrading of office equipment and furniture	

Annex B: WRM Volume Charges Summary

#	WMA	Approved Charges 2010/11 D&I	Approved Charges 2011/12 D&I	Proposed Charges 2012/13 D&I	Recommnded Charges 2011/13 (Max 30%) D&I	Full Cost "2012/13 D&I	%Increase D&I	Approved Charges 2010/11 IRR	Approved Charges 2011/12 IRR	Recommnded Charges 2012/13 IRR	Proposed Charges 2012/13 IRR	Full Cost 2012/13 IRR	%Increase IRR	Approved Charges 2010/11 Forestry	Approved Charges 2011/12 Forestry	Proposed Charges 2012/13 Forestry	Recommnded Charges 2011/13 (Max 6.6%) Forestry	Full Cost 2012/13 Forestry	%Increase Forestry
1	Limpopo	1.72	1.90	2.46	2.46	5.19	29.7%	1.72	1.90	2.02	2.46	4.26	6.6%	0.83	0.92	1.18	0.98	3.50	6.6%
2	Levubu	2.86	3.15	3.15	3.15	3.27	0.1%	1.67	1.84	1.84	1.84	2.77	0.0%	0.99	1.09	1.09	1.09	2.21	0.0%
3	Croc Marico	1.64	1.80	4.06	2.34	4.06	30.0%	1.64	1.80	1.92	1.92	4.06	6.6%	0.70	0.76	0.81	0.81	1.51	5.9%
4	Olifants	2.08	2.29	2.40	2.40	2.40	4.8%	1.56	1.56	1.67	1.67	2.40	6.6%	0.77	0.85	1.51	0.91	1.51	6.6%
5	Inkomati	1.43	1.58	2.19	2.05	2.19	30.0%	1.14	1.25	1.50	1.60	1.81	19.6%	0.74	0.82	1.40	0.87	1.40	6.6%
6	Usuthu	0.92	1.01	1.38	1.31	1.38	30.0%	0.74	0.82	1.05	1.05	1.05	28.2%	0.42	0.46	0.61	0.49	0.61	6.6%
7	Thukela	0.73	0.80	1.18	1.04	1.18	30.0%	0.73	0.80	1.18	1.18	1.18	46.8%	0.44	0.48	0.65	0.51	0.65	6.6%
8	Upper-vaal	1.90	2.10	2.58	2.58	2.58	23.1%	1.27	1.39	1.88	1.88	1.88	34.8%	0.91	1.00	1.14	1.06	1.14	6.6%
9	Middle-vaal	2.50	2.50	2.61	2.61	2.61	4.3%	1.94	1.94	1.94	1.94	1.86	0.0%	0.00	0.00	0.00	0.00	0.00	0.0%
10	Lower-vaal	1.26	1.39	1.77	1.77	1.77	27.4%	0.92	1.02	1.43	1.43	1.43	40.6%	0.00	0.00	0.00	0.00	0.00	0.0%
11	Mvoti to Mzi	1.94	2.14	2.31	2.31	2.31	8.1%	1.87	2.06	2.19	2.18	2.18	6.6%	1.11	1.22	1.36	1.30	1.36	6.6%
12	Mzimvubu-Kei	2.13	2.34	2.90	2.90	2.90	24.0%	1.84	2.02	2.15	3.10	3.10	6.6%	1.07	1.17	1.86	1.25	1.86	6.6%
13	Upper Orange	0.69	0.76	0.76	0.76	0.74	0.0%	0.43	0.43	0.43	0.43	0.38	0.0%	0.00	0.00	0.00	0.00	0.00	0.0%
14	Lower Orange	1.23	1.36	1.66	1.66	1.66	22.3%	0.79	0.87	1.11	1.11	1.11	27.6%	0.00	0.00	0.00	0.00	0.00	0.0%
15	Fish Tsitsikama	2.28	2.28	2.28	2.28	1.63	0.0%	1.01	1.11	1.50	1.60	1.93	35.3%	0.60	0.66	1.18	0.70	1.18	6.6%
16	Gouritz	3.12	3.12	4.34	4.06	4.49	30.0%	1.23	1.35	1.50	4.34	4.34	11.1%	0.67	0.74	3.49	0.79	3.49	6.6%
17	Olifants-Doorn	2.07	2.27	3.62	2.96	3.86	30.0%	1.14	1.25	1.50	3.62	3.62	19.6%	0.67	0.74	3.02	0.79	3.02	6.6%
18	Breede	3.29	3.29	3.29	3.29	1.40	0.0%	1.04	1.14	1.50	3.38	3.38	31.4%	0.41	0.45	2.52	0.48	2.52	6.6%
19	Berg	4.05	4.05	4.77	4.77	4.77	17.9%	1.23	1.35	1.50	4.19	4.19	11.1%	0.88	0.96	2.79	1.03	2.79	6.6%

Table with volume summary for year 2012-13

	Volume Summary 2012-13 FY							
WMA's	D&I		Irr		SFRA		Total	
		000		000		000		000
Limpopo 1	191 795 188	191 795	383 590 375	383 590	63 931 729	63 932	**639 892 678**	**639 893**
Levubu 2	192 207 778	192 208	384 415 556	384 416	64 069 259	64 069	**641 269 216**	**641 269**
Crocodile (w), Marico 3	348 237 947	348 238	711 322 416	711 322	13 529	14	**1 060 633 453**	**1 060 633**
Olifants	321 206 066	321 206	681 141 096	681 141	29 667 569	29 668	**1 033 017 079**	**1 033 017**
Inkomati	184 536 974	184 537	975 733 090	975 733	1 122 664	1 123	**1 162 552 998**	**1 162 553**
Usutu to Mhlatuze	264 400 000	264 400	638 180 000	638 180	350 070 000	350 070	**1 253 552 580**	**1 253 553**
Thukela	117 840 000	117 840	275 430 000	275 430	30 510 000	30 510	**424 173 270**	**424 173**
Upper Vaal (8)	1 901 727 000	1 901 727	448 893 000	448 893	12 000	12	**2 352 982 620**	**2 352 983**
Middle Vaal	317 309 820	317 310	271 447 855	271 448	-	-	**589 346 433**	**589 346**
10 - Low er Vaal	138 617 000	138 617	562 565 000	562 565	-	-	**701 883 182**	**701 883**
Mvoti to Umzimkulu	571 650 000	571 650	238 180 000	238 180	209 590 000	209 590	**1 020 229 830**	**1 020 230**
Mzimvubu - Keiskamma	334 823 529	334 824	496 631 016	496 631	135 219 251	135 219	**967 505 251**	**967 505**
Upper Orange	518 210 811	518 211	4 038 789 189	4 038 789	-	-	**4 561 557 000**	**4 561 557**
14 - Low er Orange	81 263 081	81 263	926 235 079	926 235	-	-	**1 008 505 658**	**1 008 506**
Fish Tsitsikama	132 032 381	132 032	997 079 796	997 080	15 010 074	15 010	**1 145 251 363**	**1 145 251**
Gouritz	74 312 566	74 313	369 119 794	369 120	10 798 009	10 798	**454 673 801**	**454 674**
Olifants Doorn	16 067 082	16 067	403 889 380	403 889	116 943	117	**420 493 361**	**420 493**
Breede	49 292 841	49 293	834 102 866	834 103	5 247 380	5 247	**889 526 483**	**889 526**
Berg	377 703 263	377 703	340 256 372	340 256	4 106 361	4 106	**722 783 955**	**722 784**
TOTAL	**6 133 233 327**	**6 133 233**	**13 977 001 880**	**13 977 002**	**919 484 768**	**919 485**	**21 049 830 211**	**21 049 830**