



**water & sanitation**

Department:  
Water and Sanitation  
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# Business Case for the Vaal-Orange Catchment Management Agency

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## ABBREVIATIONS AND ACRONYMS

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AMD	Acid Mine Drainage
CEO	Chief Executive Officer
CFO	Chief Finance Officer
CIO	Chief Information Office
CMA	Catchment Management Agency
CMS	Catchment Management Strategy
CUC	Capital Unit Charge
DMP	Disaster Management Plan
DWS	Department of Water and Sanitation
GDP	Gross Domestic Product
GIS	Geographic Information Systems
HDS	High Density Sludge
HR	Human Resources
IMC	Inter-Ministerial Committee
IWRM	Integrated Water Resources Management
LRA	Labour Relations Act
ISP	Internal Strategic Perspective
MAP	Mean Annual Precipitation
NWA	National Water Act
NWRS	National Water Resources Strategy
NWRS2	National Water Resources Strategy 2
OSD	Occupation Specific Dispensation
PFMA	Public finance Management Act
RO	Reverse Osmosis
RQO	Resource Quality Objectives
SONA	State of the Nation Address
STI	Short Term Intervention
TCTA	Trans-Caledon Tunnel Authority
WAR	Water Allocation Reform
WARMS	Water Registration Management System
WC	Water Conservation
WDM	Water Demand Management
WfW	Working for Water
WMA	Water Management Area
WMI	Water Management Institution
WRM	Water Resource Management
WUA	Water User Associations
WRC	Water Resource Commission

# 1 INTRODUCTION

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The National Water Act (Act 36 of 1998) mandates the Minister of Water and Sanitation to establish catchment management agencies (CMAs) for the management of water resources at the catchment level. To this end, the Minister has already established six out of a proposed 9 CMAs, of which two are currently functional (Inkomati-Usuthu and Breede-Gouritz).

Since the establishment of these CMAs, the Department of Water and Sanitation (DWS) has reviewed the appropriateness of having 9 CMAs across the country and has proposed a reduction in the number of water management areas, and by implication the number of CMAs to six. In this reduction, new boundaries for the six water management areas will be demarcated through the National Water Resources Strategy (NWRS3) as is required under the National Water Act.

In terms of section 78(1) (b) of the National Water Act, the Minister may amend the name of water management area of an established CMA and in terms of section 88(1) (a) the Minister may for the purposes of re-organising water management institutions in that area in the interests of effective water resource management disestablish a CMA if it is desirable.

As part of this process, the Vaal-Orange CMA will be established for the whole of the Vaal and the Orange catchment areas and not as was previously envisaged as Vaal CMA and Orange River CMA separately. The intention is that an integrated CMA, called Vaal-Orange CMA, for the purposes of this report, will manage the water resources in the Vaal and Orange Water Management Areas.

This document sets out the business case for this change, in line with the requirements of National Treasury in this regard, in order to facilitate approval by National Treasury of the listing of this CMA as a Schedule 3A public entity in terms of the Schedules of the Public Finance Management Act (PFMA) (Act 1 of 1999). It also sets out the required processes to be followed by the Minister to achieve the required institutional changes.

The report is structured as follows:

- Chapter 2 - Strategic rationale for CMA establishment
- Chapter 3 – Description of Water Management Area
- Chapter 4 – Corporate Form
- Chapter 5 – Legal Process
- Chapter 6 – Functions of the CMA
- Chapter 7 – Organisational Arrangements
- Chapter 8 – Organisational Requirements
- Chapter 9 – Financial Arrangements
- Chapter 10 – Institutional and Governance Arrangements
- Chapter 11 – Mechanism for Oversight and Regulation
- Chapter 12 – Change Management
- Chapter 13 – Risks addresses implementation considerations and actions; and
- Chapter 14 – Implementation considerations and actions

## **2 STRATEGIC RATIONALE FOR CMA ESTABLISHMENT**

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The establishment of CMAs, though mandated by the National Water Act 36 of 1998, requires further scrutiny in terms of its desirability and benefit not only for efficient water resource management but also for the attainment strategic social and economic goals of the country.

Currently, DWS provides an enabling environment for water resources management through the development of policy, legislation, methodologies and guidelines. Further, the DWS develops the national water resources strategy, the pricing strategy and the necessary institutional arrangements with different roles and responsibilities among key functions to ensure that water services and water resource are adequately managed. The CMAs is one of the institutions highlighted in the National Water Act to perform water resource management functions within a specified water management area. The CMA is also the designated authority in functions related to authorising and enforcing water use and setting and collecting water use charges.

Although the NWA was promulgated in 1998, there has been slow movement towards decentralising water resource management functions to CMAs, with only two CMAs established in the past 20 years. This has resulted in DWS retaining most functions. The 9 regional offices of DWS mainly focus on water resource management operations as well as acting as Proto-CMAs in various WMAs. The unintended consequence of this is that the establishment of localised water management institutions such as water user associations, water authorisation as well as enforcement of efficient water management and use has not seen enough progress.

In addition, a smaller number of CMAs was seen as enabling better economies of scale with regard to utilising scarce technical skills and reducing the regulatory and oversight requirements on the Minister and the Department. The current decision of DWS is to establish six CMAs. This means that borders will be redefined to amalgamate catchment areas that originally fell outside specific WMAs. The Vaal-Orange is part of the amendment, amalgamating two WMAs, one in the Vaal River catchment and the other in the Orange River catchment. The following sections set out some of the reasoning behind the need to establish a CMA to manage water resources in an expanded water management area.

### **2.1 A CASE FOR DEVOLUTION**

The National Treasury/DPSA Governance Framework highlights several reasons for devolution of government functions. A number of these reasons are relevant here:

#### **2.1.1 Stakeholder participation**

As has been mentioned above, stakeholder participation in water resources management is required by South African policy and legislation and is also supported by international best practice. Participation of stakeholders is necessary to find appropriate and acceptable solutions to a number of the complex issues facing water managers in the Limpopo-Olifants water management area.

Both public confidence and stakeholder participation are mutually reinforcing objectives where one strengthens the other to create a synergistic relationship. Stakeholder participation will ensure that the needs for use of water resources are provided as best expressed by the stakeholders. Mechanisms must be put in place to promote on-going and continuous engagement with stakeholders and between stakeholders, and particularly with historically disadvantaged communities.

### **2.1.2 Ring-fencing risk**

The establishment of a public entity allows for a coherent, integrated approach to managing risk through tight controls and good governance. One of the key risks that is best managed outside government is the financial risk associated with effective tariffing, billing and revenue collection. Since the CMA will be dependent on income from water use charges, there will be a much greater incentive for effective revenue management than is the case in the Department.

### **2.1.3 Implementation of the National Water Act**

The principles of IWRM emanate from the White Paper on National Water Policy, and the National Water Act carries the IWRM ideals forward. The NWA does this in Chapter 7 by calling for progressive establishment of CMAs as decentralised water management institutions. Chapter 7 states that the *purpose* of the CMA is to delegate water resource management to the regional or catchment level and to involve local communities in the decision-making processes. The intention is for water resource management to: Meet the basic human needs of present and future generations, Promote equitable access to water, Redress the results of past racial and gender discrimination, and Facilitate social and economic development.

The National Water Act, Chapter 7 in particular, sets the foundation and serves as a compelling legal case for the establishment of the Vaal - Orange CMA.

### **2.1.4 Implementation of the PFMA**

In the section above where challenges are described that are prevalent in the WMA, it has been established that revenue collection is the cornerstone for CMA sustainability. Yet, the Proto-CMA within the three Regional Offices is not responsible for billing, collecting and allocation of revenue received. This not only results in loss of potential revenue associated with Proto-CMA functions, but also that revenue collected against water use in the WMA is likely spent elsewhere in the water resource management value chain. At the same time, the current process of revenue management is not robust enough and operates at an arms-length via DWS National. This has resulted in a disjuncture between water users on the ground and the billing authority at national level. Inevitably, revenue that the Vaal-Orange CMA could have collected has resulted in a multi-million debt book as water user query bills that have been issued. This has negative implications for the sustainable management of water resources in the WMA.

### **2.1.5 Management according to hydrological boundaries**

De-politicising of water management areas, by having them defined by catchment boundary rather than political boundaries, is internationally recognised as lending itself to more effective IWRM. While there may be bulk transfers both into and out of the catchments, as is the case in the Vaal-Orange WMA, water issues at a local level, particularly with regard to water quality, abstractions, protection of eco-systems and the like, require solutions which are catchment based and which can be managed and monitored at catchment level. The Vaal-Orange CMA is expected to be more effective at achieving this than a national or provincial body, which tend to operate from a distance and is even more centralised. Strategic bulk transfers, on the other hand, are more effectively managed at a regional or national level, as an example of escalated IWRM.

The National Water Policy also recognises the protection of aquatic ecosystems as critical to ensuring sustainable delivery of resource-related goods and services. Management of water resources

according to hydrological boundaries will enable more effective and integrated protection of river systems.

### **2.1.6 Principle of subsidiarity**

As a social and economic good, water is critical to peoples' lives and livelihoods. Accordingly, to ensure equity and sustainability water resource management must be based on the principle of subsidiarity (i.e., taking decisions at the lowest appropriate level) such that all relevant stakeholder groups are actively involved in the decision-making process. This is also important in the effective functioning of a democratic developmental state. This principle recognises the role of local water users in water related decision making, no matter how diverse their developmental aspirations.

The Vaal-Orange CMA faces complex and specific issues, and the participation of stakeholders is essential to get a better understanding of the needs as well as develop relevant solutions to these issues within the Vaal-Orange water management area to consequently, reinforce public confidence. This is also important for information collection, strategy development, planning and implementation of related functions. Key to this principle is the understanding that impactful policy and strategy initiatives such as the pricing strategy should result from a localised bottom-up approach that accommodates the needs and capabilities of local stakeholders. This principle of subsidiarity recognises the role of local water users in water related decision making, irrespective of their diverse developmental aspirations. The Vaal-Orange CMA is well placed to engage and facilitate inclusive decision-making at WMA level.

### **2.1.7 Developmental / Empowerment Benefit**

Involving stakeholders in the decision-making process and the management of water resources through decentralised water resource management will contribute significantly to the redress of historical inequities and support the equitable allocation and effective management of this limited resource. International best practice shows that decentralised institutions often have a greater developmental and empowerment role than centralized institutions. Decentralised institutions have a greater ability to respond to developmental needs and opportunities on the ground as a result of reduced bureaucracy and smaller, yet more effective organizations.

The empowerment role of the CMA is important in ensuring that stakeholders do not only get an opportunity to take part in the CMA functioning, but also that they are capacitated to do so. This is critical, especially considering the types of water related challenges that are experienced in the WMA. For instance, water quality issues evidently result from both industrial and domestic water use. Addressing such challenges requires an institution that recognises that water users have varying levels of capacity and that to achieve IWRM, broad capacity building has to take place. Luckily, the National Water Policy together with the NWA acknowledge the role of Vaal-Orange CMA in addressing such capacity challenges through engagement of stakeholders directly.

### **2.1.8 Access to professional and specialist skills**

Recently, one major challenge faced by public institutions in the water sector has to do with lack of appropriate skills in the labour and the inability of DWS to attract specialist skills. Where specific skills are available to DWS, the incumbent remuneration regime often militates against hiring of such personnel. For the Vaal-Orange CMA to operate optimally, it requires access to specialist and professional skills in the financial management, contracts management and water resource management operations. The specific requirements of the Vaal-Orange CMA legitimise the need to

move outside the government remuneration structure enabling the Vaal-Orange CMA to be innovative and constructive in resolving specific technical skills challenges currently faced by DWS.

### **2.1.9 Financial viability of the CMA**

This issue will be discussed in much greater detail later in this document, but effective water resources management is premised on efficient and effective institutions with the appropriate capacity and resources to deliver. The financial viability of institutions is crucial to ensure adequate resources in the delivery and sustainability of these functions over the longer term. Ensuring financial viability and good governance requires strong financial systems and controls, linked to the requirements of the Public Finance Management Act (Act 1 of 1999) and Treasury Regulations, amongst others.

Further, financial viability also rests on the capacity and willingness of water users to pay for the water resource management services received. In this regard, water users in the Vaal-Orange WMA are all shareholders in the resources as well as paying customers. However, for this proposed governance paradigm to take hold, the starting point is the establishment of a decentralised CMA in line with the spirit of the NWA so that decision-making is inclusive and aligned to the capacity of water users to support revenue generation. Key to this is the CMA taking responsibility for its own revenue management regime, including the actual billing, collection and allocation of funds according to its budget requirements. In addition to this, although pricing for raw water is a DWS national function, the CMA is best placed to spearhead WMA-based discussions and hence decisions on the types of user charges that could be included as part of a pricing regime over and above capped national tariffs.

Currently, tariffs in the Vaal-Orange WMA are variable, with both demand and yield being utilised depending on which side of the WMA one resides. While it is acknowledged that a uniform tariff is unlikely to be achieved, the intention is to achieve a high level of rapport where all users buy-in and adhere to proposed water use charges, including scenarios where inter-basin transfers are also collected and managed by the CMA. Such discussions and the subsequent decisions can only be held successfully subject to a decentralised institutional framework. As the National Water Policy proposes and the NWA prescribes, the Vaal-Orange CMA is best placed to perform such water management area-wide engagement.

### **2.1.10 Legitimacy and public confidence in decision making**

The definitive goal of integrated water resource management is the beneficial use of water in the public's interest. This goal, if achieved, reinforces legitimacy and public confidence, resulting in water users gaining the most through ownership of the decentralised management processes of the CMA. The Vaal-Orange water management area is a crucial element to the economic growth of South Africa and therefore, accountable and appropriate governance of the water management area will strengthen public confidence. The end result is the DWS functioning as the regulator of tariffs and setting a national standard for operation and management of this resource.

## **2.2 FRAMEWORK CMA ESTABLISHMENT**

### **2.2.1 Legal basis**

Chapter 7 of the National Water Act makes provision for the progressive establishment of CMAs and states the *purpose* of establishing a CMA as to assign or delegate water resource management to the regional or catchment level and to involve local communities in the decision-making processes. The intention is for water resource management to:-

- Meet the basic human needs of present and future generations;
- Promote equitable access to water;
- Redress the results of past racial and gender discrimination; and
- Facilitate social and economic development.

Broadly, the initial role of a CMA is articulated in the Act as:

- managing water resources in a WMA;
- co-ordinating the functions of other institutions involved in water related matters; and
- involving local communities in water resource management.

Further functions are then to be assigned or delegated to the CMA as it evolves.

The Act requires the progressive development of a national water resource strategy (NWRS) that provides the framework for water resource management for the country as a whole and guides the establishment of CMA institutions to manage water resources at a regional or catchment scale in defined water management areas (WMA). In addition, the Act requires for the progressive development of a catchment management strategy (CMS) for each WMA by each CMA. This CMS must be in harmony with the NWRS. Both the NWRS and CMS must engage stakeholders and ensure participation.

### 2.2.2 Principles

The establishment of CMAs in South Africa reflects a significant change in the approach to IWRM, from the past. This represents a major opportunity to give effect to the new paradigm captured in both the government transformation and IWRM policies and legislation. The framework for the establishment of CMAs is guided by the following principles:

- The *democratic* government must contribute to *social and economic development* and the *eradication of poverty* in South Africa;
- The *NWA* and policy require *equity, sustainability* and *efficiency* in the access and use of water resources and the activities of the institutions established for their management;
- *Transformation* of the public service (Batho Pele) and the *new paradigm* (and functions) of WRM (NWA and policy), requires institutional, organisational and cultural transformation from the way in which water resources were managed in the past;
- In particular this implies a paradigm shift to an approach based on *integrated water resources management (IWRM)*, *stakeholder involvement/participation* in decision making (empowerment of citizens), and *cooperative governance*; and
- CMAs (and other water institutions) must develop a *service delivery orientation* (Batho Pele), which must reflect a *commercial orientation* to the business of water resources management (taking account of government's social objectives for the water sector).

These principles imply that as an institution, the CMA must:

- Develop legitimacy as the key IWRM institution in the WMA, with a social development focus, based on equity, sustainability and efficiency;
- Entrench the required paradigm shift to IWRM in the institutional arrangements and organisational structure, as the organisation evolves to perform additional functions;

- Facilitate cooperation between organisations involved in IWRM and participation of stakeholders in IWRM decision making;
- Be institutionally focused, organisationally efficient and customer services oriented, in performing delegated IWRM functions, while considering the various interests of water users and stakeholders in the WMA; and
- Be representative of the demographics in the WMA, in the governing board, the staff and contracted organisations, while developing and retaining adequate management, technical capacity to perform its functions.

The focus of the Vaal-Orange CMA in the first few years is on mobilising the stakeholders and creating legitimacy within the WMA. The evolution of the CMA is discussed below.

### 2.3 EVOLUTION OF THE CMA

A framework for the Establishment of Catchment Management Agencies was developed by the then Department of Water Affairs in 2012. This sub-section highlights the principles guiding reform and transformation in water resource management, and the legal requirements of decentralisation and subsidiarity as contained in the NWA. Such an institutional change moves the responsibility for water resource management from DWS to the CMA as the catchment-based organ of state. A number of phases can be identified that describe the process of shifting responsibilities from DWS and the evolution of the CMA.

Once the CMA is established, the first phase is about creating **legitimacy** within the WMA, during which relationships are developed between the CMA, other water management institutions (WMIs) and stakeholders in the WMA. The CMA undertakes the critical role of advising on, and coordinating water resource management, and developing the catchment management strategy (CMS). This stage is about building relationships and establishing credibility and legitimacy within the WMA. This stage involves the CMA assuming a number of initial functions, as defined in Section 80 of the NWA:

- to investigate and advise interested persons on the protection, use, development, conservation, management and control of the water resources in its water management area;
- to develop a catchment management strategy;
- to co-ordinate the related activities of water users and of the water management institutions within its water management area;
- to promote the co-ordination of its implementation with the implementation of any applicable development plan established in terms of the Water Services Act, 1997 (Act No. 108 of 1997); and
- to promote community participation in the protection, use, development, conservation, management and control of the water resources in its water management area.

In order to perform these functions, the CMA has some inherent powers under the NWA:-

- i. the powers of a natural person of full capacity (Section 79(1));
- ii. a range of powers related to planning and conducting the routine administrative and organisational business of the CMA (Schedule 4); and
- iii. powers to make and recover charges in terms of the Minister's pricing strategy for water use charges to cover their costs in executing (at least) the initial functions (Section 84(1)).

Following legitimisation of the CMA, the second phase follows that focuses on **consolidation**. During this phase, the CMA is focused on building capacity and strengthening the organisation to undertake its water resource management functions. This implies strengthening of systems within the organisation, including fiduciary management and governance of the CMA, and the establishment of stable information and implementation systems. Additional water use management functions are delegated to the CMA. Proto-CMA staff (current DWS staff performing CMA functions) will now be transferred to the CMA as a coherent business unit, with the requisite infrastructure and budget. During this stage and prior to the transfer of staff, the CMA (led by the Governing Board and CEO) should compile and approve its comprehensive business plan. This must also link to the DWS timeframes for establishing water use charges (under the Pricing Strategy).

The final phase relates to the CMA becoming a full **authority** in the WMA. This stage is characterised by DWS delegating or assigning **responsible authority** functions<sup>1</sup> as contemplated in sections 73 and 63 of the National Water Act. The majority of water resource management and implementation roles and responsibilities are now seated in the CMA, which assumes the role of Responsible Authority. The relationship between the CMA and DWS is well established, and the systems and processes within and between these institutions are stable. Under Section 73(1)(a) of the NWA, the Minister can **assign** the powers and duties of a responsible authority to a CMA. The most significant of these are the powers and duties related to authorisation of water use and the issuing, review and amendment of licences. In Section 63 of the NWA, there is provision for the **delegation** of powers and duties vested in the Minister<sup>2</sup>, rather than assignment. However, the Minister is prohibited from delegating certain powers under Section 63(2)3. In addition to providing the legal basis to the CMA performing its functions in its WMA, the NWA also allows the CMA to perform functions outside its WMA, under the condition that this does not impinge on the execution of its functions or detrimentally affect other water management institutions.

## 2.4 PHASED TRANSFER OF FUNCTIONS

The transfer of functions to a CMA will be done in a series of phases. While the actual transfers can be adjusted to meet the specific requirements of a particular CMA, an outline of the generic phases of transfers of functions is given below as a guideline to support effective development and functioning of the CMAs.

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<sup>1</sup> The powers and duties of a responsible authority are described as:- i) issue general authorisations and licences in respect of water use subject to conditions, ii) extend the licence period under certain conditions, iii) review licences at periods stated in the licence and make amendments to its conditions or renew it, iv) waive the need for a licence if the water use is authorised under another law, v) promote "one-stop shop" licensing, vi) require license applicants to provide security for licence obligations, vii) require registration of existing lawful water uses, viii) require an existing water user to apply to verify its water use, ix) undertake compulsory licensing where there is water stress, x) suspend or withdraw entitlements to use water and xi) enforce licence conditions.

<sup>2</sup> Some additional powers and duties may be delegated to the fully-functional CMA, as described in Schedule 3 of the NWA:- i) power to manage, monitor, conserve and protect water resources and to implement the CMS, ii) establishment of water-use rules, iii) establishment of management systems, iv) require alterations to waterworks and may direct users to terminate illegal use and v) temporarily control, limit or prohibit the use of water during periods of water shortage.

<sup>3</sup> i) the power to make a regulation, ii) the power to authorise a water management institution to expropriate under Section 64(1) of the NWA, iii) the power to appoint a member of the Governing Board of a CMA and iv) the power to appoint a member of the Water Tribunal.

The phases of transfer of functions should be discussed with the CMA Board as soon as they have been appointed, so that they can plan for the appropriate development of capacity to support the transfer of functions. The diagram below summarises the phases.

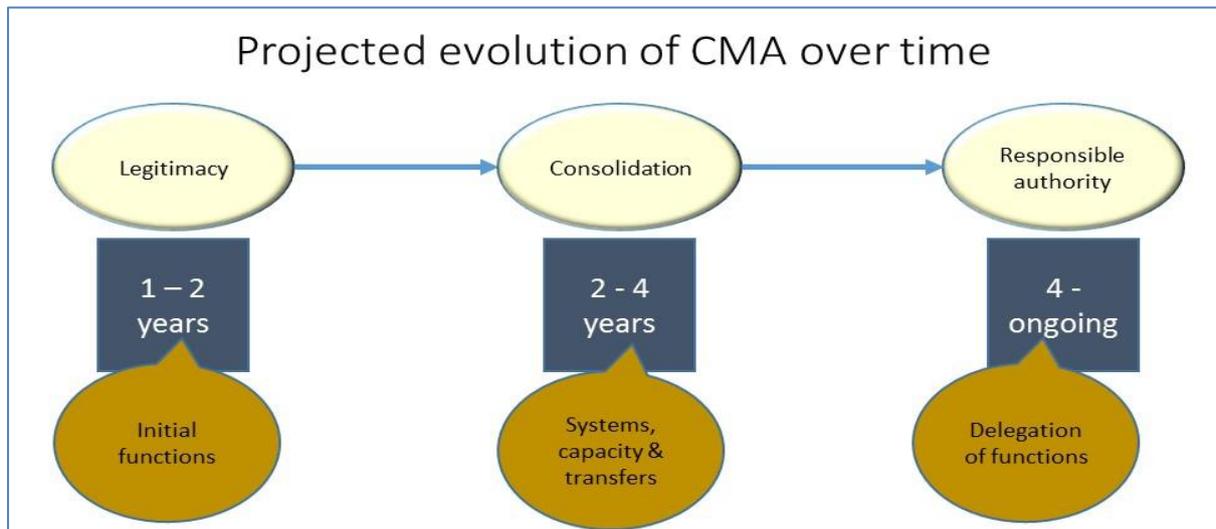


Figure 1: Phases of CMA establishment

It is recommended that a plan for the transfer of functions, staff and budget over a period of 3 – 5 years be agreed to between the Board and DWS within 6 months of the establishment of the CMA so that both sides are clear on what is to be transferred and when, and so that appropriate arrangements can be made by both sides to support the effective, efficient and smooth transfer of functions, staff and budget.

When established, CMAs are expected to carry out their initial and inherent functions (as specified in Section 80 of the NWA). Apart from these functions, all other functions must be delegated or assigned to the CMA. As discussed above, the Minister may delegate or assign a wide range of additional powers and duties to a CMA, including those of a responsible authority (Chapter 4) and any of those in Schedule 3 of the NWA. This section sets out a generic phasing of the transfer of functions that should be used as a guideline in the development of a plan for the transfer of functions for each CMA.

Three phases of the development of a CMA and the associated transfer of functions are envisaged, as described below.

#### 2.4.1 Phase 1: Developing Relationships and Legitimacy

The first two years of the CMA's existence are seen as being focused on developing administrative systems, developing a catchment management strategy, building relationships and building its profile amongst stakeholders in the WMA.

During this period the CMA will be engaged in implementing its initial functions, such as development of the catchment management strategy and engagement with stakeholders, and the delegation of functions will be minimal.

Within the first two years, the following additional functions may be delegated to the CMA:

- Involvement in water use registration and verification of water use;
- Advising and supporting licence applicants on the licensing process and requirements;;
- Advising DWS on water use authorisations and licenses;

- Checking of water use against licence conditions and informing DWS of the results where compliance enforcement is required; and
- Validation of information submitted for registration.

As an inherent function, CMAs should, during this phase, be responsible for determining their water user charges for abstraction uses, based on information provided by DWS in relation to registered water use and allocable water quantity.

The CMA should also be responsible, during this phase, for verifying account information generated by DWS before the distribution of bills, and the managing of customer queries and customer care.

## **2.4.2 Phase 2: Building Capacity and Consolidate**

The second phase will start after the CMS has been developed and will see an increase in capacity within the CMA and the undertaking of WRM functions as they have been prioritised in the CMS. Functions to be performed and delegated are outlined below.

### **2.4.2.1 Resource Directed Measures**

The NWA prescribes in chapter 3 that for all significant water resources, the class, reserve and resource quality objectives have to be determined as soon as reasonably practicable. S14 requires that all water management institutions give effect to these while executing their functions. During this second phase, the CMA should be in a position to determine these factors for water resources within the WMA that are not considered to be of national significance, and the relevant powers must be delegated to the CMA. All reserve determinations that are inter-WMA or have strategic importance will be undertaken by DWS.

### **2.4.2.2 Water Resources Monitoring**

Water resources monitoring includes both water quality and quantity monitoring of surface and ground water. The monitoring required for the national information monitoring system must be kept under the control of DWS. However, the CMA will be delegated the power to monitor water resources as necessary for the implementation of the CMS and the management of water at the WMA level. Since this monitoring will have to feed into the national systems, the CMA must comply with monitoring standards and protocols determined by DWS.

In the delegation of this function, DWS must set conditions for the provision of information and data to DWS and the necessary protocols and standards for such.

### **2.4.2.3 Disaster Management**

During this phase 2, the CMA will be delegated the authority to assess and manage droughts, floods and water quality disasters in the WMA. The CMA should have developed a disaster management plan (DMP) as part of the CMS, which it should now implement.

### **2.4.2.4 Water Conservation and Demand Management**

The implementation of WC/WDM is the encouragement of water users to conserve water, thus lowering the overall demand for water. During this phase, the CMA should be involved in assisting to implement WC/WDM strategies. This does not, however, require the delegation of specific powers or functions.

#### **2.4.2.5 Operating of Waterworks**

Under specific circumstances CMAs may be required to either develop or operate waterworks. During this phase this function may be delegated if necessary. If not, this function should be delegated during phase 3.

#### **2.4.2.6 Issuing of general authorisations and limited authorisation functions**

During this phase the issuing of general authorisations can be delegated to the CMA, as well as authorisation of water use with limited impacts, along the lines of the powers currently delegated to regional offices.

#### **2.4.2.7 Institutional Oversight**

The CMA will, from establishment, be responsible for institutional oversight within the WMA, which includes co-ordinating with institutions, establishing stakeholder forums and providing support to other water management and water services institutions.

During this phase, the CMA should be delegated the power to establish Water User Associations (WUAs) that do not manage government waterworks and do not have government guaranteed loans.

### **2.4.3 Phase 3: Fully Functional and Responsible Authority**

During the third phase the following powers and functions will be delegated to the CMA:

#### **2.4.3.1 Water Use Authorisation and Licensing**

Water use authorisation and licensing are continued from phase 1, at which stage the CMA would have been involved with processing applications and advising DWS on issues related to license applications, and phase 2 where general authorisations and limited licensing powers were delegated to the CMA.

During the final phase, the CMA will be delegated the power to authorise water use and issue licenses. These functions will be delegated to the CMA for non-strategic water use as authorizing strategic water uses will remain a function of DWS.

#### **2.4.3.2 Compulsory Licensing**

In areas with water stress (demand exceeds availability) or inequitable access to water resources, compulsory licensing is undertaken to assess the volume and quality of water available and allocating that available resource in an equitable and sustainable way. In phase 3, the CMA will be delegated the power to undertake compulsory licensing.

#### **2.4.3.3 Issuing of Directives**

As the responsible authority, the CMA should be delegated the power to issue directives (over and above the inherent powers in this regard conferred by the NWA). The directives could include, but will not be limited to:

- Requesting alterations to waterworks;
- Determining operating rules for systems; and
- Controlling, limiting, and prohibiting water use.

## **2.5 STATUS OF CMAs IN THE VAAL-ORANGE WATER MANAGEMENT AREA**

The Vaal catchment area has been legally established on paper and gazetted to establish the Vaal CMA. The recent reorganisation of WMA boundaries requires that the gazetted Vaal CMA boundary extended to include the Orange WMA. Although, the Vaal CMA has been gazetted, the process to develop the business case for the amalgamated CMA only commenced in the first half of 2015. Prior to that and unlike other WMAs, no significant work had been undertaken on the formal CMA establishment process. The new WMA boundaries will be promulgated in the NWRS3, and the CMA establishment will be published on Gazette Notice for the Vaal-Orange CMA.

This document presents a case for the amalgamation of the Vaal and Orange WMAs into a single indivisible management area. This sub-section of the document explores the legal requirements necessary to ensure that the amalgamation process complies with the NWA.

### 3 DESCRIPTION OF THE WATER MANAGEMENT AREA

#### 3.1 LOCATION

The Vaal-Orange Catchment Management Area occupies the Central North-eastern part of South Africa. It extends from Ermelo in Mpumalanga, just west of Swaziland in the east across to Kuruman in the Northern Cape to the west. To the northwest, the extended WMA borders Botswana and the Crocodile (West) and Olifants Catchments. Johannesburg sits on the boundary of the WMA. To the southeast it is bounded by Lesotho, and it includes the Orange WMA. The area of the Orange river system is mainly in the Free State and spreads over to the Eastern and Northern Cape. It includes parts of the Orange river basin upstream of the South Africa/ Lesotho border and therefore it includes the Lesotho Highlands Water Project (LHWP).

#### 3.2 SUB-CATCHMENTS IN THE VAAL-ORANGE WMA.

The Vaal-Orange WMA is split into 2 sub-regional areas. The Vaal river system, which is the main tributary of the Orange, and the Orange river system. Figure 2.1 below presents a locality map indicating a geospatial location of all designated CMAs in the country. The legend indicates the Vaal-Orange WMA as catchment area number 4.



Figure 2.1: Proposed Water Management Areas in South Africa

The boundary of the Vaal WMA is extended to include the Orange WMA. The intention is to establish the Vaal-Orange CMA for the whole of the Vaal and the Orange WMA areas. An integrated Vaal-Orange CMA will manage the water resources that previously fell in separate catchment areas. Although the proposed Vaal-Orange CMA will be established as a single juristic entity (due to common features such as in and out water transfer requirements), there are also nuanced differences coupled

with the sheer size of the WMA that dictate for a regionalised operational model. The Vaal-Orange is indicated as area number 4 in the map below, and includes 3 management regions of the Vaal and the 2 in the Orange.



Figure 2: The Vaal-Orange WMA

The diagram above allows for the adoption of a model that integrates common features prevalent in the two river systems, while at the same time accommodating requirements for localisation of regional offices closest to where water resources need to be managed. The sub-section that follows describes in summary form the various catchment areas that are constituent of the Vaal-Orange WMA.

### 3.2.1 The Vaal Catchment Area

As indicated in Figure 2 above, the Vaal river system has an area of 240 128 km<sup>2</sup>. It starts in the centre of the country extending over the Free State to the confluence of the Mooi and Vaal Rivers. It straddles the southeast of Mpumalanga and the southwest of Gauteng and its southern limit adjoins Lesotho. It consists of the Vaal, Klip, Wilge, Liebenbergsvlei & Mooi rivers and includes the Vaal, Grootdraai and Sterkfontein Dams. The Vaal system supports the economic activities (industrial and mining) that take place in and around the greater Gauteng. The system further extends between the confluence of the Vaal and Rietspruit rivers as it flows towards Bloemhof Dam, through Schoonspruit River in the north to the Vet River in the South, where it also covers some parts of the Free State and Northwest Province. Schoonspruit, Rhenoster, and the Valsch rivers also form part of this system. It extends between the Bloemhof Dam and the confluence of the Vaal and Douglas Rivers, to also cover parts of the Northwest Province, Northern Cape and the Southwest of the Free State. Its northern border adjoins with Botswana. At this point, the system consists of the Harts River which is the only significant tributary to the Vaal River.

### 3.2.2 The Orange Catchment Area

The Orange River is – at 2200km the longest river in South Africa, has its origin in the high lying areas of Lesotho. The river drains a total catchment area of about 1 million km<sup>2</sup> and runs generally in a westerly direction and finally discharges into the Atlantic Ocean at Alexander Bay. The Orange is very important to South Africa as a water resource, and several transfer systems originate from the Orange system, including the Lesotho Highlands Transfer Scheme with 780 m<sup>3</sup> per annum, the Caledon/Modder transfer for the augmentation of water supply to Bloemfontein and Mangaung<sup>4</sup> which transfers 88 m<sup>3</sup> per annum. Other transfers include Orange/Fish transfer to the Eastern Cape totalling 629 m<sup>3</sup> per annum, the Orange /Riet transfer totalling 260 million m<sup>3</sup> per annum, and the Orange/Vaal transfer scheme with a maximum of 142 million m<sup>3</sup> per annum. These transfers show that the management of the Vaal-Orange catchment as an integrated water resources system is critical for future assurance of water supply in the country.

The **Orange** river system is mainly in the Free State and Northern Cape and also drains part of the Eastern Cape. This catchment is covered by savannah grassland in the eastern part of this water management area, and it flows to the southwest of the Karoo. The topology opens into wide plains from the foothills of the Maluti Mountains at the South African border with Lesotho. With characteristics flat-topped hills, the geology largely consists of sedimentary rocks of the Karoo Supergroup, with relatively little water bearing capacity. The Upper Orange is defined as the Orange River basin upstream of the South Africa/Lesotho border and therefore includes the Lesotho Highlands Water Project (LHWP). The LHWP is a strategic component of the Vaal-Orange and one of the largest water projects of its kind in the world.

The lower most portion of the Orange system is in Namaqualand and includes the Ai Ais-Richtersveld Transfrontier Park. It also includes the majority of the Northern Cape and small portions of the Western Cape.

Combined with the Vaal River system, the Orange drains almost two thirds of the interior plateau of the country. Major rivers found in the Orange river system include the Modder, Riet, Kraai, and Caledon rivers. As indicated above, the Orange River is also an international resource, shared by four countries i.e., Lesotho, South Africa, Botswana and Namibia. Any developments, strategies or decisions taken by any one of the countries that will impact on the water availability or quality in South Africa.<sup>5</sup>

### 3.3 LAND USE IN THE VAAL-ORANGE WMA

The landscape across the Vaal-Orange Water Management Area is diverse. Commercial agriculture is dominant through all the key areas, varying from dry and rain fed cultivation, including irrigated and rain fed cultivation and livestock farming.

Industrial land use includes petrochemical plants (Sasol), iron and steel processing (Arcelor Mittal) as well as coal-fired power stations mainly in the Vaal river system. Mining is significant in the North-western region, extracting coal, base metals and industrial minerals, together with significant gold mining activity that are predominantly found in the Free State and Northwest. Alluvial diamond and iron ore extraction is also significant in the lower parts of the Orange. In the regions that fall within

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<sup>4</sup> Development of a Reconciliation Strategies for Large Bulk Water Supply Systems: Orange River, Current and future water requirements (DWS, 2014)

<sup>5</sup> Development of a Reconciliation Strategies for Large Bulk Water Supply Systems: Orange River, Current and future water requirements (DWS, 2014)

the Orange, urban development is fragmented with urban and suburban sprawl developed from and around agricultural, mining, industrial, recreational areas.

### **3.4 MAIN WATER USERS**

Water use is shared by the industrial, urban and mining sectors. Irrigation accounts for 49%, with power (energy) generation accounting for 7% and the rest is used to supply rural areas. Aside from the above usages, water is also transferred in and out of the Vaal-Orange Water Management Area. Transfers mainly go out to the Crocodile, Marico and Olifants water management areas and transfers-in come from the Thukela, Usutu & Mhlathuze water management areas as well as from Lesotho as per the agreement between South Africa and Lesotho via the Lesotho Highlands Water Project.

According to the Reconciliation Strategies Report by the (then) Department of Water Affairs (2013) water use in the Orange is shared primarily between agriculture, forestry and fishing, mining and quarrying, manufacturing and utilities, including services (which includes government). The largest economic contributors in the Orange regions are mining and irrigated agriculture sectors. Mining activities occur both inland and along the coast and consist mainly of the extraction of alluvial diamonds and a variety of other mineral resources. There is widespread irrigation along the Orange River, where there is inclination towards the growing of high-value orchard crops. Namibia also uses water from the Orange River for domestic, mining and irrigation purposes. Where the climate is favourable, sheep and other livestock farming are practised.

The Vaal-Orange WMA also plays a cross-boundary role through its impact on international water sharing. It has an impact on Botswana, Lesotho, Namibia, Zimbabwe, Mozambique and eSwatini. The Vaal area has a major influential transfer out of the area into the Crocodile & Marico catchment area. The Molopo River acts as the border and is shared between South Africa and Botswana. The waters of the Vaal-Orange River Basin are subject to the ORASECOM agreement signed between South Africa, Lesotho, Botswana and Namibia.

### **3.5 TOPOGRAPHY**

The Vaal river slopes gently from about 1 800 m in the east at its origin to 1 450 m in the vicinity of the Vaal Barrage at Vereeniging. The area between the confluence of the Vaal and the Rietspruit Rivers and the Bloemhof Dam is relatively flat with a maximum elevation of about 2 200 m in the hilly upper, and a minimum elevation of about 1 250 m in the vicinity of Bloemhof Dam. Pans and other enclosed drainage basins are features of the Western parts. The area between the Bloemhof Dam and the confluence of the Vaal and the Orange Rivers has no distinct topographic features with most of the terrain being relatively flat. Its topography opens into wide plains from the foothills of the Maluti Mountains at the border of Lesotho, with characteristic flat-topped hills. The geology largely consists of sedimentary rocks of the Karoo Supergroup, with relatively little water bearing capacity.

### **3.6 CLIMATE AND RAINFALL PATTERNS**

The mean annual temperature ranges between 12°C in the east and 16°C in the west to, with an average of about 15°C for the catchment as a whole. Maximum temperatures are experienced in January and minimum temperatures usually occur in July. Rainfall is strongly seasonal with most rain occurring in the summer period (October to April). The peak rainfall months are December and January. Rainfall occurs generally as convective thunderstorms and is sometimes accompanied by hail. Frost occurs in winter and there is occasional light snow on high lying areas. The overall feature of

mean annual rainfall over the Vaal catchment area is that it decreases uniformly westwards from the eastern escarpment regions across the central plateau area. Average potential mean annual gross evaporation (as measured by Class A-pan) ranges from 1 600 mm in the east to a high of 2 200 mm in the drier western parts. The highest-class A-pan monthly evaporation is in January (range 180 mm to 260 mm) and the lowest evaporation is in June (80 mm to 110 mm). The climatic conditions vary considerably from west to east across the WMA and effects of climate change could have impact on the water resources in the catchment.

Considerable variations in climatic conditions occur over the Vaal-Orange WMA. The Mean Annual Precipitation (MAP) decreases from 800 mm to 100 mm over the Vaal catchment area. This tendency is reversed when considering potential annual evapotranspiration, which increases from 1 300 mm in the upper most parts of the Vaal to 2 800 mm in the lower parts of the Vaal catchment area.

The Orange also reports variable rainfall patterns ranging from as high as 1 000 mm in the eastern part, while the western parts is reported to only receive about 50 mm per year. The biggest water contributor to the Orange catchment is Lesotho, where rainfall varies between 600mm and 1500mm per year, supplemented by runoff from snow. The lower parts of the Orange system are the driest, experiencing the lowest mean annual rainfall. Yet its waters are on highest demand mainly due in part, to the upstream water requirements coupled with downstream international requirements. Potential evaporation can be as high as 3 000 mm per year and often several times more than the annual rainfall.

Rainfall in the lower parts of the Orange range from 400 mm, on the eastern side, to a low of 20mm on the coastal side per year. This area is characterised by prolonged droughts except for scarce and highly intermittent runoff from local rivers and occasional inflows from the Fish River in Namibia. Sometimes the harsh dry conditions of this area are interrupted by severe flooding. This part of the Orange is completely dependent on the flow from upstream of the Vaal-Orange WMA. Although groundwater resources are limited, it is well used for rural water supplies.

The Western areas, which include Namaqualand, a portion of the Green Kalahari and Calvinia and the Upper Karoo receives rain in the winter during April to September. Eastern areas of this water management area experience summer rainfall, usually accompanied by thunderstorms.

## **3.7 SOCIO-ECONOMIC DYNAMICS**

### **3.7.1 Population**

Over the past years, the demographics in the Vaal-Orange WMA have changed significantly with increasing numbers concentrated around the urban areas. The estimated population residing within the Vaal-Orange WMA is close to 12.6 million (see Table 1 below). However, the Vaal River System supplies water to a total population of about 20 million.

The following sources of information were used as part of the methodology in order to reflect approximate population figures stated in Table 1 below:

- Geographical information system (GIS);
- DWS and WRC catchment data and shape file (mapping ward demarcation); and
- Census 2011 statistics for wards.

Population figures were extracted for each of the wards falling within or partially within the Vaal River catchment boundary. Using GIS, the population of those wards falling only partially within the Vaal-Orange WMA were proportioned on an area basis.

### **3.7.2 Economic Activity**

The predominant water requirements in the Vaal-Orange Catchment stem from domestic, mining and industrial requirements, most of which account for the urban-industrial activity in both the Vaal and the Orange river systems. Major water users in the rest of the basin include the generation of hydroelectric power, irrigation and mining (Hall and Jennings, 2007). Economic activities in the rest of the catchment area are described below.

#### **3.7.2.1 The Vaal System**

Widespread urbanisation, mining and industrial activity (gold and coal deposits) occur in the northern part of the water management area. Collectively, mining and industrial development in this section of the river system produce a total of 45% of South Africa's Gross Domestic Product (GDP). Economic activity in the rest of the catchment is mostly livestock farming and rain fed cultivation (Hall and Jennings, 2007; NWRS, 2004). The main activity in the middle part of the Vaal river system is mainly services extensive livestock farming, rain fed cultivation, and some irrigation farming. Economic activity is however dominated by gold mining in the Klerksdorp and Welkom areas. The mining sector alone contributes about 45% of the GDP in the water management area (NWRS, 2004).

Kimberley lies in the lower portion of the water management area, and is primarily an area of iron ore, diamonds and manganese mining. Farming activities vary from extensive livestock farming, rain fed cultivation to intensive irrigation operations at the Vaalharts (NWRS, 2004), which accounts for 80% of the total water use (Hall and Jennings, 2007). Kimberley is the largest urban centre in the area with a population of approximately 200 000. It straddles the divide between downstream of the Vaal and upstream of the Orange portions of the water management areas (Hall and Jennings, 2007; NWRS, 2004).

Due to ongoing economic growth and continued urbanisation (mainly in the Vaal portion of the WMA), further growth in water demand is expected. It is therefore paramount that prudent water allocation decisions are made, considering that there is only marginal potential for further resource development. This area produces about 50% of South Africa's GDP as well as more than 80% of the country's electricity requirements (DWAf, 2005, *cited in* Hall and Jennings, 2007).

#### **3.7.2.2 The Orange River System**

Close to 5% of the GDP of South Africa originates from the Orange river. According to statistics the largest economic sectors serviced by this river system (Gross Geographic Product) are the Government sector (contributing approximately 25%), Finance sector (contributing approximately 16%), Trade sector (contributing approximately 16%) and the Transport sector (contributing approximately 15%). Economic potential in the exists within the agricultural sector if higher value crops are invested in as well as in the transport sector, which will result from increased economic growth in other areas of the country. The two main industries in this WMA are mining and agriculture. Mixed farming is the main agricultural activity and diamond and salt mining are the primary mining activities in the Orange WMA. The largest economic contributors of this region are mining and irrigated agriculture. Mining activities occur both inland and along the coast and consist mainly of the extraction of alluvial diamonds and a variety of other mineral resources. There is widespread irrigation along the Orange River, where there is inclination towards the growing of high-value orchard crops. Namibia also uses water from the Orange River for domestic, mining and irrigation purposes. Where the climate is favourable sheep and other livestock farming are practised.

The downstream portion of the Orange system has the second lowest GDP (less than 1%). According to 2007 statistics the largest economic sectors in this WMA in terms of the GGP (Gross Geographic

Product) are Government services- (contributing approximately 20%), Mining- (contributing approximately 18%), Agriculture- (contributing approximately 16%) and the Trade sector (contributing approximately 15%). The main economic potential exists in the mining and agricultural sectors. There are large amounts of deposits in this region and there is no indication of a decline in mining activities in the short term. However, Agricultural expansion is limited by available water and growth in this sector. This could be realised if improved and more efficient water usage techniques are implemented.

### **3.7.3 Social Drivers**

The majority of the social drivers that will impact the CMA revolve around the need for equitable access to water for all users. Constitutionally, the right of “access to sufficient water” (NWRS2, 2013) is a priority that must be realised through the Water Allocation Reform (WAR) Program. The program aims to transform the water resource landscape by facilitating equitable water allocation to historically disadvantaged genders and races, thereby improving the livelihoods of the poor and marginalized and hence, eradicating poverty. The CMA’s role through functional assignment and (later delegation), to perform validation and licencing of water use will allow the implementation and monitoring of water allocation to facilitate equitable distribution and use of water within the WMA.

The water quality monitoring role by the CMA is essential. Early indications are that the growing population in the WMA is likely to result in sanitation problems from unplanned sanitation in informal settlements, resulting in effluent discharge into surface and ground water sources. For this reason, monitoring pollution within the WMA will not only be the responsibility of the CMA but will require assistance from the DWS and other stakeholders in the area.

Also, there is an increasing threat of acid mine drainage pollution in the upper Vaal catchment area and growing concern upstream of the WMA (Vaal river system). This also poses a threat to water quality of the WMA as a whole. Nonetheless, DWS has recently put in place numerous policy frameworks<sup>6</sup> and programmes aimed at managing challenges associated with AMD.

For the CMA to achieve the implementation of the above drivers, additional funding may be required, either through the pricing strategy, an augmentation subsidy or even a public interest grant from DWS.

## **3.8 WATER AVAILABILITY AND REQUIREMENTS**

### **3.8.1 Availability in the Vaal River System**

The current system yield in the Vaal River System is around 3 000 million m<sup>3</sup>/annum. The available system yield is impacted by several factors. The Vaal River Bulk Water Supply Reconciliation Strategy<sup>7</sup> of 2009 states that irrigation water requirement makes up about 37% of the total water use supplied from the Vaal River System. Moreover, detailed validation studies carried out for DWS indicated that as much as 174 million m<sup>3</sup>/annum could be unlawful. The bulk of this unlawful water abstraction is located in the river reach upstream of Vaal Dam and downstream of the outflow where the water from the Lesotho Highlands Water Project is discharge into the Ash River from the tunnels. This volume of unlawful abstraction effectively implies that a large proportion of the additional water

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<sup>6</sup> Department of Water and Sanitation (DWS). 2017. *Water Quality Management Policies and Strategies for South Africa. Report No. 4.3. Note on the Monitoring and Evaluation Framework.* Water Resource Planning Systems Series, DWS Report No.: 000/00/21715/20. Pretoria, South Africa

<sup>7</sup> DWS Report No. P RSA C000/00/4406/09

available from Mohale Dam (part of the Lesotho Highlands Water Project) does not reach the intended users that are supplied from Vaal Dam.

The water regions of the Vaal are indicated in the locality map shown below.

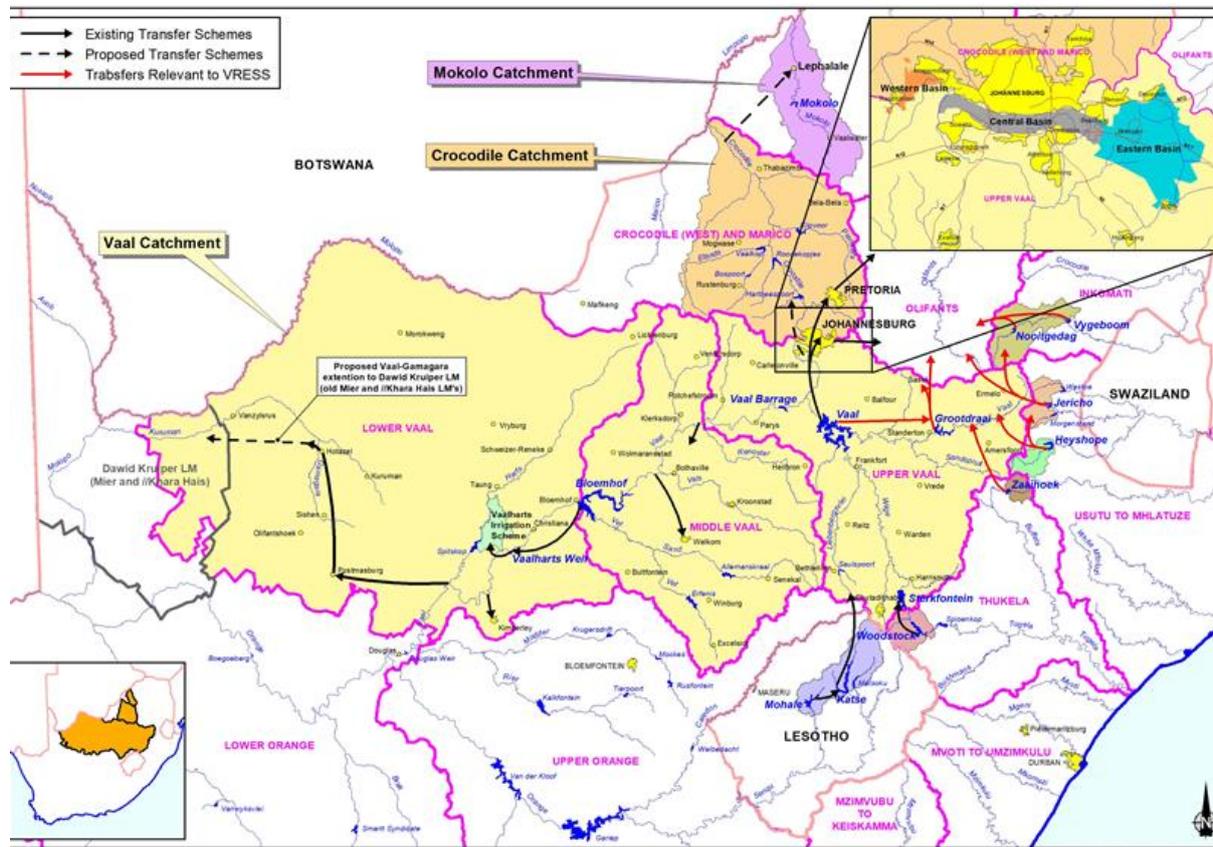


Figure 3: Water management regions in the Vaal

Some studies have been conducted to investigate the potential savings that could be achieved through Water Conservation and Water Demand Management measures in the urban area. The findings from the study indicated that about 15% savings in urban water use is possible through implementing water loss management measures such as pressure management, retrofitting and removal of wasteful devices, leak detection and repair, etc. In addition, it was found that measures to improve the efficiency of urban water use can reduce the water requirements by a further 15% (total saving of 30% for all Water Conservation and Water Demand Management measures). A potential also exists for re-use of up to 80% of the surplus yield in the Crocodile West River System.

Further, the results from simulation analysis show that re-use of mine water effluent, in combination with the other interventions, could have significantly contributed to solving the supply shortage experienced between the year 2014 and 2019 and thereby postponing the need for further augmentation after the implementation of Phase 2 of the Lesotho Highlands Water Project.

There are currently two alternative infrastructure options that are available for augmenting supply to the Vaal River system. They involve the expansion of the phases of the Lesotho Highlands Water Project (Polihali Dam) and the Thukela Water Project (Jana and Mielietuin Dams).

### 3.8.2 Availability in the Orange River System

In approximately 2009, the Department of Water and Sanitation commissioned studies known as Internal Strategic Perspectives (ISPs). The object of these studies was to capture the “state of the art”

in terms of water resources management in each of the Water Management Areas. The embedded knowledge of senior DWS water resources staff was a key input in this. The intention was to provide a critical input into Catchment Management Strategies, which are required to be developed by Catchment Management Agencies, once they were in place. Although the ISPs are now slightly out of date, they capture a wealth of information and cover aspects such as features of the area, demography, land use, economics, institutional factors and infrastructure. The lower part of the Orange river system ISP is discussed briefly below.

Water resources in the lower part of the Orange river system are fully developed. Large operational and transmission losses are experienced in the process of ensuring that the requirements of the various water users are met during the long travel distance of 1 400 km, from the point of release at Vanderkloof Dam to the most downstream point of use.

Constructing a new dam can reduce these losses by providing de-regulating storage and regulating spills from dams in upstream WMAs. The Orange WMA is divided into three sub-catchments namely:

- Orange sub-area, with minor tributary streams;
- Orange Tributaries; and
- Orange Coastal.

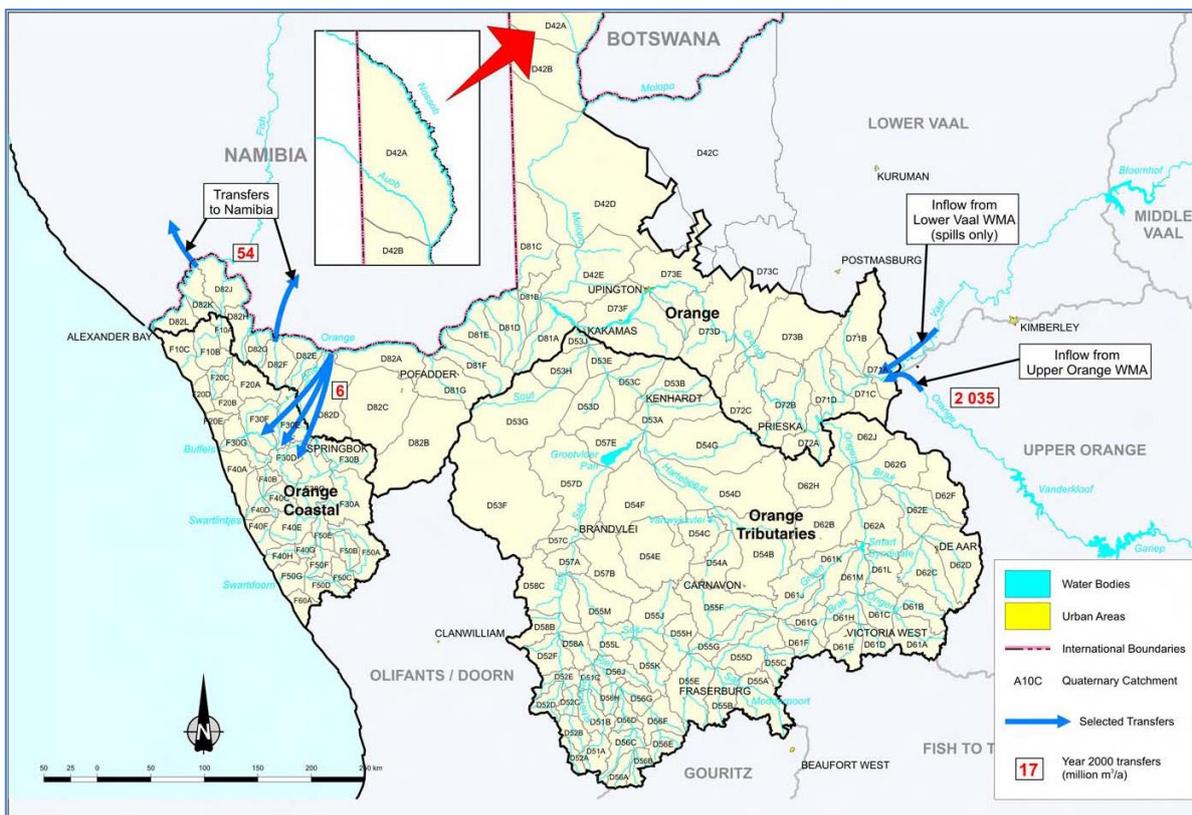


Figure 4: Lower Orange WMA sub-regions<sup>8</sup>

A summary of the overall water balance is shown in **Error! Reference source not found.2** below, with supporting information in Table 3 and Table 4. This illustrates that, as it stands, this area has surplus

<sup>8</sup> Lower Orange Water Management Area Overview of Water Resources Availability and Utilisation (2003, p2)

water resources. Most of the surplus water will be taken up with the commissioning of the Mohale Dam and the 12 000ha predicted new irrigation.

### 3.8.3 Anticipated Requirements

#### 3.8.3.1 Vaal river system

Several requirement scenarios were evaluated during the course of the reconciliation studies published in 2009. This led to the identification of actions necessary to improve the assurance of water supply to the region, based on a range of Projection Scenarios, as presented hereunder.

Table 1 - Scenario 1: High (No water loss reduction measures implemented)

System	Sector	Components	Water Requirement Projections (million m <sup>3</sup> /a)	
			2018	2019
Vaal River System	Urban	Rand Water	914.3	927.5
		Midvaal Water Company	45.0	45.0
		Sedibeng Water	49.7	50.3
		Other towns and small industries	248.8	252.2
	Large Industries	Eskom	149.8	151.0
		Sasol Sasolburg Operations	24.2	24.6
		Sasol Secunda Operations	84.6	84.9
		Mittal Steel	13.9	14.2
	Irrigation	Vaalharts/Lower Vaal	541.5	541.5
		Other	551.9	551.9
Losses	Wetland and river losses	328.2	328.4	
Outside Vaal River System	Urban	Rand Water	741.1	752.0
	Industries	Eskom	220.0	224.7
<b>Total</b>			<b>3913.1</b>	<b>3948.3</b>

Table 2 - Scenario 2: High – With Eradication of Unlawful Water Use

System	Sector	Components	Water Requirement Projections (million m <sup>3</sup> /a)	
			2018	2019
Vaal River System	Urban	Rand Water	914.3	927.5
		Midvaal Water Company	45.0	45.0
		Sedibeng Water	49.7	50.3
		Other towns and small industries	248.8	252.2
	Large Industries	Eskom	149.8	151.0
		Sasol Sasolburg Operations	24.2	24.6
		Sasol Secunda Operations	84.6	84.9
		Mittal Steel	13.9	14.2
	Irrigation	Vaalharts/Lower Vaal	541.5	541.5
		Other	476.9	476.9
Losses	Wetland and river losses	328.2	328.4	
Outside Vaal River System	Urban	Rand Water	741.1	752.0
	Industries	Eskom	220.0	224.7
<b>Total</b>			<b>3778.5</b>	<b>3807.5</b>

Table 3 - Scenario 3: High – With Eradication of Unlawful Water Use and Water Conservation and Water Demand Management (WC/WDM)

System	Sector	Components	Water Requirement Projections (million m <sup>3</sup> /a)	
			2018	2019
Vaal River System	Urban	Rand Water	835.9	848.4
		Midvaal Water Company	45.0	45.0
		Sedibeng Water	49.7	50.3
		Other towns and small industries	248.8	252.2
	Large Industries	Eskom	149.8	151.0
		Sasol Sasolburg Operations	24.2	24.6
		Sasol Secunda Operations	84.6	84.9
		Mittal Steel	13.9	14.2
	Irrigation	Vaalharts/Lower Vaal	541.5	541.5

		Other	476.9	476.9
	Losses	Wetland and river losses	328.2	328.4
Outside Vaal River System	Urban	Rand Water	703.1	713.6
	Industries	Eskom	220.0	224.7
<b>Total</b>			<b>3684.7</b>	<b>3694.4</b>

Table 4 - Scenario 4: High – With Eradication of Unlawful Water Use, WC/WDM and Reuse (Surplus in Crocodile West River System)

Catchment	Sector	Components	Water Requirement Projections (million m <sup>3</sup> /a)	
			2018	2019
Vaal River System	Urban	Rand Water	835.9	848.4
		Midvaal Water Company	45.0	45.0
		Sedibeng Water	49.7	50.3
		Other towns and small industries	248.8	252.2
	Large Industries	Eskom	149.8	151.0
		Sasol Sasolburg Operations	24.2	24.6
		Sasol Secunda Operations	84.6	84.9
		Mittal Steel	13.9	14.2
	Irrigation	Vaalharts/Lower Vaal	541.5	541.5
		Other	476.9	476.9
Losses	Wetland and river losses	328.2	328.4	
Outside Vaal River System	Urban	Rand Water	647.1	657.6
	Industries	Eskom	220.0	224.7
<b>Total</b>			<b>3665.6</b>	<b>3699.7</b>

This data has been updated and is provided by courtesy of DWS.

Figure 2.2 below is a summary of the **net** demand projections in the Vaal River System (excluding supply outside of the catchment).

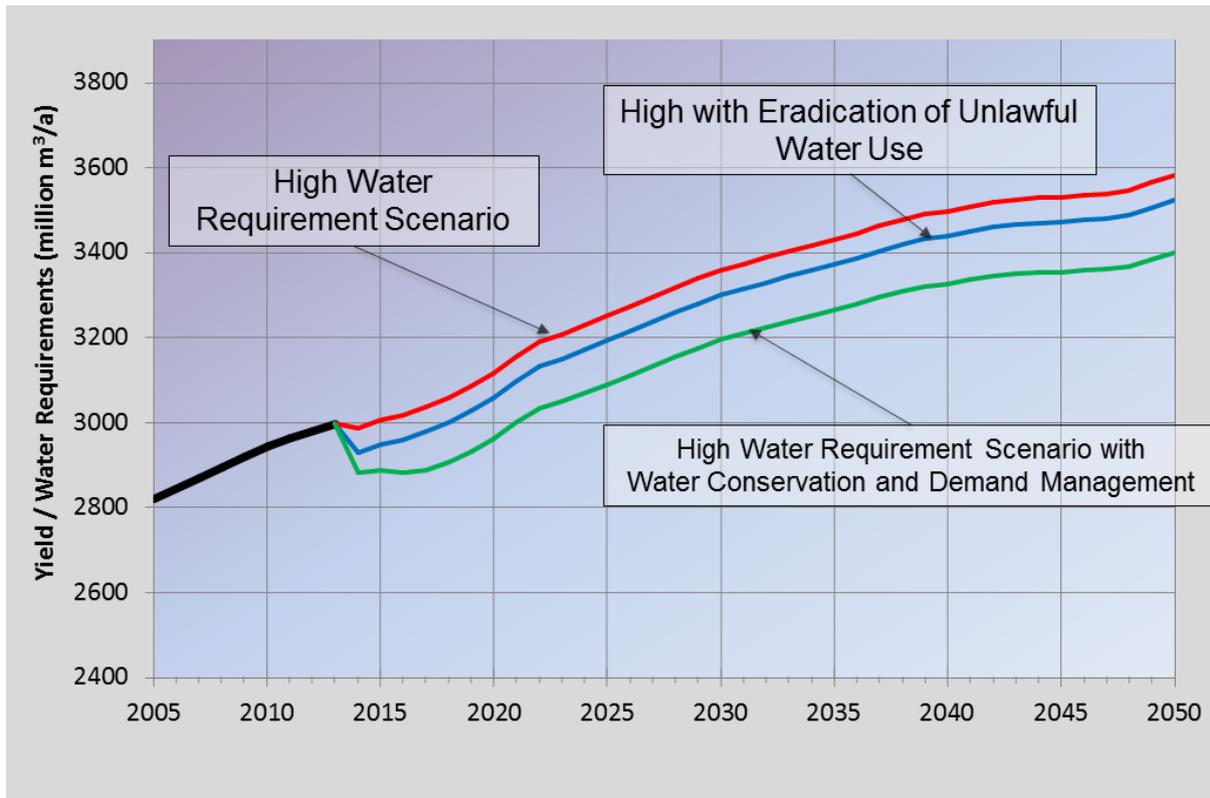


Figure 3.5 : Net Demand Projections for the Vaal River System

### 3.8.4 Water requirements vs. availability

As can be deduced from the above, the availability is very dependent on the successful implementation of several mitigation factors, such as the eradication of unlawful use, Water Conservation and Demand Management (WC/WDM) initiatives, reuse of effluent and desalinated mine water and the introduction of the augmentation options. The eradication of unlawful use, WC/WDM and reuse of treated effluent and mine water are issues which will fall within the jurisdiction, monitoring and control of the Vaal-Orange CMA.

The construction of Polihali Dam on the Senqu River, as part of Phase 2 of the Lesotho Highlands Development Project is unlikely to come on stream until further notice and therefore the focus of the financial analysis in this business case study is focussed on the years leading up to 2021 and beyond. The extent of the supply deficit is highly dependent on the success of the proposed mitigation strategies, as is evident from the scenarios in the following figures. There are also challenges to be overcome in replacing the lost yield in the Senqu River to the Orange River System as a result of supplying water to the Vaal River System.

The following figures (Figure 2.3, 2.4 and 2.5) indicate the impact of various mitigation measures on the availability of water in the Vaal River System.

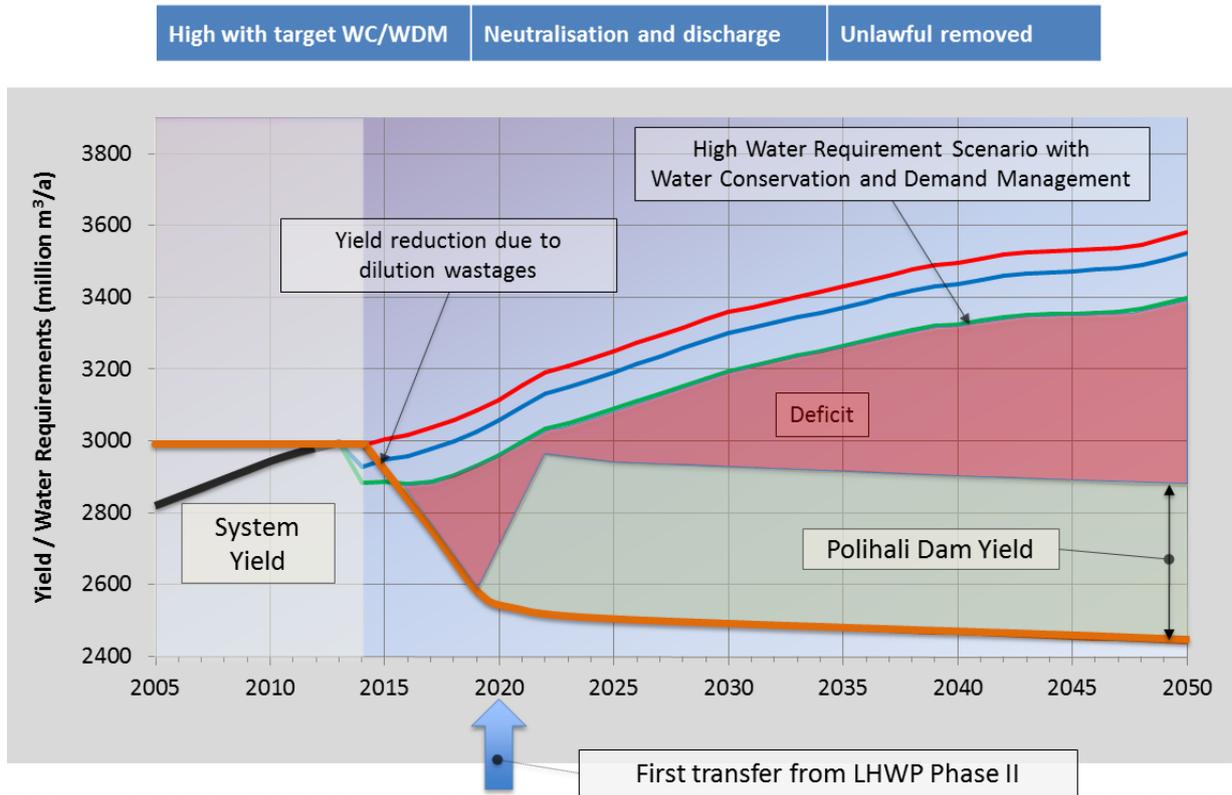


Figure 3.6 : Projected Water Requirements vs Availability: WC/WDM implemented and Unlawful use eradicated

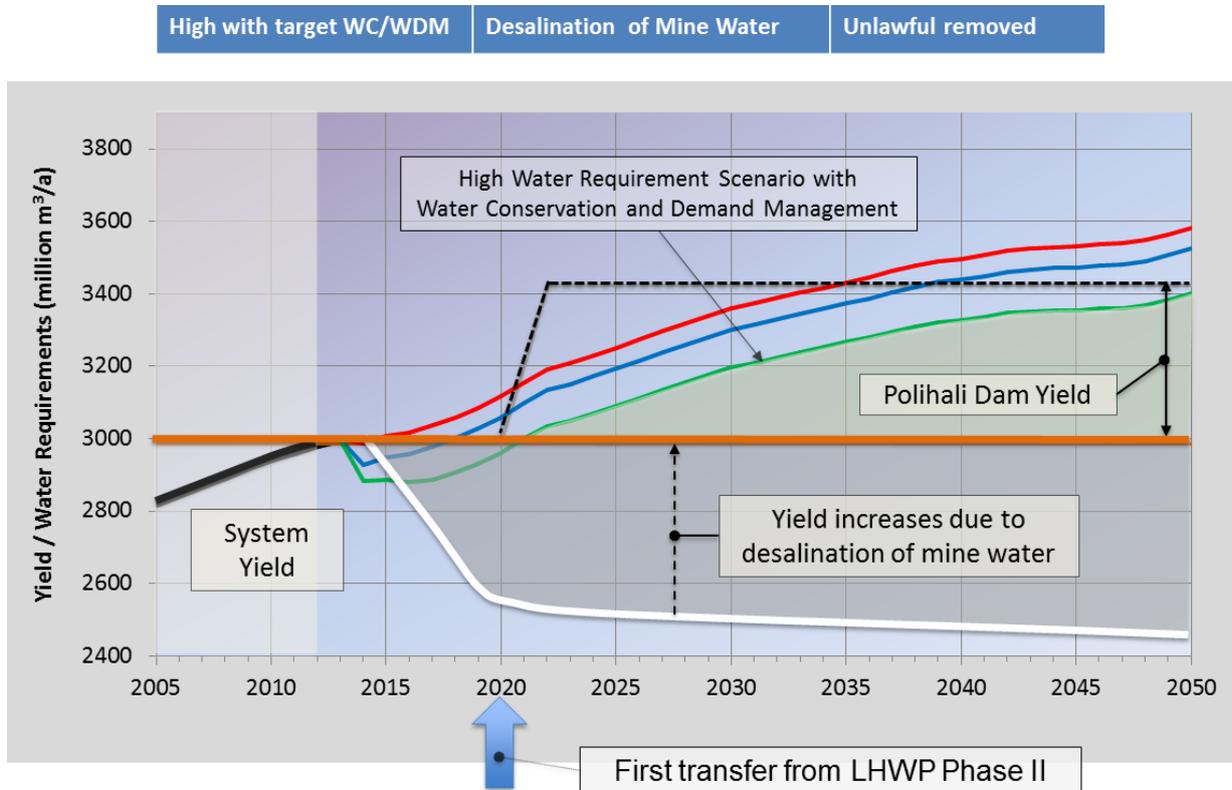


Figure 3.7 : Projected Water Requirements vs Availability: WC/WDM implemented, Unlawful use eradicated, Desalinated Mine water added.



<b>Orange Tributaries</b>	280	35
<b>Orange Coastal</b>	24	2
<b>Total</b>	502	69

Water resources in the lower part of the Orange river system is fully developed. Large operational and transmission losses are experienced in the process of ensuring that the requirements of the various water users are met during the long travel distance of 1 400 km, from the point of release at Vanderkloof Dam to the most downstream point of use. The constructing a new dam can improve these losses by providing de-regulating storage and regulating spills from dams upstream river system.

**Table 7: Available water in 2000 (million m<sup>3</sup>/a)<sup>10</sup>**

Orange System	Natural Resource		Usable return flow		Total local yield	Transfers in	Grand Total
	Surface water	Ground water	Irrigation	Urban			
Senqu Lesotho	523	0	0	0	523	0	523
Caledon Lesotho	28	1	0	2	31	0	31
Caledon RSA	167	5	4	2	178	0	178
Kraai	34	10	0	0	44	0	44
Riet/ Modder	85	6	13	33	137	242	379
Vanderkloof	3474	43	17	0	3534	0	3534
<b>Totals</b>	<b>4311</b>	<b>65</b>	<b>34</b>	<b>37</b>	<b>4447</b>	<b>2</b>	<b>4449</b>
	Natural Resource		Usable return flow		Total local yield	Transfers in	Grand Total
Orange	-1092	9	96	1			
Orange Tributaries	9	13	0	0	22	0	22

<sup>10</sup> Upper Orange Water Management Area Overview of Water Resources Availability and Utilisation, p22

<b>Orange Coastal</b>	0	3	0	0	3	6	9
<b>Total</b>	<b>-1083</b>	<b>25</b>	<b>96</b>	<b>1</b>	<b>-961</b>	<b>2035</b>	<b>1074</b>

The table below provides a summary of the water reconciliation for the year 2000.

**Table 8: Reconciliation of Water Requirements and Availability for the year 2000 (million m3/a)<sup>11</sup>**

ISP Sub-area	Available water			Water requirements			Balance
	Local yield	Transfers in	Total	Local requirements	Transfers out	Total	
Senqu Lesotho	523	0	523	23	491	514	9
Caledon Lesotho	31	0	31	40	0	40	-9
Caledon RSA	178	0	178	105	59	164	14
Kraai	44	0	44	103	0	103	-59
Riet/ Modder	137	242	379	351	29	380	-1
Vanderkloof	3534	0	3534	346	2809	3155	379
<b>Total</b>	<b>4447</b>	<b>2</b>	<b>4449</b>	<b>968</b>	<b>3148</b>	<b>4116</b>	<b>333</b>
ISP Sub-area <sup>12</sup>	Available water			Water requirements			Balance
	Local yield	Transfers in	Total	Local requirements	Transfers out	Total	
Orange	-986	2035	1049	989	60	1049	0
Orange Tributaries	22	0	22	31	0	31	-9
Orange Coastal	3	6	9	8	0	8	1
<b>Totals</b>	<b>-961</b>	<b>2035</b>	<b>1074</b>	<b>1028</b>	<b>54</b>	<b>1082</b>	<b>-8</b>

The potential for further water resource development exists within the Orange, since this region has the largest yield country wide. The Lesotho Highlands water Project has a significant effect on water availability in this WMA, since the project relies on water that naturally flows into the Orange water

<sup>11</sup>Information provided is at 1:50 year Assurance for the Upper Orange water management area (Upper Orange Water Management Area Overview of Water Resources Availability and Utilisation, p23)

<sup>12</sup>Information provided is at 1:50 year Assurance for the Upper Orange water management area (Lower Orange Water Management Area Overview of Water Resources Availability and Utilisation, p22)

management area. Developments in Lesotho, and increased transfers out of the water management area, are likely to have an adverse effect on the water availability in this area.

Water Quality in the Lower Riet River and over-exploitation of groundwater is of concern in some parts of the Orange river system. It is important that developments alongside the Orange River should be protected by implementing flood management at the Gariep and Vanderkloof Dams.

### **3.8.5 International Considerations**

Since the Vaal River contributes to the Orange River system, the management of the Vaal River falls within and is subject to the international agreements reached with neighbouring Lesotho, Botswana and Namibia. These agreements define the responsibilities of the upstream authorities with respect to both quantity and quality of water released downstream, the monitoring of which will need to be addressed as part of the CMA catchment management strategy. The trans-boundary agreement covers the Establishment of the Orange Senqu River commission and specifically includes:

- Article 1 – The establishment of the commission;
- Article 2 – Institutions of the commission;
- Article 3 – Meetings of the council;
- Article 4 -6 – Objectives, functions and powers of the council;
- Article 7 – Obligations of the contracting parties;
- Article 8 – Settlement of disputes;
- Article 9 – Withdrawal;
- Article 10 – Financial arrangements; and
- Article 11 – General provisions.

Clearly, the Vaal-Orange CMA is not expected to operate without taking into consideration the existing international institutional arrangements.

Other strategic and operational considerations include local surface that have been developed to full extent and the groundwater that is already utilised. It is for this reason that, this WMA is completely dependent on the Orange's water release and transfers, and the adverse consequence is that upstream mining, urban, industrial and irrigation activities have a negative influence on water quality downstream.

Efficient irrigation water use, water monitoring and control are of concern in this region. Contributing towards these concerns is the lack of management and control structures to release water from the Vanderkloof dam. The implementation of efficient integrated flood management measures and cooperating with upstream users is important in this regard to protect the Orange river system developments and improve its economic contribution to the GDP.

There is also a need to reallocate water and to embark on programmes to relieve poverty in this region through the support of emerging irrigation farmers.

### **3.9 CHALLENGES**

The Vaal River system is crucial to South Africa, this system supplies water to 60% of the country's economy and 45% of the population of the country (NWRS2, 2013). This includes Gauteng, the mines and industries of the Mpumalanga highveld including most of ESKOM's coal fired powers stations. Further, the Vaal River also supplies the Northwest province, including the gold mines in the Free State and NorthWest and platinum mines around the Rustenburg area. The Vaal River is a complex system that receives runoff from its own catchment area, as well as receiving transfers from other systems such as the Lesotho Highlands, Thukela and Usuthu. At the same time, it also transfers water to systems such as the Crocodile-Marico and the Olifants.

The Vaal River system, with its runoff and transfers (in and out) is currently at maximum capacity and efforts must be made to address and reduce the usage of the available capacity that exists in the system and to augment the supply.

In addition to the technical challenges there are also a number of operational challenges that will be material to the CMA board's approach to structuring and operating the CMA.

### **3.10 TECHNICAL CHALLENGES**

#### **3.10.1 Balancing Inequity Issues**

The estimated population of the Vaal-Orange CMA is in the order of 12 million according to the Census data of 2011. The socio-economic data of the area reveals that, in terms of income, education and access to services, a great disparity exists. Although the area consists of large urban areas, quite a large portion of the population live in informal areas, due to the rapid urbanisation of the region, and thus poverty levels are quite high. This disparity may cause political tensions as the informal residents can feel neglected and not receiving services. At the same time this has a potential to increase unlawful water use as residents exploit available sources of water in the catchment. The CMA will thus have to ensure that the demands of informal and rural areas are also met as well as the urban areas.

Lessons from the Inkomati-Usuthu CMA show that continued lack of infrastructure (small dams, canals, off-stream storage, etc.) and extension support in some areas entrenches and exacerbates the imbalances of the past and the plight of the historically disadvantaged. The board of the Vaal-Orange CMA will need to pay special attention to address these imbalances.

Furthermore, non-compliance by developers and mines, and continued lack regulation and compliance enforcement are negatively impacting on socio-economic development and rapidly reducing the sustainability of water resources. Some of the issues require law enforcement and these include illegal water abstraction and waste dumping; illegal land use within wetlands and riparian zones; illegal regulation of rivers and drainage of wetlands; illegal fishing, hunting, harvesting of medicinal plants; etc.

#### **3.10.2 Sanitation**

Sanitation is highlighted as being a crucial basic human right and bucket eradication remains a major focus for the Department.

The report on the status of sanitation services in South Africa (2012) provides an indication of the extent of lack of sanitation services to the Vaal-Orange WMA. Many of the informal settlements dispersed through the WMA have no formal sanitation infrastructure or services. This is further reinforced by a study conducted by the South African Human Rights Commission.

The following table indicates the status of sanitation in South Africa:

Province	RDP-Acceptable			Not RDP-Acceptable		
	Flush Toilet	Chemical Toilet	Ventilated Pit Latrine	Unventilated Pit Latrine	Bucket Latrine	None
Free State	67.10%	0.60%	87.00%	13.50%	5.50%	3.10%
Gauteng	85.40%	1.10%	2.40%	7.40%	1.80%	1.10%
North West	45.40%	0.80%	11.30%	34.20%	1.00%	5.80%
Northern Cape	66.00%	0.60%	9.10%	10.70%	4.00%	8.00%
<b>South Africa</b>	<b>60.10%</b>	<b>2.50%</b>	<b>8.80%</b>	<b>19.30%</b>	<b>2.10%</b>	<b>5.20%</b>

Access to Sanitation, by Province as of October 2011 (Report on the Right to Access Sufficient Water and Decent Sanitation in South Africa (2014))

As the bucket system diminishes and sanitation becomes more formalised, there will be an increase in the volume of water used by individuals. This will have implications for the overall water balance and should be considered within the Catchment Management Strategy. Furthermore, formalisation of sanitation systems may result in positive implications for water quality in the catchment through better control of sewerage systems.

The CMA should play a proactive role in assisting with various government initiatives to alleviate the sanitation issues within the Vaal river system area this will require commitment, constant engagement and communication to ensure that this basic human right is met.

### 3.10.3 Unlawful Use & Enforcement

Unlawful use of water is prevalent in the Vaal river system area, largely due to mining and commercial farming. This poses a significant challenge to the sustainability of water resources in the region. In order for the Vaal River system to maintain a constant supply, in the implementation of the Phase 2 of the Lesotho Highlands project, the unlawful use of water for irrigation of crops must be controlled. To address this situation, the Department instituted the Reconciliation Strategy in 2009 with a strategy steering committee formed in July 2009. In terms of the Reconciliation Strategy, it is estimated that 174 million m<sup>3</sup>/annum is lost due to unlawful use of water. Regulations have been proposed to assist with the enforcement of this action.

In practical terms the structure of water users within the Vaal river system area may have an impact on the makeup or distribution of skills across the CMA. In particular, it is noted that in the upper area of the Vaal system, there is a higher proportion of large-scale bulk, industrial users (e.g., Eskom, SASOL, Mining Houses) who are easier to manage in terms of monitoring and enforcement than smaller scale, geographically dispersed users such as might be found in the lower reaches of the catchment.

### 3.10.4 Water Conservation and Demand Management

An important issue that is currently being addressed is water conservation and water demand management with currently losses estimated at being around 36%. The Department had set a goal of reducing this by 15% by 2015, to alleviate the water shortage prior to the second phase of the Lesotho Highland project being constructed. This issue was supposed to be addressed mainly by the municipalities that were supplied from the Vaal River system with an objective of saving at least 195 million m<sup>3</sup>/annum by 2015. Although significant progress has been made through management of

water in the City of Johannesburg, there is constant increasing demand which has raised the priority of water conservation and demand management to avoid future water restrictions. The City of Johannesburg had to save at least 110 million m<sup>3</sup>/annum. Further to this the City of Tshwane achieved the interim targets set, while the City of Ekurhuleni is achieving savings but did not meet the targets required. One of the major institutions in the area, Rand Water - which supplies bulk to most municipalities and industry including ESKOM - has indicated that an increase in the demand from their users will be sought. This, however, will not be feasible with the current water availability; and it has been suggested that Rand Water implement water saving measures through its various users to lessen the chance of water restrictions.

### **3.10.5 Use of Return Flows**

A further proposed mitigation measure to address potential shortages in supply that may be implemented is the reuse of water from the return flows from the various wastewater treatment works within the various municipal areas. This will have the effect of placing less of a strain on existing raw water sources, but the “withholding “of return flows may affect downstream areas or other systems. An example being the Crocodile River system that has sufficient capacity with return flows but would experience a shortage without such return flows.

### **3.10.6 Acid Mine Drainage**

Acid mine drainage (AMD) refers to the outflow of acidic water from metal mines or coal mines. Acid mine drainage occurs naturally within some environments as part of the rock weathering process but is exacerbated by large scale earth disturbances characteristic of mining and other large construction activities, usually within rocks containing an abundance of sulphide minerals.

In South Africa, AMD has long been identified as a challenge in numerous locations. As a result, an Inter-Ministerial Committee (IMC) was established to advise the government on AMD. The IMC then appointed a Team of Experts to assess and appraise the situation, which made recommendations to the IMC in their report dated December 2010.

The report identified certain critical actions to be taken to address the risks related to AMD in the Witwatersrand. The scope encompassed the three basins in Gauteng namely, Western, Central and Eastern.

The overall strategy has been divided into short term interventions to address immediate risks associated with mine water decant (i.e., contaminated groundwater essentially overflowing into the surface water system). While a longer-term strategy for the sustainable management of AMD is being developed and implemented.

### **3.10.7 Water Quality Management**

Water quality deterioration in the Vaal-Orange River WMA is mainly attributable to one or more land-use impacts. Irrigation run-off, particularly in the Orange river system side where agriculture is dominant. The Orange river system has large irrigated areas that carry fertilisers and increased salt loads through leaching (DWA, Orange River Water Quality and Effluent Re-use Report, 2012). Water quality tends to be degraded with considerably higher salt and nutrient concentrations which contributes significantly to the salt load in the Orange River.

The quality of the water in the Vaal-Orange WMA must be carefully controlled as it provides water to a large area of the country. To ensure that the quality of the water is achieved an Integrated Water Quality Plan for the Vaal River system exist but has yet to be implemented. Potential problems with

management of the quality of water will arise due to the large industrial and urban settlement patterns that exist in the catchment area. The CMA will thus have to ensure that the quality of water that is being returned to the system by industrial users is of such a quality that future supply is assured. To deal with these challenges the Vaal-Orange CMA will have to develop a policy and process for water quality management. The process will not only involve the CMA but the community, affected parties as well as industry. The water quality strategy for the CMA will include issues from the whole spectrum of the water cycle including drinking water quality, monitoring, groundwater, rural land uses and water quality, storm water, sewage systems, wastewater treatment works return flows and effluent control for industries. For this reason, a robust communication and participation plan is desired in order to achieve the set strategic water quality objectives.

### **3.10.8 Invasive Species**

The CMA will also have to address issues such as alien vegetation, which although not prevalent in the Vaal River System, does have an impact on the quality and quantity of water that is available for usage in the system.

## **3.11 OPERATIONAL CONSIDERATIONS**

### **3.11.1 Turn-around of Licence Applications**

While DWS has managed to significantly reduce the backlog in water use licence applications, there is a challenge in streamlining the process to ensure and maintain an efficient, equitable and effective authorisation process and to prevent a new backlog from developing (NWRS2, 2013). Most likely, excessive backlogs act as drivers for unlawful water use and may exaggerate perceptions that the CMA is unable to enforce licencing regulations.

Meetings of the Regional Steering Committee for the Vaal have raised the issue of faster turnaround for licences several times and it is clear that the Vaal-Orange CMA will need to meet the expectation of water users by ensuring that processing times become more reliable.

### **3.11.2 Financial Independence**

Although it is envisaged that the CMA should be financially independent, the funding that it will receive from water charges may not be sufficient to cover the cost associated with the work that needs to be undertaken. As a first step toward sustainability, it is envisaged that the CMA will take over the Water Trading Entity accounts from DWS Regional Offices that lie within the Vaal-Orange CMA. These are Gauteng, Free State and Northern Cape regional offices. Nonetheless, the magnitude of challenges in the CMA seem to indicate that funds from these Water Trading Entity accounts will still need to be augmented from the fiscus.

### **3.11.3 Levels of Engagement**

There is generally a low skills base on water resource management in the catchment particularly from previously disadvantaged communities. From an integrated water resource management point of view, this is likely to create a challenge in terms of engagement and understanding of the objectives of the CMA. While the CMA may gain meaningful support from organised stakeholders such as industry, mining and commercial farmers, it is likely to face discontent in the majority of communities where capacity is low or non-existent. This is likely to result from both the perceived and actual poor

progress in implementing the requirements of the National Water Act and Integrated Water Resources Management. There is a serious threat of these water issues leading directly to civil protest and unrest.

Tailored engagement approaches are critical, that appraise the skills base and raise awareness among communities.

### **3.11.4 Integrated Catchment Planning**

The interactions between the various planning mechanisms in place across the WMA are complex. They span technical, geographical and political boundaries. While the CMA will be responsible for the development of the key plan for water resources management within the catchment (the Catchment Management Strategy), this will need to interact with many other agencies focused on broader developmental issues.

The NWRS2 document refers to the need for water to be at the centre of development planning and identifies that development planning needs to be geared towards realisation of the water scarcity issues in South Africa. It also identifies that there is a lack of priority given to water management issues resulting in an *“assumption that water is readily available at minimal cost, resulting in ineffectual planning and unrealistic developmental expectations”*. The Vaal-Orange CMA will need to take a leading role in planning for the development of the CMA, but also taking a proactive role to contribute to the development of municipal, provincial and other planning processes. The primary goal is to meet the objective of NWRS2 that *“Water and its management are an integral part of development planning and frameworks.”*

### **3.11.5 Pressure on Tariffs from Infrastructure Projects**

Revenue generated from the Vaal River Bulk Raw Water Tariff facilitates a range of functions including management, augmentation, betterment, operations and maintenance of water resources within the Vaal River system. The viability and sustainability of water infrastructure projects aimed at augmenting the Vaal River system, will directly impact the tariff levied by water users.

The Government’s decision to fund a number of augmentation projects off budget necessitates the need to recover the capital and operation costs through consumer tariff increases. This stems from the view that the benefits of water quality improvements and supply security are largely enjoyed by consumers. However, there is recognition of reluctance among Vaal River system users to unilaterally fund augmentation activities. At the same time, the amalgamation of the two CMAs is likely to require a review of the tariff regime to accommodate differences currently prevalent. Currently, tariffs in the Orange are based on yield in contrast to the Vaal tariff regime, which is based on demand. These are important considerations, especially since one of the main objectives of the Vaal-Orange CMA are to ensure financially sustainable water resource management.

Augmentation projects currently funded off budget include:

- Lesotho Highlands Water Project – Phase 1;
- Lesotho Highlands Water Project – Phase 2; and
- Treatment of Acid Mine Drainage.

Phases 1 and 2 of the LHWP will be delivered through revenue from a Capital Unit Charge (CUC) and a Bulk Operations and Royalty (BO&R) charge levied on consumers as part of the Bulk Raw Water Tariff. Funding of AMD was authorised in 2014 and will impact CUC and BO&R charges in 2015/16.

While these schemes may have an impact on the overall cost of water to users in the catchment, it is considered to be budget neutral in terms of the CMA’s revenue and costs as it will not form a part of the Water Resources Management charge levied by the CMA.

### 3.11.6 Operational Model

Although there will be one CMA with one Governing board and one CEO, the proposed operational model is to run the Vaal and the Orange systems separately with each system having its own tariffs and its own distinct operations.

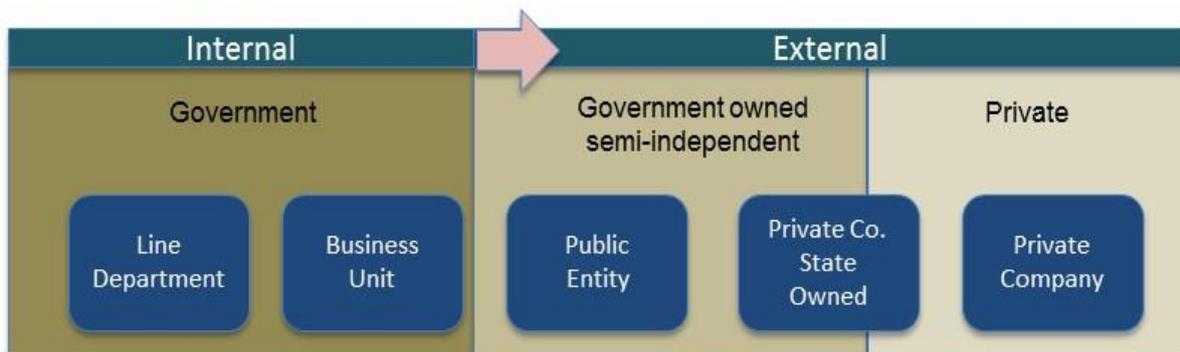
Specific reasons have been advanced by stakeholders in both the Vaal river system and the Orange river system in support of the separate management of the two river systems. Key among these, are concerns arising due to the combined actual size of the WMA (the Orange is significantly large on its own), differences with regard to dominant water uses (irrigation for the Orange, and domestic/industrial for the Vaal), as well as the differentiated tariff system that is applicable. Others mention the fact that the Vaal river is actually a tributary of the Orange river and that the linkages are negligible with the Vaal River contributing to the water supply and flow of the lower part of the Orange River only during years of above average rainfall. Clearly, the proposed organisational model should cater for IWRM requirements, including trans-boundary water agreements as well as facilitate decentralised management that caters for the needs of both systems within the WMA needs.

Suggestions are leaning towards a regionalised design that treats the Vaal and the Orange as regional centres located closest to each river system with satellite offices within the regional stretch of the two river systems for co-ordination and management at a local level.

## 4 CORPORATE FORM

The appropriate corporate form must be informed by the purpose of the entity, and specifically by the risks, powers and functions of the CMA. A distinction should be drawn between delegation of functions within DWS, and agentising of the functions. Agentising is an integral part of strengthening and improving governance, by assigning responsibility and accountability to the institution best placed to ensure efficient use of resources and effective service delivery. It is appropriate only where there are good reasons for independent governance and control. The extent of independence from departmental control is illustrated in the diagram below.

Figure 9: Corporate options



An added requirement is that once public sector institutions are legally established, the National Treasury through the Accountant General lists them in Part A, Schedule 3 of the PFMA to enable effective financial management and accountability. The 2012 Department of Water Affairs document

“A Framework to guide the establishment of Catchment Management Agencies” provides the following conclusion on the selection of Corporate form for CMA’s. This is considered to remain relevant to the CMA:

According to the National Treasury, “the public entity corporate form is suitable for functions that require the involvement of stakeholders and experts to ensure effective and efficient delivery and where a moderate degree of autonomy in decision-making is desirable, or functions where it is necessary to assign decision-making to an independent juristic person in order to enhance public confidence in the implementation of a policy framework or the provision of policy advice or research. A business enterprise, on the other hand, is primarily focused on the provision of goods and services in a market environment”.

There are four key reasons why creation of a public entity is preferred for the CMA:

- It is a model that has already been implemented in the Breede-Gouritz WMA and the Inkomati-Usuthu WMA, with benefits already being seen despite the lack of transfer of other key functions to these CMAs and their financial constraints;
- A CMA is a service-delivery entity performing a function of government;
- A CMA does not directly provide goods and services in a market environment, but it is dependent on revenue from water users for the delivery of the services; and
- A CMA needs to involve stakeholders in the management of water resources and to build public confidence in its implementation of water resources policy.

It is therefore proposed that each CMA be established as a national public entity and listed under Schedule 3 (a) of the PFMA because it:

- Would be established in terms of National legislation;
- May be partially funded from the National Revenue Fund;
- Would be accountable to Parliament; and
- Would not be authorized to carry out a business activity providing goods and services in a market environment.

The subsection below explores further the case for the proposed corporate form.

#### **4.1 A CASE FOR THE PREFERRED CORPORATE FORM.**

The corporate form of the CMA is driven by the need to achieve the principles underlying the IWRM. On the other hand, it is driven by the requirements of the Public Finance Management Act as well as the recommendations for management of public entities as proposed by National Treasury (NT) and the Public Service and Administration (DPSA) departments.

The general principles underlying IWRM are as follows:

##### **4.1.1 Integrated Hydrological Cycle**

Water is a finite and vulnerable resource therefore needs to be managed in an integrated manner. The fact that water serves many different purposes, functions and services it therefore requires holistic management on demands and threats to it.

#### **4.1.2 Decentralised Institutional Arrangements**

This is based on the establishment of decentralised institutions that provide a framework that integrates human systems, i.e., economic, social and political issues with a responsibility for encouraging protection of water resources.

#### **4.1.3 Decentralised Decision Making**

This is based on the need to have some of WRM decisions taken at a lower level with the involvement of stakeholders. It is underlined by subsidiarity, i.e., taking decisions at the lowest appropriate level, including communities represented through groups, elected individuals and any other accountable agencies.

#### **4.1.4 Developmental / Empowerment Role**

Decentralised institutions have a developmental and empowerment role in order to ensure effective participation of stakeholders, particularly historically disadvantaged individuals.

#### **4.1.5 Financial responsibility of WMI**

The financial viability of institutions is crucial to their sustainability and effectiveness. This requires a need for institutions to have strong financial systems and controls. The financial systems and controls may be linked to the requirements of the Public Finance Management Act, (Act 1 of 1999)

Against this background the CMA will be a public entity established for the local management of water resources. Secondly, the CMA will be a stakeholder body that will perform functions and deliver service to stakeholders/users. In performing these functions, it will raise water resource management charges from the users; however, it will also require financial subsidies from DWAF and possible grant-in-aid.

### **4.2 SPECIFIC ATTRIBUTES OF THE CMA.**

Based on the categorisation above, the following attributes will guide the governance and operation of the CMA:

- **Legal Status:** Juristic person in terms of NWA;
- **Political Accountability:** Executive Authority, i.e., the minister. The Minister is accountable to Parliament and represents government's policy. The Minister will need to develop a service delivery agreement with the Accounting Authority, i.e., the Board;
- **PFMA Statutory Accountability:** The Board is the Accounting Authority. Through DWS it will account in terms of the PFMA. The Board will submit a business plan to DWS (DG) and will be required to submit annual reports;
- **Appointment of the Board:** The Minister (Executive Authority) based on advice by the Advisory Committee will appoint the Board;
- **Appointment of the CEO:** The CMA Board appoints the CEO, with the approval of the Minister,
- **Internal Accountability:** The CMA is at liberty to determine its internal accountability and related systems;
- **HR regime:** Public servants (seconded staff), may later have a separate section of PSA;

- **Operational funding sources:** Water charges, grant-in-aid and DWS subsidies / financial support;
- **Budget approval:** DWS (Executive Authority) will approve the CMA budget;
- **Spending autonomy:** The CMA is autonomous within the limits of mandates by DWS;
- **Procurement:** PPPFA and the CMAs own governance rules but satisfying national priorities;
- **Pricing:** The CMA will set pricing but will be subject to approval by the DWS guided by the Pricing Strategy as revised on a 5 yearly basis;
- **Borrowing powers:** The CMA will need specific approval from the Minister of Finance, but should only require overdraft facilities for working capital;
- *Accounting basis:* Generally Recognised Accounting Practices (GRAP) linked to the PFMA ;
- **Social and environmental responsibility:** Direct responsibility to promote empowerment of local and affected communities and meet environmental requirements; and
- **Dissolution:** By the Minister (as the Executive Authority) based on advice. All assets and liabilities revert to the state.

## 5 LEGAL PROCESS

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### 5.1 INTRODUCTION

The transformation of the legal systems was a fundamental part of the political events arising out of the end to the apartheid era in 1994 (de Lange 2001). Under the leadership of the then Minister of Water, Sanitation and Forestry, a process was launched to incorporate public views nation-wide and to harness global knowledge for the formulation of the National Water Act, which was finally promulgated in 1998. These globally recognized ‘best principles for integrated water management’ include the integration of surface and groundwater management, the gradual decentralization of water management to the lowest appropriate level and self-financing of water management by user groups, public participation and community involvement, the preservation of water for ecological purposes, and the shift from administrative to hydrological basin boundaries for water management, ultimately to be implemented by Catchment Management Agencies.

The National Water Act (1998a) highlights the following components that are most relevant to the legal basis for the establishment and responsibility of CMAs:

- a) **Redress of Inequities of the Past based on Race and Gender:** The basic human right that — ‘Everyone has the right to have access to sufficient food and water’ — is firmly rooted in Section 27 of the new Constitution of South Africa (RSA 1994) and subsequently enshrined in the National Water Act. Throughout the Act, the principle of ‘redress of racial and gender inequities from the past’ is mentioned as a main criterion for South Africa’s new integrated water resources management.
- b) **Basic Human Water Needs:** The National Water Act stipulates that the government must allocate a Reserve for basic human consumption needs before any other use. A similar priority allocation is made for the Ecological Reserve.
- c) **Demographic Representation:** According to the National Water Act, governance bodies should be representative in terms of including sections of the population that were previously unrepresented in governance forums—especially, blacks and women. The Minister of Water and Sanitation and Forestry has far-reaching powers to ensure demographic representation in new legal governance structures such as CMAs.
- d) **Cooperative Governance:** A general government policy in South Africa, which is crucial for rectifying race and gender inequities through water law, is the emphasis on strong horizontal and vertical ‘Cooperative Governance’. This entails cooperative governance both *within* government agencies, in this case coordination between the various divisions within DWS, such as Water Supply, Water Quality, Groundwater, Catchment Management Agencies, Resource Planning, Modelling, etc., and *among* the various government agencies, of which the CMAs form part.
- e) **Water Reallocation:** A legal tool in the National Water Act that allows reallocation of water from high-volume users to poor water users is termed Compulsory Licensing. DWS can call for ‘compulsory licensing’ where and when needed.

### 5.2 LEGAL REQUIREMENTS

The National Water Act, Act 36 of 1998 Chapter 7 (NWA, 36, 1998) allows for the progressive establishment of CMA’s throughout South Africa. A significant step towards the establishment of a CMA is the proposal (this document) that is required in terms of Section 77 of said Act. The main issue

of this document is not if a CMA should be established but rather a proposal to re-organise WMA boundaries and to establish a single CMA that will ensure that water resources are managed as a single indivisible asset. The Vaal and the Orange WMAs are areas of interest for the purpose of this business case. Since the Vaal River CMA already exists on paper, a few questions arise that seek to establish legal basis and process required to establish a new CMA (Vaal-Orange CMA).

The requirements in terms of Section 77 of the National Water Act, 36 of 1998, set out that the business case must address the following issues:

- The proposed functions that the CMA will be required to fulfil including functions that will be assigned or delegated;
- The proposed funding model of the CMA, which can include user charges or subsidies from the fiscus; and
- The feasibility of the CMA based on factors such as technical, financial and administrative matters.

However, for the purpose of reorganising water management area boundaries, legal completeness demands that the dis-establishment process set out in Section 88 of the NWA, be followed. The disestablishment and re-establishment processes are discussed briefly below.

### **5.3 AMENDMENT OF THE BOUNDARY OF THE VAAL RIVER CMA**

Section 78 (1) b provides for the Minister to amend the name or water management area of the Vaal River Catchment Management Agency. The Minister must publish in the Government Gazette a notice of intention to amend the boundaries and area of operation of the Vaal River Catchment Management Agency to include the Orange WMA in terms of Section 78 (4) of the National Water Act, 36 of 1998.

The Section 78 process is expected to be a simple, yet time constrained process given the requirement for a gazette and the request for comments. Only after the comments have been received and the Minister has considered them, can the promulgation process be initiated, and hence the finalisation of the process to amend the name and water management area of the Vaal River CMA.

Finally, the amendment of the boundaries of the water management area must be completed through the amendment of the National Water Resources Strategy (NWRS2) and the promulgation of the new boundaries therein. Throughout this process, stakeholders must be afforded an opportunity to make comments.

### **5.4 ESTABLISHMENT OF THE VAAL-ORANGE CMA**

The Vaal-Orange CMA is established as a separate juristic person in terms of the NWA. It is established in terms of the National Water Act (s78(1)) by the Minister. The Vaal-Orange CMA will be gazetted for establishment and includes the Upper Vaal, Middle Vaal, Lower Vaal, Upper Orange and Lower Orange WMAs. Effectively, the name Vaal River CMA is expected to change to Vaal-Orange CMA (or any other name that the Minister in consultation with relevant stakeholders may deem appropriate). An organisational model and a management structure is proposed in this document that is designed to cater for water resource management demands in the expanded WMA.

## 6 FUNCTIONS OF THE CMA

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### 6.1 INTRODUCTION

The functions that the Vaal-Orange CMA will perform are informed by the National Water Act, as described below. The CMA will perform functions that fall into three categories, and some categories will be delegated as the CMA establishes capacity as an independent entity.

- Initial functions as described under the National Water Act (S80),
- Inherent functions conferred on a CMA under the National Water Act, and
- Other functions that may be delegated or assigned to the CMA by the Minister.

This chapter describes the following: delegation versus assignment, delegation of functions by the DWS, the phased transfer of these functions, considerations for the delegation process, and implications for the structure and functions of the DWS.

### 6.2 DELEGATION VS ASSIGNMENT

As stated in the National Water Act, the Minister holds the authority to delegate or assign functions to the CMA, and it is therefore important to distinguish between delegation of functions, and assignment of functions.

**Delegation and Assignment:** When a power or duty is delegated, the CMA is effectively carrying it out on behalf of the Minister and delegation may be withdrawn or made conditional. When a power or duty is assigned, the power or duty is fully transferred to the CMA, which exercises the power or duty in its own right. The policy position underpinning this functional analysis is that CMAs will, in due course, perform most of water resources management functions, and that the Department of Water and Sanitation (DWS) will only retain those strategic functions that have national implications. Thus, in determining whether a function should be delegated to a CMA, the following issues are considered:

- The spatial scale at which the function must be performed. For example, national or regional multi-water management area functions should not be delegated, while WMA or local functions should be delegated;
- The significance of the potential impact of the function;
- The capacity to perform the function, which would include a plan to build that capacity for the delegation, rather than the need to demonstrate existing capacity; and
- The principle that a water management institution cannot regulate or audit itself.

Current policy on the delegation or assignment of functions is that until the CMA's institutional arrangements have matured and been tested, functions and powers should only be delegated to the CMA's rather than formally assigned. This provides a "safety net" allowing the Minister to withdraw functions if they are not being performed effectively.

In addition, conditions can be attached to any specific delegation or assignment of a function. In the delegation of functions to the existing Inkomati and Breede-Overberg CMA's, the conditions outlined below have been applied and it is reasonable to assume that similar conditions will be applied to the Vaal-Orange CMA:

- a) Access WARMS and any other system that might be required to support the functions hereunder and can readily interface with the Department's systems;
- b) A protocol/an action plan to coordinate water user's activities and foster cooperation between institutions;
- c) Job descriptions of positions, that will be implementing the process contained in this delegation, are in place; and
- d) CMA reporting to include submission of quarterly reports to the Chief Director: Institutional Oversight and Regional Head; and (report any change in the capacity and skills referred to in condition(a)).

### **6.3 ASSIGNED AND RETAINED FUNCTIONS**

The following functions to be performed by the CMA have been identified:

- Develop operational policy and strategy;
- Regulate Water Use;
- Establish, Support and Regulate Institutions; and
- Monitoring and Planning; and Infrastructure development.

A brief summary of what each function entails is provided below, and an indication to whether each item listed under this function is retained by the DWS or assigned or delegated to the CMA (See Table 6 below). In addition to the functions listed below, the Quality/Compliance management with its internal functions; and Management of Assets and Facilities, are Internal Functions which should be assigned to the CMA.

#### **6.3.1 Develop Policy & Strategy**

National Policy and Strategy; Legislation and WRM Methods; National Water Resources Strategies; Pricing Strategies; Institutional Roles and Responsibilities; and Determination of Water Resource Classes, should be retained by the DWS.

The development of policies and strategies is a function that should largely be retained by the DWS, although the CMA will provide input. As the DWS will retain most functions in terms of development of policy and strategy, it is recommended that only the development of policy and strategy relating to the Determination of Reserves and RQOs of non-National Significance be delegated.

Furthermore, the development of Catchment Management Strategies and the Financial Management and Planning for CMAs should be assigned.

#### **6.3.2 Regulate Water Use**

Authorisation and Allocation of Water for Strategic Purposes; Inter WMA Transfers; Maintain WARMS Database at a National level; and Regulation of water use where CMA is the User should be retained by the DWS. Furthermore, authorisation of water use; validation and verification; enforcement of water use; setting water tariffs; and collecting fees, should be assigned to the CMA.

### **6.3.3 Establish, Support And Regulate Institutions**

Establishment, support and regulation of the catchment management agencies; All WUAs including those who manage a works or have government loans; national bodies (e.g., TCTA/WRC); and inter-WMA coordination and conflict resolution should be retained by the DWS

Furthermore, water management institutions specified within the CMS; Coordination of water related activities of institutions; and ensuring public engagement in WRM and WMA, should be assigned.

### **6.3.4 Monitoring And Planning**

Monitoring and planning of national information and monitoring systems; monitoring of water resources in national monitoring systems; and national planning (including determination of allocable Water per WMA), should be retained by the DWS.

Additional monitoring required for CMS implementation; assessment and evaluation on this monitoring; allocation within WMA; water resource rehabilitation; flood warnings within WMA; flood warnings across WMA boundaries; and drought rules, should be assigned to the CMA.

Physical monitoring of national system; and reconciliation within WMA (in coordination with national activities) should be delegated to the CMA.

### **6.3.5 Infrastructure**

Major infrastructure development and dam safety regulation should be retained by the DWS, however localised infrastructure for CMA benefits (e.g., monitoring of equipment) should be assigned to the CMA.

For completeness, the table below provides a summary of the discussion above.

Table 6 : Summary of Functions to be Retained, Assigned or Delegated by the DWS

	Retained by DWS	Assigned or Delegated
<b>Development of Policy and Strategy</b>		
National Policy and Strategy	X	
Catchment Management Strategy		X
Financial Management and Planning for CMA		X
Legislation and WRM Methods	X	
National Water Resources Strategy	X	
Pricing Strategies	X	
Institutional Roles and Responsibilities	X	
Determine Water Resource Class	X	
Determine Reserve and RQO's of Resources of National Significance	X	
Determine Reserves and RQOs of non-National Significance		X
<b>Regulation of Water Use</b>		
Authorisation of Water Use		X
Validation and Verification		X
Enforcement of Water Use		X
Setting Water Tariffs		X
Collecting Fees		X
Authorisation and Allocation of Water for Strategic Purposes	X	
Inter WMA Transfers	X	
Maintain WARMS Database at a National level	X	
Regulation where CMA is the User	X	
<b>Establish, Support and Regulate Institutions</b>		
CMA	X	
WUAs who Manage a Works or Have Government Loans	X	
All other WUAs not managing government works		X
National Bodies (e.g., TCTA/WRC)	X	
Inter WMA Coordination and Conflict Resolution	X	
Water Management Institutions Specified within the CMS		X
Coordinate Water Related Activities of Institutions		X
Ensure Public Engagement in WRM and WMA		X
<b>Monitoring and Planning</b>		

	Retained by DWS	Assigned or Delegated
National Information and Monitoring Systems	X	
Monitoring of Water Resources in National Monitoring System	X	
Physical Monitoring of National System		X
Additional Monitoring Required for CMS Implementation		X
Assessment and Evaluation on this Monitoring		X
National Planning (including determination of allocable water per WMA)	X	
Allocation within WMA		X
Reconciliation within WMA (in coordination with National activities)		X
Water Resource Rehabilitation		X
Flood Warnings within WMA		X
Flood Warnings across WMA Boundaries		X
Drought Rules		X
<b>Infrastructure</b>		
Major Infrastructure Development	X	
Localised Infrastructure for CMA Benefit (e.g., monitoring equipment)		X
Dam Safety and Regulation	X	
<b>Other Internal Functions</b>		
Quality/ Compliance Management with its Internal Functions		X
Management of Assets and Facilities		X

The organisational structure of the DWS retains certain strategic functions (together with relevant staff compliment) whose implementation has national impact. However, once the CMA consolidates its capacity, it can take up additional functions as a responsible authority through a delegation process.

## 7 ORGANISATIONAL ARRANGEMENTS

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The starting point to the discussion on organisational arrangements is the appreciation of the proposal to treat the Vaal and the Orange systems of the WMA as operationally distinct regions of the CMA. This business case makes this proposal based on the sheer size of the WMA, together with the distinct water availability and management associated requirements identified in each catchment. With this in mind, the following diagram is worth noting here that illustrates how appropriate organisational arrangements could be achieved.

The management and operational model that is proposed envisages the CMA operating through two regional offices and a number of localised centres. The CMA “head office” is expected to reside in Bloemfontein, with regional offices in each catchment (Vaal and Orange). At a local operational level, the idea is to locate sub-regional centres directly at local level. Clearly, operational issues on the ground may dictate that further assessments are necessary to decide the precise location of operational offices.

A key consideration in the determination of the office location is the consolidation of management resources and achieving cost effectiveness in line with Treasury stipulations on the reduction of costs and exploring efficiencies in the establishment of public institutions. The other considerations include the technological developments and the digitisation of work spaces which may not require physical office spaces for efficient management. The Board and management of the CMA may wish to explore how resources and personnel may be located closest to the service area without the incremental cost of office infrastructure. The rationalisation of the CMA office arrangements also moves away from the previous categorisation into Upper, Middle Lower Vaal and Upper and Lower Orange which is based on the previous 19 WMA demarcation as was proposed in NWRS1. The proposal embraces the new concept of an integrated Vaal-Orange WMA and seeks to reinforce the idea of a single WMA whilst acknowledging the differences between the river systems, the Vaal and the Orange. Further, the proposal recognises the need to accommodate this fact in terms of the management at a local level. The final decision on the matter is the responsibility of the Vaal-Orange CMA board once established. The proposed catchment based regional structure is illustrated below, indicating possible locations of the various offices.

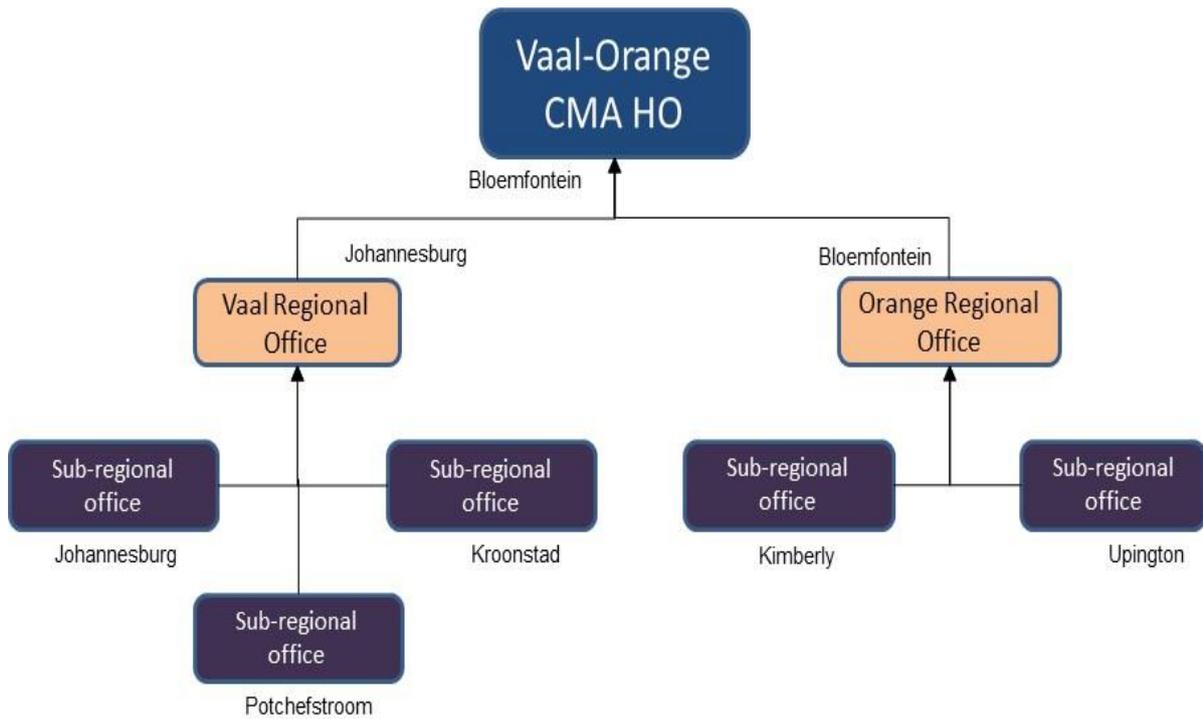


Figure 10: Vaal-Orange CMA with two regional offices

The dominant industrial, mining and dense urban environment in the Vaal requires a special focus in terms of management and technical skills. While the less industrialised, sparsely populated, drier and mainly rain fed agricultural sub-catchments in the Orange demand a slightly different focus in terms of skills. This is not to say the Vaal is any more important than the Orange. Rather, that a regionalised model acknowledges the differences described above (see Chapter 2) as well as eliminates the need to travel extensive distances downstream from the Vaal to the coast at the mouth of the Orange. Subsequently, and pending a final assessment by the board and CEO, the types of skills required may well be similar for both the Vaal and the Orange regional offices. The discussion on the organisational structure that follows is framed in line with the proposed regionalisation model.

## 7.1 PROPOSED FUNCTIONAL DESIGN

The Vaal-Orange CMA functional design must provide a systematic response to the water resource management challenges listed above. At the same time, the functional design must incorporate functions that are prone to pricing to ensure that the CMA achieves its sustainability requirements. A possible high level functional organisation of the Vaal-Orange CMA consists of functional areas captured in Figure 11 below and briefly described in the subsequent sections. At this point it is not necessary to differentiate functions according to the proposed regions of the Vaal-Orange CMA. However, an indicative structure is also presented that focuses on the key water resource related issues in the two regions of the WMA.

What is important is to organise CMA functions into manageable clusters in order to inform the organisational design process. The functional areas presented below are the initial functions that are linked to the 11 activities that the CMA could consider as part of the WR charge, and they exclude those that will be retained pending CMA capacity consolidation and subsequent functional delegation. For completeness and ease of presentation, the support functions (figure 12) are presented separately from the core water resource functions (figure 11). The structures are presented below.



## Vaal-Orange Functional Design

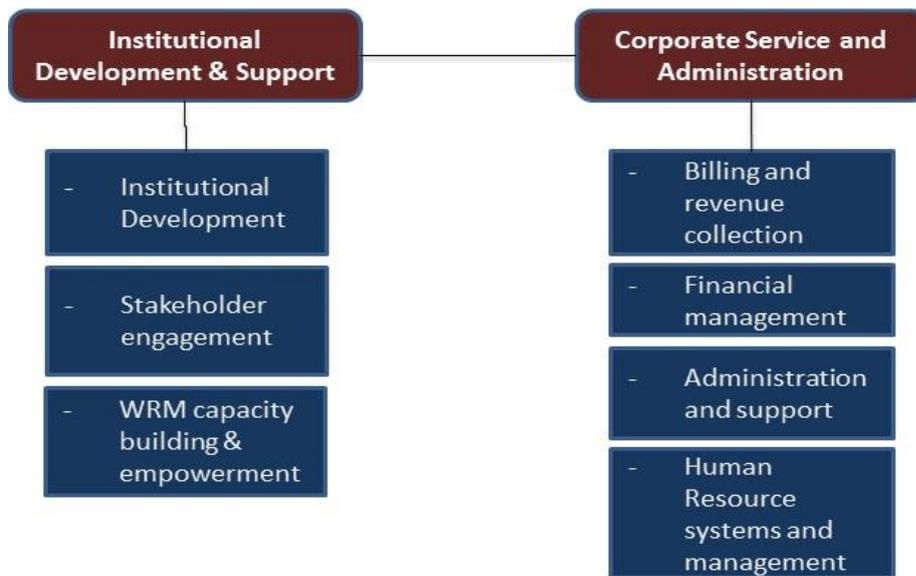


Figure 10: Institutional support and corporate service functional design

### 7.1.1 Water Use Regulation

Water use regulation is responsible for coordinating and managing all regulatory functions of the CMA. This will include water use authorisation, which includes water allocation reform, licensing, as well as other regulatory functions related to water quality management such as compliance monitoring and enforcement. The compliance monitoring will be undertaken at sub-catchment level by “compliance inspectors” (who may also act as information conduit and a first link for enforcement).

Prior to DWS delegating the water use authorisation function to the CMA, the water use regulation programme includes activities such as supporting DWS on licensing, registration of water users, monitoring of water use, management of information and records on water use, including ensuring water use compliance and enforcement as prescribed in the water use license. Water use management and related responsibilities such as compliance and regulation, including related functions such as validation and verification of water use to support the water resource management planning function are the focus of this regulation function. The water quality management priorities include the registration of waste and developing measures for effective resource protection and compliance with regulations and license requirements. These functions complement WARMS by providing information on water use collected from the sub-catchment offices.

While the CMA will initially focus on making recommendations to DWS regarding water use authorisations, promoting and implementing demand management interventions and issuing directives and restrictions on water use during emergencies, it will ultimately take over the licensing function, including compulsory licensing. Inspections to verify information contained in license and registration applications are performed in this division of the CMA, including registration, issuing of registration certificates and water use de-registrations. This is likely to happen at a central level with field monitoring and assessment undertaken by “inspectors” in sub-catchment offices.

### 7.1.2 Water Resource Information Management

Given the numerous sub-catchments of the WMA, the different water availability and requirement needs, and the integration of information management systems is crucial. Integration of information

and the relevant management system is the responsibility of this division. Data and information acquisition, management and sharing/dissemination are key to fulfilling the role of the Vaal-Orange CMA. The information management functional area will focus on providing comprehensive and consistent information at all levels, set-up effective information systems, including establishing strategic interfaces with DWS information systems where necessary to improve access to information by stakeholders. The key aspects of this function are set out below:

- *Monitoring systems:* although the actual resource monitoring responsibility is a delegated function, as soon as the CMA is established, it must put in place the necessary monitoring systems for water use to record information on the resource status that they need to perform their functions, over and above the national monitoring conducted by DWS.
- *Data and information systems:* the CMA must put in place the necessary databases and information systems to capture the relevant data to be provided by DWS from the national information system and from their own monitoring systems. These must cover water use (registration and authorisation), and resource status (water quality and quantity). These systems must interface effectively with the DWS systems and with other related CMA systems. DWS will need to put in place appropriate protocols to ensure that this is possible.
- *Information assessment:* The CMA must be in a position to analyse the information to provide trends and evaluation assessments to the planning and management sections so that they are able to respond appropriately to ensure effective use and management of water resources.
- *Disaster management:* in terms of section 63(1) disaster management is a delegated function. However, the CMA must put in place systems to generate data required for implementation of crisis plans developed by the Catchment Strategy function and ensure early warning for disaster events.
- *Geographic information systems:* The information manager must be an integrator, facilitating the integration of water resource information to corporate and strategic information systems, in particular keeping up to date information on registrations and water use to support revenue collection and strategic planning process at WMA and National level.

### **7.1.3 Catchment Strategy, Programmes and Planning**

Catchment Strategy, Programmes and Planning is responsible for planning the development, allocation of water resources (including water quality aspects) to meet resource quality objectives (RQO), and to reconcile supply and demand, including the development and operation of water resources infrastructure. This division will be responsible for performing the following initial functions:

- Conducting and commissioning water resources studies and investigations on water resources, advising DWS and interested parties on the matter and supporting integrated water resources planning through coordinating the development of a catchment management strategy (CMS) in accordance with the national water resources strategy. This function includes:
  - Conducting, commissioning and participating in investigations and studies to gather information to support management decisions for strategy development;
  - Reconciliation and augmentation strategies;
  - Developing management strategies, including WRM/ reconciliation, disaster management, allocation and water quality management plans;

- Investigating and providing advice to DWS on WMA planning to inform the NWRS and other national processes; and
- Advising users/institutions on implications of CMS/ NWRS for water resource development.
- Investigating and providing advice on disaster management to DWS and other institutions on the management of floods, droughts and pollution incidents, putting in place early warning systems and supporting municipalities in preventing settlement development within floodplains.
- Planning for allocation of water resources, once delegated.

#### **7.1.4 Institutional and Stakeholder Coordination**

While institution development and stakeholder involvement will be coordinated across the whole of the Vaal-Orange CMA area, it is proposed that the institutional and stakeholder interaction should be carried out on an area basis, specific to the three sub-catchments of the Vaal and the two sub-catchments of the Orange. Its focus would be on the following:

- establishing, overseeing and providing support to water user associations, (except those that manage government waterworks or have government guaranteed loans);
- ensuring co-ordination between water management institutions and relevant government departments and organs of state in the water management area;
- establishing and maintaining stakeholder consultation forums and mechanisms, with a particular focus on ensuring the participation of poor and marginalised communities; and
- establishing and fostering relationships and credibility within the water management area.

In the new Vaal-Orange CMA, the initial focus should be on coordination and mobilisation of stakeholders, including building legitimacy, trust and strategic relationships with key partner institutions, including establishing and supporting consultative bodies such as stakeholder forums. This institutional coordination function complements the information management function through effective stakeholder engagement to ensure that the CMA understands the needs of its immediate stakeholders and is marketed to water users. Typically, good relations and close cooperation with large, well established and strong organisations such as Rand Water, Sedibeng Water and Midvaal Water Company need to be encouraged and fostered.

These organisations play a vital role in water supply in the catchment and undertake valuable monitoring activities within their areas of jurisdiction and also have meaningful, on the ground interaction with forums in the catchment.

Ultimately there is potential for cost saving (within both the proposed CMA and potentially partner organisations) by removing any duplicated effort and ensuring that knowledge and data are shared across institutions.

#### **7.1.5 Corporate Services, Finance and Support**

The corporate service, finance and administration support functional area will be responsible for collection and administration of water resource management charges, corporate financial management, corporate strategic planning, human resource management, and general administration of the organisation. Some of its key areas of focus include:

- *Billing, revenue collection and management:* focusing primarily on the billing and collection of water resource management charges, and the administration of all activities related to revenue collection, including issuing of invoices and managing debt associated with non-payment, including managing transfer of revenue collection from DWS.
- *Finance:* to ensure general financial sustainability and viability of the CMA through effective financial planning and budgeting and management of accounts for the CMA, including ensuring that financial controls and reporting systems are in place.
- *Administration:* to manage and ensure effective office administration and general logistic / office support is in place, including effective records management.
- *Human resource management:* The human resource development and performance management will be oriented towards the broader human capital management and to ensure employee well-being through processes such as:
  - Development and implementation of human resource systems and policies;
  - Recruitment and retention of staff;
  - Managing staff performance;
  - Managing the internal Vaal-Orange CMA change management and transformation process;
  - Employee assistance programmes;
  - Managing employee occupational safety;
  - Awareness and capacity building programmes; and
  - Coordinated training and skills development interventions.

This function is an integrator, and an enabler of the operations of the core functional elements of the CMA through effective coordination and management of administration and support requirements.

The proposal is that functions that are strategic and governance related are better suited for location at head office for the purpose of ensuring seamless organisational planning and direction. While those functions that are primarily operational in terms of focus are suited for location at regional level where water resource management activities take place. The organisational structure does not depart from the functional design which shows various units associated with each grouping of functions, except for the differentiation in terms of location of specific functions.

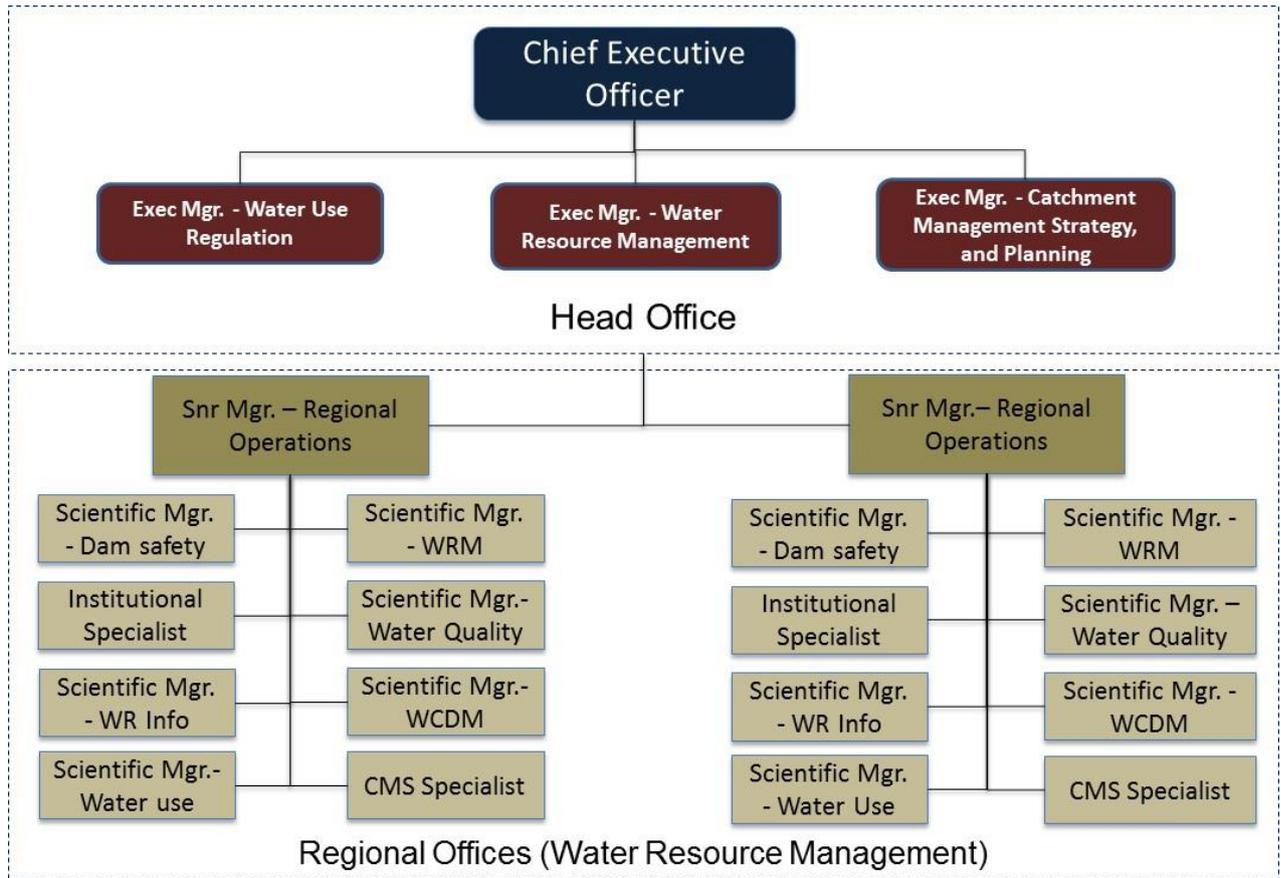


Figure 11: Vaal-Orange high level organisational structure

The regionalised organisational structure above provides a logical foundation for the discussion on the organisational requirements associated with managing water resources in a complex WMA such as the Vaal-Orange. In essence the above diagram illustrates the various CMA divisions in preparation for a discussion on human resource organisational requirements.

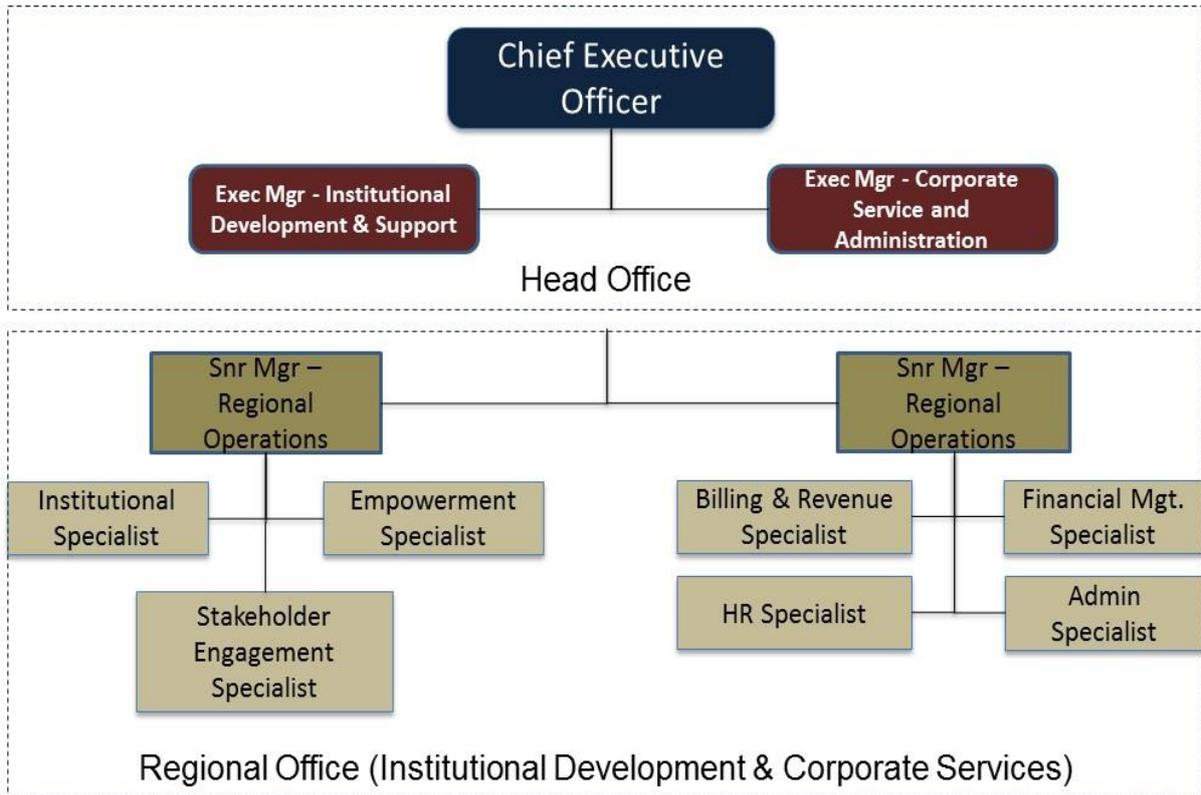


Figure 12: Regionalised organisational design

## 7.2 TIERS OF THE ORGANISATIONAL STRUCTURE

The greatest institutional challenge posed by the creation of the CMA is the tension between local service provision and consistent direction and leadership which tends towards centralised management. Moreover, tensions may arise as a result of observed differences between the Vaal and the Orange catchments, in particular the differing water use tariffs that are determined based on yield and/ or demand. In the Orange catchment, the tariff system is currently determined by yield, which tends to surpass actual demand. While in the Vaal system, tariffs are determined by demand as it tends to surpass yield on an annual basis. According to DWS, approximately 80% of water used in the Vaal area is for industrial and domestic use, with the remainder (20%) used for agriculture and forestry. In the Orange river system, the demand for agricultural water is approximately 90% with the remainder used for industrial and domestic needs. To ameliorate tensions arising as a result of the above issues, the proposed organisational structure is envisaged to operate across three tiers as illustrated in the diagram and described below.

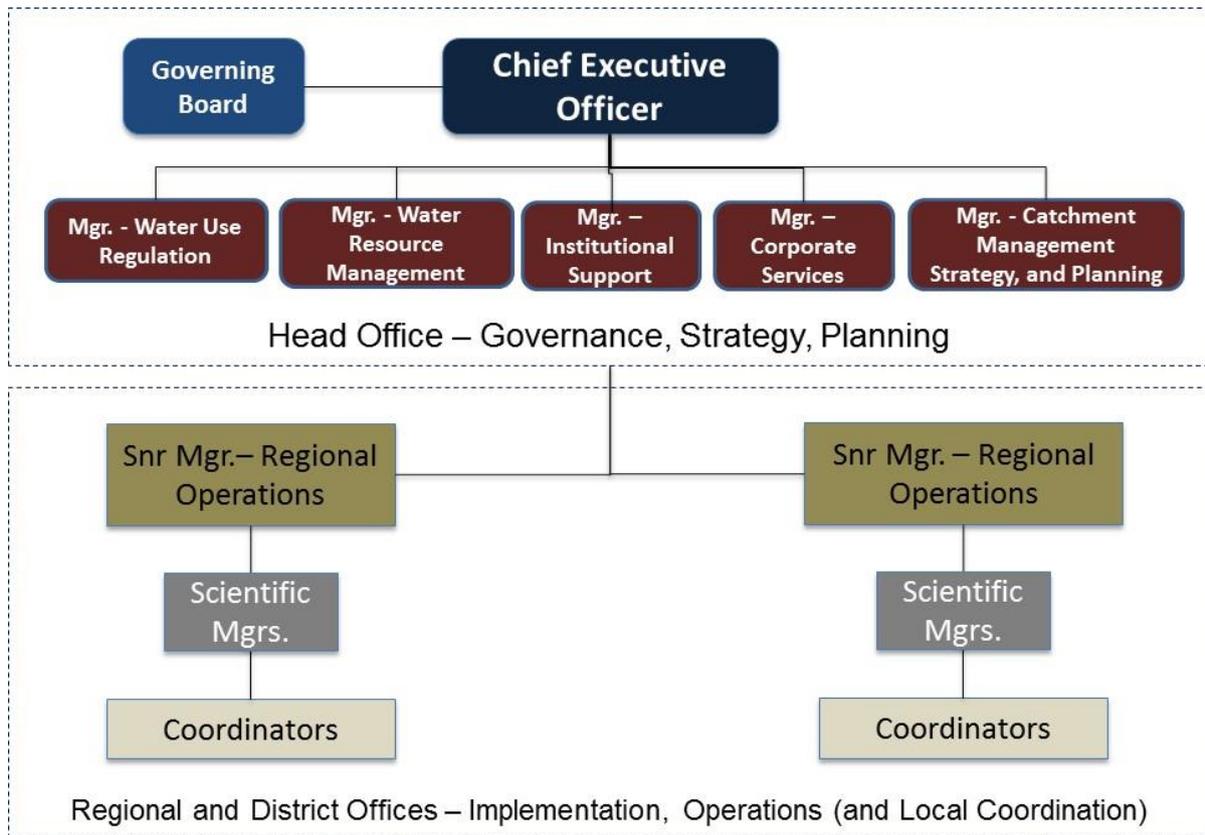
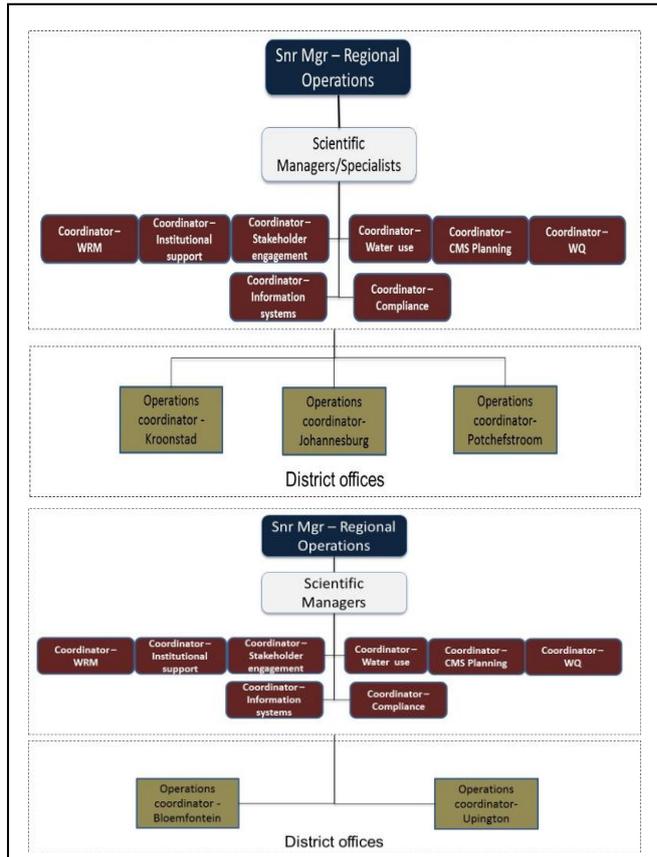


Figure 133: Tiers of the Vaal-Orange organisational structure

**Head Office** - At the most central level a leadership tier is proposed that contains both the CMA board to provide governance and strategic direction and the CEO's office to provide managerial and corporate leadership. All executive managers have offices in this tier, this is the CMAs Head Office. Water resource planning, governance and regulatory decisions that impact on the CMS are managed and supervised at this level, with a coordinating presence at sub-catchment level for purposes of operational implementation, information collection and analysis. The executive management team at Head Office is critical in ensuring that the Vaal-Orange is management as a single WMA.

**Regional Offices** - The next tier has a strong operational focus, both technically and administratively, comprising middle management teams that have technical or administrative capacity to perform integrated water resources management responsibilities. Given the challenges in the Vaal-Orange WMA, this clearly requires a strong regionalised presence that recognises differences in the Vaal and the Orange as constituent catchments of the WMA. Both regional offices are under the supervision of senior managers, and the proposal is that Kimberley and Johannesburg could be towns where these offices located. The designated sub-catchments of each region operate under the supervision of senior managers who report to executive management at head office. The proposed regional reporting arrangements for both regional offices are indicated in the figure below. It is important to note that for the purposes of this document, the towns mentioned are only proposals to be finalised by the board and executive team of the CMA.



**District Offices** - The final tier is at the local level in “district or sub-catchment offices” where tasks will be performed which require a physical presence in close proximity to the users and local stakeholders. These will require user oriented technical, communication and leadership skills but will also need direct interaction with the technical teams in the middle tier to ensure efficient coordination, communication and technical performance. This tier need not be seen as a separate entity from the regional office, rather as an integral part that extends the reach of the CMA in this vast WMA. In fact, the determination of the office locations to allow consolidated management of resources to achieve cost effectiveness in line with Treasury stipulations (on the reduction of costs and exploring efficiencies in the establishment of public institutions) is also an important consideration. Moreover, technological developments and the digitisation of work spaces which may not

require physical offices also presents an opportunity to streamline regional operations.

### 7.3 LOCATION OF OFFICES

The structure proposed envisages the CMA operating from two physical centres that are managed at a regional level. All the initial functions of the CMA are critical in addressing water resource challenges across the Vaal-Orange WMA. Therefore, it is expected that the sub-regional offices will play a role in the performance of all functions (although in varying degrees depending on immediate needs on the ground) as indicated above, supervised by regional managers. The model should allow for a smooth and seamless process that caters for water user needs across the WMA. A Vaal-Orange Steering Committee will be established whose primary task should be to decide on the office locations. Suffice to say for the moment, that the following locations are proposed for consideration:

- Head Office in Bloemfontein,
- Vaal Regional Office in Johannesburg,
- Orange Regional Office in Bloemfontein,
- Vaal sub-regional offices in Kimberley, Kroonstad or Potchefstroom, and
- Lower orange sub-regional Office in Upington.

These offices will be heavily focused on the effective monitoring of both the regulatory compliance and water use management across the WMA. A comprehensive knowledge of water laws and

regulations pertaining to surface water resource development, administration and management is critical within each office.

#### **7.4 LEADERSHIP**

Part 2 of Chapter 7 of the National Water Act defines the requirement to appoint members a governing board of the catchment management agency. The board is required to represent the interests of the various stakeholders in a balanced manner. The leadership must facilitate decentralised decision making through engagement and involvement of various water users in processes aimed at making those decisions. Such leadership is capacity oriented and requires that the board takes care to ensure that representatives of all stakeholders have the right skills and acumen to engage on water related issues.

Supporting the board will be an executive body of employees (rather than elected members) who will support the board in the operational management of the CMA. This group completes the leadership team and is envisaged to represent the requisite expertise relevant for water resources management.

#### **7.5 DISTRICT ENGAGEMENT**

A number of “district” units will be established to provide local services. This is anticipated to be largely associated with the field-based verification, compliance monitoring of water use and general information collection on water use to support planning and regulatory functions of the CMA.

Moreover, the primary function of the district offices will be to provide data to the technical teams at head and regional offices through the collection of hard data, and entry of this data in the WARMS system. However, they will also be instrumental in engaging with stakeholders at the most local level to understand the challenges of water users in their respective areas.

The current proposal is for the inspectors within the district offices to report via the Water Use and Catchment Regulation function.

## 8 ORGANISATIONAL REQUIREMENTS

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The Vaal-Orange CMA will require five executive management positions consisting of Executive Managers for Water Use and Catchment Regulation, Institutional & Stakeholder Coordination, Water Information Management, Programmes, Planning and Catchment Strategy, and Corporate Services and Finance. The CMA team is led by the CEO. The company secretary located in the office of the CEO will provide legal service expertise to the Vaal-Orange CMA.

Following consultation with the Gauteng, Free State, Northern Cape and the Northwest regional offices, it is expected that the required number of staff for the local offices must be grounded upon specific water resource challenges at hand in the specific parts of the WMA. The organisational requirements will be determined through an ongoing internal process that was put in place to establish Proto-CMAs. Suffice to say here, that the location of the critical mass of skills is likely to align to areas where water users and related critical infrastructure is located.

It is estimated that the Vaal-Orange CMA will require a staff complement of 243 staff, combining the two previous WMA (Vaal and the Orange). Concluding the organisational requirements will be one of the first responsibilities of the Vaal-Orange CMA Board and CEO.

### 8.1 STAFFING MODEL

Staff have been identified within the existing Gauteng, Free State and Northern Cape Regional units of DWS (Proto-CMA) for the execution of functions which will ultimately become the responsibility of the CMA. Although staff has been nominated that performs current Proto-CMA functions, this document does not seek to match existing personnel to future CMA positions, nor does it seek to allocate all existing posts. Rather, to present a staffing model and its key features. The staffing model presented below is informed by the following:

- Regionalisation of operations – The operational functions of the CMA are likely to be implemented efficiently through a regionalised structure that allows for decision making on operational matters closest to where operations take place. The Head Office then ensures that appropriate reporting on operational matters takes place in line with the CMS and performance requirements;
- Phased approach to capacitating the CMA – The employment and/or transfer of staff is not expected to be a once off event, soon after the establishment of the CMA. The three phases of CMA establishment should play a role in guiding how the Board and CEO gradually build capacity within the CMA;
- Existing staff that performs current Proto-CMA functions – This includes both current staff but also vacant positions which are funded and pending recruitment processes. The nominated staff members have been indicatively allocated to the functional units. Nonetheless, it is not the intention of this business case to resolve transfer of individual staff to specific roles and therefore the allocations of staff in this business case should be considered indicative;
- Location of water resources management infrastructure – The Orange-Vaal WMA is vast as well as having large water resources infrastructure located in the upper part. Therefore, the staffing model proposed here aligns with the type of capacity required to manage and monitor the performance of this infrastructure; and
- Location of water users – Water users in the WMA are also numerous and vary in terms of their water related needs, including the type of compliance monitoring that is required to ensure that

water quality requirements are adhered to. The allocation of staff to various functions should appreciate water user requirements.

The organisational design of the CMA should be influenced by its strategy. Another fundamental and key driver for the organisation is the very large geographic area for this WMA. Most likely, the long travel distances between the sub-catchments could mean that area satellite offices and virtual offices are a potential solution and may be a key part of the business operating model. Ultimately the direction in which the CMA board takes the structure and makeup of the organisation will need to reflect the needs of the agency over time as it evolves and its ability to generate or source the appropriate revenues to maintain its viability. Section 9.2 briefly discusses remuneration, performance management, conditions of employment, human resource management systems and policies that the CMA management needs to take into consideration.

## **8.2 HUMAN RESOURCE CONSIDERATIONS**

The CMA is not yet functional; hence, this means that most of the powers and functions earmarked for assignment to the CMA remain in DWS Regional Offices (Proto-CMA). A gradual process of transferring powers and functions to the new Vaal-Orange CMA should be initiated as soon as the WMA is promulgated and gazetted. Such a process will, however, directly impact on staff currently employed by the Proto-CMA performing water resource related functions. This section discusses some of the key considerations that relate to staff recruitment/ transfer, including remuneration, performance management, systems and policies necessary for effective human capital management.

### **8.2.1 Grading and remuneration**

The topic on remuneration of staff is a vexed one as it affects the organisation's capacity to attract and build its internal capacity and staff motivation. As such, the Vaal-Orange CMA will be a technical institution, with a requirement to enable government to meet its national obligations while also building a reputable international presence through acceptable IWRM practices. This means that it will depend largely on the availability of high level technical and coordination skills to perform its functions effectively. Such technical skills are required for both strategic and operational management. With these issues in mind, three remuneration models are proposed; one for the Board which is based on recovery of expenses rather than a specific salary, another for technical staff which is based on Occupation Specific Dispensation rates (OSD), and non-technical staff of the CMA whose salaries have been aligned with Department of Public Service and Administration "Salaries and Benefits in the Public Service". The salary of the Chief Executive Officer will be benchmarked against the DPSA's "Chief Director" salary level.

### **8.2.2 Transfer of staff**

Section 197 of the Labour Relations Act (LRA) allows for staff to be transferred as part of "a going concern" to another organisation provided that the conditions of service are "substantively the same". As a result, it is proposed that consultation with affected staff take place to ensure that the conditions of employment are at least as good as that which they enjoyed as DWS employees. Where appropriate, staff could be seconded to the CMA within parameters as envisaged in the Labour Relations Act 66 of 1995 (as amended) (LRA). Seconded staff will then be transferred from the Regional Office to the CMA in line with the requirements of Section 197 as mentioned above. Consultation with affected parties is critical and it must be ensured, and where possible written agreements may be put in place, and salaries and conditions of employment need not be less than those applicable currently.

The process of transferring staff involves an intensive process of consultation to agree the following:

- The basis on which staff are identified for transfer;
- The effective transfer date;
- The new conditions of employment including remuneration, leave and other benefits;
- The handling of accumulative leave;
- The new job descriptions, job titles, reporting structures and job grading;
- The handling of post-retirement medical aid funding, if appropriate; and
- Alternatives if staff identified for transfer refuse to take up the new positions.

The consultation process is often lengthy, and an allowance of up to six months should be made for proper consultation to take place.

It is not the objective of this report to determine the impact of the transition on a catchment management agency for individual staff members and this study has not examined staff on an individual basis within existing DWS structures to new roles within the proposed CMA. However, negotiations are ongoing and an agreement for the transfer of staff from the existing department to the proposed CMA is currently under discussion. At this stage, and subject to the conclusion of those negotiations, a likely transfer mechanism appears to be a section 197 transfer under the Labour Relations Act.

### **8.2.3 Matching of current staff to CMA posts**

The idea matching staff to new posts is linked to the issue of staff transfer discussed above. At the time of writing this report, it was not possible to match current Proto-CMA personnel to posts that have been created for the Orange-Vaal CMA. It is expected that due to the sensitivities associated with the transfer of staff, the process to match existing staff should be done as part of the process to negotiate transfers. At this point of the development of this business case, the idea is to use the organisational requirements (see Section 9.2) to guide the DWS internal discussion on the details of the envisaged transfer process.

Matching of staff should not be construed to mean that staff will be downgraded to an un-desirable level. Rather, it must be viewed as an opportunity to upgrade skills and to improve on efficiencies.

### **8.2.4 Performance Management**

Performance management is a two-way process integrating both the organisation and the individual. This is based on the understanding that the success of both the individual and the organisation are interdependent. However, it is not the scope of this document to suggest a specific approach to performance management by the CMA. That responsibility is vested in the board.

### **8.2.5 Organisational systems**

From a water resource management point of view, information management systems are critical. Since the CMA will be required to collect and manage revenue to ensure its sustainability, a standardised revenue management system is desirable. This should be coupled with water resource management systems to capture and management of data. Key among these are:

- Geographical Information Systems;

- Hydrological Information Systems;
- Supply chain Management System;
- A standardised billing system;
- WARMS;
- Waste Discharge Charge System; and
- General administrative systems for finance and HR.

### **8.2.6 Organisational policies**

It is important to ensure marketability and stability from the early stage of CMA establishment. From human capital management perspective, organisational policies are critical. A table of contents for a typical set of policies would include sections on:

- Employment practices;
- Performance management;
- Salary administration;
- Leave;
- Employee benefits;
- Labour relations;
- Discipline and rules; and
- Training and development.

The DWS is currently developing a “Starter Pack” that will provide a range of pro-forma policies and tools that CMAs can use as the basis for their own policy and systems development. Human resource aspects of this starter pack have been identified as critical, together with the financial aspects.

## 9 FINANCIAL ARRANGEMENTS

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Whilst there are many factors that will determine the feasibility of the establishment of a CMA, and indeed any organisation, Financial Viability is arguably one of the most important aspects in determining the sustainability of the proposed CMA. The other aspects discussed in this report are also important and can be implemented over time if the financial viability is sound. The financial arrangements and viability requirements, are key to the institutional development process and will remain integral to the longer-term success of the CMA. Luckily, CMAs have a tested predecessor since the Inkomati-Usuthu CMA is functional. Nonetheless, the Vaal-Orange CMA will have to be established and evolve in a complex and changing economic, social and natural environment. In such an evolving environment, it is important to note that the financial aspects will need to be adapted to suit the continual development of the new institution as DWS's responsibility reduces while that of the CMA increases.

Clearly, the CMA's financial arrangements need to support the performance of water resource management functions in the WMA and should provide for an increasing level of responsibility over time. Below, the various sources of funding are discussed together with the financial arrangements as defined in the NWA.

### 9.1 SOURCES OF FUNDING

Inevitably, the establishment costs of the Vaal-Orange CMA are to be funded by the DWS, from its parliamentary appropriation. Water use charges are to be ring-fenced for implementation of water resources management functions in the catchment, not for the establishment of new institutional arrangements. Moreover, Section 84 of the National Water Act (NWA) gives the CMA full authority to raise additional funds for the purpose of exercising its powers and duties. The Act details the sources of funding for the CMA as:

- Parliamentary appropriation;
- Water use charges (possibly including, in the long run, the Waste discharge charge); and
- Other lawful sources, including :
  - i. recreational concessions;
  - ii. license application fees;
  - iii. donor support and sponsorship;
  - iv. contractual payments;
  - v. investment returns; and
  - vi. in-kind contributions and donations.

Clearly, the scope for sourcing additional funds is wide open for the CMA, although these are influenced by broader market forces. The graph below illustrates the funding arrangements for the CMA.

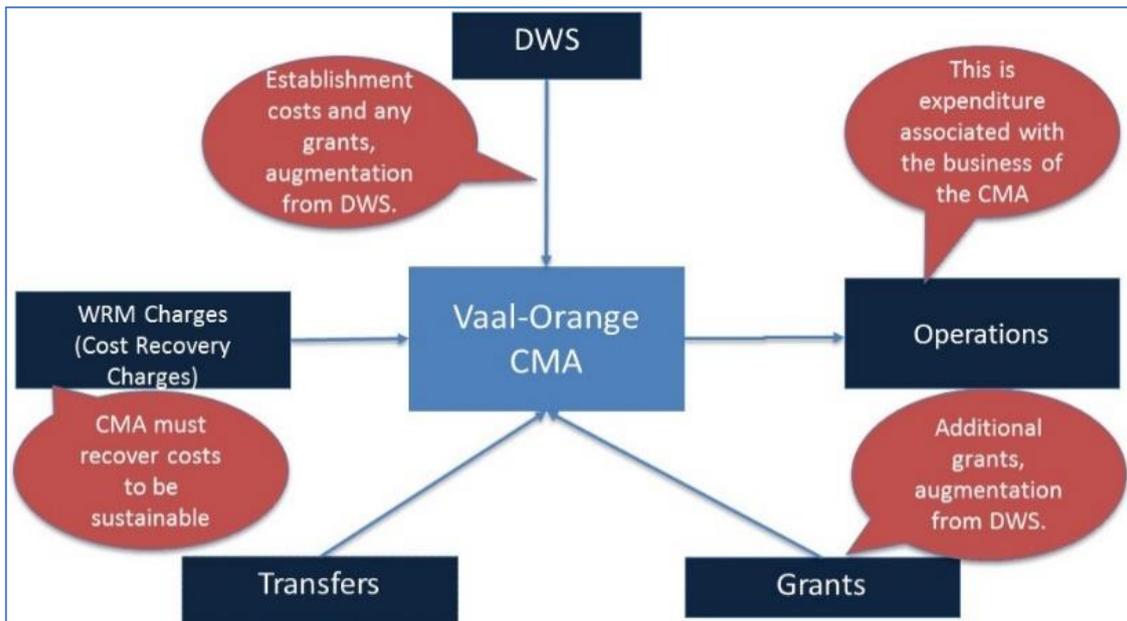


Figure 3: Financial arrangements for the Vaal-Orange CMA

## 9.2 WATER USE CHARGES AND THE PRICING STRATEGY

Once the CMA is operational, funding of the CMA will be derived largely from water users. Water uses as defined in the NWA can be broadly categorised into abstraction related uses, waste discharge related uses and non-consumptive uses. Further, the Act empowers the Minister, in consultation with the Ministry of Finance, and after consulting with the public, to establish a pricing strategy for any water use described in Section 21. Some of the functional activities that could be taken into account for setting of charges by the CMA are tabulated below.

No.	Function / Activities	Abstraction activities	Waste discharge activities
1	Catchment management strategy	<ul style="list-style-type: none"> <li>Resource studies, investigations and integrated strategy development</li> </ul>	
		<ul style="list-style-type: none"> <li>Allocation plans</li> </ul>	<ul style="list-style-type: none"> <li>Water quality management plan</li> </ul>
2	Resource directed measures	<ul style="list-style-type: none"> <li>Reserve determination, Classification &amp; Resource quality objectives.</li> </ul>	
3	Water use authorisation	<ul style="list-style-type: none"> <li>Registration and verification of water use</li> </ul>	
		<ul style="list-style-type: none"> <li>Abstraction &amp; stream flow reduction activities licensing</li> <li>Dam safety regulations</li> </ul>	<ul style="list-style-type: none"> <li>Waste discharge &amp; marine outfall licensing</li> </ul>
4	Control and enforcement of water use	<ul style="list-style-type: none"> <li>Abstraction &amp; stream flow reduction</li> </ul>	<ul style="list-style-type: none"> <li>Waste discharge and marine outfall control &amp; compliance monitoring</li> </ul>

No.	Function / Activities	Abstraction activities	Waste discharge activities
		activities control & monitoring • Dam safety control (private dams)	
5	Disaster management	• Flood & drought management	• Pollution incident planning and response (management)
6	Water resources management programmes	• Integrated programmes • Abstraction programmes • Water conservation & demand management	• Waste discharge programmes [e.g., cleaner technology, dense settlements, waste discharge strategies]
7	Water related institutional development	• Stakeholder participation, empowerment, institutional development & coordination of activities	
8	Water weed control	E.g., hyacinth	
9	Terrestrial Invasive Alien Plant (IAP) (see 6.5.7)	• Control of invasive alien plants with acknowledged negative impacts on water resources, e.g., riparian zones, mountain catchment areas, wetlands and in areas where there could be an impact on aquifers.	
10	Geohydrology and hydrology (see 6.3.5)	• Monitoring groundwater yields & compiling of maps and yield information • Extending and maintaining the hydrological database & compilation of information • Water quality monitoring & compilation of information	
11	Administration & Overheads	Admin & overheads for regional office or CMA	

Table 7: Water resource management activities to consider for pricing purposes

The activities tabulated above form an inherent part of the functional structure of the CMA. Although some functions will require delegation by the Minister at the appropriate time. Effectively, two types of water use charges are provided for in the Act, namely:

- a) **Funding water resource management:** activities such as information gathering, monitoring and controlling water resources and their use, water resource protection (including waste discharge and the protection of the Reserve), monitoring of groundwater yields and related information, and water conservation.
- b) **Funding water resource development and use of waterworks:** the costs of investigation, planning, design, construction, operation and maintenance of waterworks, pre-financing of development, a return on assets, and the costs of water distribution. (Resource management and resource development charges are financial charges, which are directly related to the costs of managing water resources and supplying water from schemes and systems).

The pricing strategy applies only to the use of raw (untreated) water directly from or in respect of water resources, and to the setting of tariffs by the Department and water management institutions established in terms of the Act. It does not deal with treated water supplied in bulk (by water boards, for instance) and distributed to households (via water services authorities), which is dealt with in the Water Services Act, 1997. There is, nevertheless, an explicit requirement in the Act to ensure that the pricing strategy supports the establishment of tariffs for water services in terms of the Water Services Act.

The Pricing Strategy, established under the NWA, will allow DWS, and the CMA over time, to levy charges for most of the water uses defined above, after consultations with the Minister and the public. It is important to note here that, the water uses described in Section 21 are sufficiently different to warrant different approaches to determining charges in terms of the pricing strategy. The overall pricing strategy will therefore comprise a number of distinct components – described below – each of which will be established separately and implemented progressively over time. Sub-sections 10.3 to 10.5 describe the various water uses that are subject to charges.

### 9.3 ABSTRACTION<sup>13</sup> AND CONSUMPTIVE-RELATED USES

Water use charges are already in place for abstraction related uses and are currently collected by the DWS. Charges will apply to three consumptive uses of water which can be expressed in terms of annual volumes of water used:

- Abstracting (taking) raw water directly from surface and groundwater resources (section 21(a));
- Storing water (section 21(b)). In this case the use is abstracting water from storage or, in the case of dams constructed to enhance property values or for recreational use, initial filling and annual refilling [1]; and
- Engaging in a stream flow reduction activity (section 21(d)). Thus far only the use of land for afforestation which has been established for commercial purposes has been declared to be a stream flow reduction activity.

Other land-based activities are being considered and may be declared in future in terms of Section 36.

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<sup>13</sup> Section 21 (a), (b) and (d) of the NWA (1998)

## 9.4 WASTE DISCHARGE CHARGE SYSTEM<sup>14</sup>

The Waste Discharge Strategy will deal with charges for all aspects of waste discharge, as follows:

- Engaging in a controlled activity (section 21(e), and section 37(1)(a) and (d));
- Discharging waste or water containing waste into a water resource (section 21(f));
- Disposing of waste in a manner which may detrimentally impact on a water resource (section 21(g));
- Disposing of water which contains waste from any industrial or power generating process (section 21(h)); and
- Aspects of removing, discharging or disposing of water found underground (section 21(j)).

The system will be based on the “Polluter Pays” principle and will address point and diffuse sources of pollution. It will supplement the more traditional regulatory approach to water quality management, in which standards and objectives are set and enforced, by introducing financial and economic incentives and disincentives to:-

- Ensure that the costs of polluting activities are, as far as possible, borne by the polluter (internalised), and not passed on (externalised) to other water users who could be disadvantaged by the detrimental impacts of waste on water resources;
- Encourage the minimisation of waste discharge; and
- Promote efficient and effective water use.

Charges made under the system will reflect the direct and indirect costs associated with the discharge or disposal of waste. Accordingly, key representative pollutants and the costs for reducing the impacts of various categories of pollutants will be identified, and methods for determining the direct costs of impacts will be developed. Revenues from the charges will be used to fund water quality management activities related to waste discharge or disposal, such as impact monitoring and mitigation, providing assistance to users to reduce the impacts of their discharges or disposal activities, and system administration.

## 9.5 NON-CONSUMPTIVE USES<sup>15</sup>

The Department is considering the introduction of further components of the pricing strategy for the other aspects of water use, which deal with impeding or diverting flow in a watercourse (section 21(c), altering the physical characteristics of a watercourse (section 21(i), and for the use of water for recreational purposes (section 21(k). A strategy has also been developed for charging for recreational use, as a non-consumptive water use, however, there is some institutional clarity required through DWSs Institutional Reform and Realignment process as to roles and responsibilities in this regard.

## 9.6 TARIFF STRUCTURE

The current tariffs for the Vaal-Orange CMA have been segregated per sub area as follows:

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<sup>14</sup> Section 21 (e), (f), (g) and (h) of the NWA (1998)

<sup>15</sup> Section 21 (c), (e), (i), (j) and (k) of the NWA (1998)

Table 8 : Raw Water Charges

Year	Sector/ Use	Approved tariffs	
		Orange	Vaal
2021/2022	Domestic & Industrial	1.71	2.87
	Irrigation	1.06	2.01
	Forestry	-	2.43

Historically these values have been calculated by examining the potential yield within the catchment, apportioning proportionate usage to the key sectors within each catchment area and calculating the tariff by broadly dividing the cost to deliver services by the volumes delivered. This approach has recently been amended to examine licenced usage (derived from the WARMS database), rather than potential yield. As noted in the Table, the Tariffs for the Vaal – Orange have not yet been harmonised with the Orange having very low tariffs compared to the Vaal catchment. Understandably, a decision has been made by the DWS to ensure that the tariff systems for the CMA are harmonised and only one tariff applies to entire WMA.

## 9.7 FINANCIAL SUPPORT

CMA's are primarily expected to collect revenues from water users to fund water resource related activities. However, in addition to primary regulatory and management obligations administered in the public interest, CMA's also have a mandate to achieve the government's political, social and environmental objectives in ways that may not directly benefit water users. As such it is acknowledged that there is a requirement for some level of financial support to subsidise the CMA, ensuring that all of its responsibilities are appropriately discharged. The Department has identified that there is a case for a Public-Interest Operating Subsidy of up to 35% of the total operating cost of the CMA (DWA, 2012). However, the source document does not provide a clear indication of how this will be applied. For example, if the shortfall in collections is less than 35% of the total amount, it is not clear if the Public Interest Operating Subsidy can be used to subsidise tariffs within the CMA or if this is intended as "top up" funding. Further work and engagement with stakeholders are required to resolve this issue.

Issues of ability-to-pay versus the willingness-to-pay are anticipated in the WMA in the short-term and for a young institution these can be challenging to deal with. Initial financial support may therefore be required to ensure short-term viability until there is adequate cost recovery. Should there be short term specific funding issues, for example where recovery is poorer than budget or a specific activity not covered within the CMA's budget is required, a specific motivation may be made for ad-hoc interventions from the fiscus to ensure functional delivery of CMA services. These will be reviewed on a case-by-case basis.

Although the Vaal-Orange CMA will be legally mandated to perform the function of billing and collecting of water use charges, assistance from DWS will be required in the short term to collect water use charges until the institutional and systems arrangements are in place in the CMA.

It is also important to address allocation reform and redress within the WMA, as a national and regional priority, and therefore issues of affordability and equity will require careful consideration.

## **9.8 FLOW OF CAPITAL**

Funds will flow into the Vaal-Orange CMA through the following:

- Water use charges;
- DWS establishment and operational support grants; and
- Other legal sources.

### **9.8.1 Water Use Charges**

Water Use charges levied on water users will be the most important source of income for the CMA. These charges will be levied in accordance with the pricing strategy and approved tariffs from time to time. The Vaal-Orange CMA is unique with regard to the applicable tariff that is charged to water users. While all water management areas use the registered volumes to determine the raw water use charge, the Orange WMA is an exception, with the yield volume used to determine a charge. The Vaal WMA on the other hand uses registered volumes to calculate the charge. Clearly, the Vaal Orange CMA faces an enormous task to consider options to smooth the sectoral water resource management charges in order to arrive at an equitable pricing regime.

Water use charges will flow into the CMA on a regular basis, with large water users billed monthly and smaller users billed six-monthly. Debt management is a serious concern for business in general and the CMA will be no exception. Initially the CMA will be dependent on DWS for its billing, collections and debt management. As part of the delegation process, the CMA will, in due course, collect these charges and be responsible for debt management. The efficiency of collection of charges has been a matter of concern in some parts of the country. Some lessons have been forthcoming in Mpumalanga, where efficiency seems to have been particularly low, and at one point was in the order of 40%.

It is expected that the CMA will improve on the collections record of DWS as the CMA will probably be closer to its customers and will have a more engaging relationship than is the case with DWS at present. This will be an important management challenge for the CMA, yet one that must be faced head since water use charges remains the primary source of income and cash-flow for the CMA.

Initially, the flow of capital into the CMA is unlikely to be matched requisite cost recovery. The establishment grant from DWS will cover the first year's operating expenditure of the CMA and the "once-off" establishment costs of the CMA. The proposal is that these funds should be transferred into the CMA account as a lump sum early in the establishment of the institution, to enable it to continue the establishment process without encountering cash-flow constraints.

The CMA Board and the CEO will develop a 3-year budgetary cycle and motivate for ongoing operational support grants that are required by the Vaal-Orange CMA to make effective planning and execution possible. This can be transferred at the beginning of each financial year as a lump sum deposit, after the necessary adjustments for incorrect assumptions about key determinants of the budget e.g., inflation. A lump sum transfer is justified (recruitment of CEO and CFO are prerequisites), as the funds are relatively small and interest accruing over the financial cycle will be limited. Significantly, lump-sum transfers will enable the CMA to conduct its operations and undertake its functions without encountering cash-flow constraints.

### **9.8.2 DWS Establishment Grant**

The CMA should not be expected to bear the costs of establishment of the CMA. As the establishment of the Vaal-Orange CMA is a new beginning in terms of being a functional CMA, it is considered prudent for DWS to provide an establishment grant to cover the upfront establishment costs of the CMA.

A lump sum establishment grant should be provided by DWS at the pre-establishment phase to ensure that the CMA will not run into financial problems in terms of funds availability to implement the establishment of the institution. A lump sum transfer is justified as the funds are relatively small but the consequences of not having the funds available timeously could hamper the establishment process and delay operations of the CMA.

In addition to the initial establishment grant, the CMA may require additional funding to bridge any deficit that may be expected from water use charges. A realistic budget should be prepared by the CMA indicating anticipated costs and most likely income from WRM charges (taking account of possible collections difficulties). Any realistic deficit between the budgeted costs and income from WRM charges should be supplemented by an operational grant by DWS to enable the CMA to effectively discharge its responsibilities in the CMA.

It is important that these funds are made available to the CMA at the beginning of each financial period to ensure effective operations of the CMA. Any lack of funding will result in the failure of the CMA to perform its duties and functions effectively and could possibly result in the demise of the CMA.

In preparing the budgets for the CMA, allowance also needs to be made for resource capacity. It is reasonable to expect that the necessary skills and capacity may not be available at the outset to effectively perform the functions of the CMA. Certain services will therefore need to be outsourced to appropriate service providers and this may also need to be funded from the DWS operational grants (to meet potential shortfalls from the WRM charges income).

### **9.8.3 Alternative revenue improvement options for the CMA**

The need for cost recovery is embedded in the definition of water pricing which defines it as 'applying a monetary rate or value at which water can be bought or sold'(EEA Technical Report No. 16, 2013)<sup>16</sup>. Given the fact that the Vaal and the Orange apply different calculations to arrive at the water use charge, it is important to consider some alternatives in order to facilitate a discussion and to guide future planning aimed at sustaining the new CMA. The current status seems to suggest that improving on inefficiencies in collections and debt management, the CMA is likely to be viable. In the South African context, the pricing regime needs to facilitate the achievement of a number of principles, including Social Equity, Ecological Sustainability, Financial Sustainability and Economic Efficiency<sup>17</sup>.

Starting with the current water use charge regime in the two WMAs, this section discusses a number of alternatives that the DWS and the CMA could explore further to improve chances of sustainability of the proposed CMA. The question to be answered in this section is "What is the optimal funding alternative to ensure the viability of the Vaal-Orange CMA"? Given the environment within which the CMA will operate, revenue collected should enable the CMA to attract a reasonable level of

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<sup>16</sup> Assessment of cost recovery through water pricing, European Environmental Agency Technical Report No. 16 (2013)

<sup>17</sup> Revised Water Pricing Strategy for Raw Water III for comment, DWS (2013)

investment, ensure availability and acceptable standard, operational cost of the service, and more importantly, the efficiency of management and distribution of raw water.

For the purposes of this business case, not a lot of alternatives exist that could be explored until the Revised Pricing Strategy is adopted into policy by DWS. Hence, the Revised Pricing Strategy (DWS, 2013) “recognises that the financial viability of CMAs will need funding from the fiscus to support the establishment of the CMAs, and for ongoing support for certain functions and in certain areas. Further, the revised pricing strategy recognises the under-recovery of the WRMC across the country, and that a period will be needed to allow DWS and CMAs to improve these recovery rates. Until improved rates have been achieved, CMAs (and proto-CMAs) will need fiscal support to cover the under-recovery”<sup>18</sup>. In the light of the above, the following alternatives are worth discussing:

- A. **Retaining current arrangement but improve efficiency** – the CMA can inherit and continue with the current water use charge regime. Contextual circumstances such as water availability, use and pollution vary in the two catchments of the WMA and for this reason, retaining the status quo has the following advantages:
- The CMA is likely to ensure its legitimacy and user buy-in if it continues to accommodate sensitivities prevalent in the WMA;
  - Water quality and availability differences are catered for in the current regime. The Vaal is prone to industrial and urban pollution due to economic and settlement developments in the upper catchment. While availability exceeds demand and there is also less pollution due to agricultural return flows in the Orange; and
  - The current status enables equity based on two key water resources management requirements – availability and quality management. The CMA has an opportunity to phase in other user charges over the next time (ten years following establishment)<sup>19</sup>.

However, for the current status to support the financial viability of the CMA, efficiencies in billing, revenue collection and debt management are important prerequisites. At the same time, maintaining the current regime in a new CMA may prove difficult, since the reconfigured WMA is expected to be inclusive, while recognising sub-catchment differences. Consequently, water users in the upper end of the WMA may hesitate to throw their weight behind the CMA, and therefore impact negatively on the legitimacy of the CMA.

- B. **Progressive smoothing of the pricing regime** – this alternative is concerned with slow, periodic increases on capping, targeting those water users in the Upper and Lower Orange who discharge contaminated return flows into the resource without any changes on the Vaal side of the WMA. This alternative requires constant and rigorous consultation as the CMA stabilises itself as a water resource management institution. The second phase of the smoothing process could see a general increase on capping and the incorporation of the rest of the user charges in the entire WMA in terms of the Revised Pricing Strategy. Clearly, this is the ultimate goal of the pricing strategy, and

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<sup>18</sup> Revised Water Pricing Strategy for Raw Water III for comment (DWS – 2013)

<sup>19</sup> Ensures that those users who get the highest assurance of supply pay for that privilege and that users who use water for commercial purposes pay the full cost of water in the long run (DWS, Revised Water Pricing Strategy for Raw Water III for comment, 2013).

it depends on the adoption of the pricing strategy as a policy. The success of this alternative depends on the guidance and leadership by the DWS. Therefore, the new CMA has little leverage except to engage and influence DWS in this regard.

The advantage of this alternative in improving the viability of the CMA is clear. However, it is likely to result in delays due to contestation among key water users, and due to its economic implications to water users, it has a potential to impact negatively on the legitimacy of the CMA.

Note: Implementation of the waste discharge charge will require the CMA to have a strong Enforcement and Compliance function, specifically capacitated to address water quality issues in the WMA.

#### **9.8.4 Budgeting per Catchment Area**

As discussed above, the CMA business planning will include a 3-year budget. Regions must subdivide their total budget allocations for the budgeting cycle between catchment areas in respect of the under mentioned water resource management activities provided for. The relevant budget figures must include the cost of gathering information, monitoring, public participation and support, where applicable. Typical expense headings will be:

- Corporate Services (Finance, Admin, HR, Procurement, Revenue);
- Functional Support;
- Planning and Implementation of Water Resource Management Strategies;
- Institutional & Stakeholder Coordination;
- WARMS, GIS, Hydrological data management;
- Dam Safety Control;
- Water Quality Management & Pollution Control;
- Solid Waste Control;
- Water Allocation;
- Water Use Control;
- Strategic projects;
- Water Conservation; and
- Demand Management.

In addition to the above budgeting, the CMA needs to take cognisance of the specific issues in the CMA which may require additional funding, for example:

- Unlawful use of water for irrigation purposes (estimated at 175 million m<sup>3</sup>/annum);
- Water conservation and demand management (currently an average of 36 % water losses estimated) and inability of municipalities to reduce these losses;
- Dealing with acid mine drainage or underground mine water induced salt loading;
- Reduction in recharge due to re-use of water from the return flows from the various wastewater treatment works;
- Water quality challenges from the coal mining industry;

- Climate change impacts; and
- Free Basic Water as provided for by the equitable share grants to municipalities.

## 9.9 FINANCIAL SYSTEMS ARRANGEMENTS

Financial system arrangements will consist of the following key aspects:

- *Tabling of plans:* The Governing Board must approve and submit a strategic plan to the Minister;
- *Submission and approval of budgets:* The Governing Board approves the budget and submits it to Minister;
- *Funding/ Budget:* cost recovery (water charges), grants-in-aid, donations and DWS subsidies / financial aid;
- *Spending autonomy:* The Entity is autonomous within the limits of relevant legislation and agreements;
- *Pricing:* By the Entity, in line with the national Pricing Strategy on Raw Water;
- *Borrowing powers:* the CMA will need specific approval from the Minister of Finance for borrowing, but should only require overdraft facilities for working capital;
- *Surpluses/dividends:* The Entity may not make a profit;
- *Accounting basis:* International Financial Reporting Standards (IFRS); and
- Compliance to the Public Finance Management Act (PFMA)

Financial Systems arrangements will have an important bearing on the financial viability of the CMA. As the CMA evolves, so too will its financial arrangements. At the outset, the CMA will receive assistance from DWS for billing and collection of water use charges, but as the CMA develops and matures, these functions will be taken over by the CMA.

In Year 1, it is anticipated that the regional office of DWS will bill and collect revenue on behalf of the CMA. DWS will assume revenue collection risk in the transitional period. The existing system and business process for billing and collection of water use charges, with a consolidated invoice and centralised management of the system, that is well established in DWS and will continue for at least the first year of operation of the CMA. Critical organisational development matters such as the regulatory compliance and internal capacity of the CMA will be addressed during this period.

In year 2, the CMA will develop its offices and premises and substantial funding will be required to start implementation of systems, specifically billing and revenue management systems. As the CMA gathers momentum, this period will also see secondment of staff into the CMA as the CMA gets processes in place. The early development stages of the CMA will have a strong focus on customer relations as the CMA tries to build its credibility with its customers. Relationship building will also be extended to all stakeholders in the CMA. This will entail building trust and credibility by understanding the issues in the CMA and customers' needs, including matters of licensing, billing, tariffs, etc.

In building relations with customers, it will be vital for the CMA to have access to key systems such as the WARMS database so that it can ably assist customers with queries. It is important for the CMA to gain access to important information about the catchment and its users soon after establishment. This will help develop the confidence of customers in the CMA.

During this stage, it is expected that the CMA will start taking on more responsibility away from DWS as its development gains momentum. Integration of systems and processes will be vital in this period as the CMA commences to undertake billing and revenue collection.

During establishment, the centralised DWS billing system will be used for billing, debt management and financial accounting, with WRM charges submitted to DWS by the CMA. Transfers from the trading account would be made to the CMA account according to the arrangements agreed to in the CMA business plan. These transfers would include funds generated through WRM charges and establishment support from DWS. Operational support from DWS may also be required, through parliamentary appropriation.

In year 3, consolidation of the business of the CMA will occur as the CMA would have assumed its fiduciary and governance responsibilities. By this time, most Proto-CMA staff would have been transferred to the CMA. The WARMS information system will be operational within the CMA, including HR systems and the all-important financial systems, notably billing and revenue collection systems. If revenue recovery rates are ahead of planned recovery rates, the overall revenue and debt management function will be decentralised to the CMA. Account payments would be directly to the CMA account and relevant entries would be made by the CMA onto the billing system.

As the legally mandated CMA assumes more and more of its WRM functions, limited or no payments would be due to DWS for WRM functions. The CMA would then be responsible for disbursing payments for levies such as the WRC levy and/or Working for Water (WfW) projects. Risk is however shared between the CMA and DWS, with the business plan as the baseline for performance management.

The Department's process of redress and water allocation reform may also result in additional operational support being required from DWS, especially where subsidies are in place for the agricultural and forestry sectors. In addition, should users not be able to afford the water user charges, operational support may be required from DWS to meet the shortfall.

In Year 5, Risk is shifted to the CMA in its entirety, with the CMA fully accountable for fiduciary management and corporate governance. The CMA will assume its full authority functions, it will be responsible for all aspects of the operations of the CMA from tariff setting and revenue management to HR and IT responsibilities. At this point, the CMA may develop its own billing, debt and/or financial management systems, with oversight and support from the DWS.

### **9.9.1 Proposed Establishment and Operational Costs**

The financial analysis has been based on a simple financial model for the CMA for a 3-year period, starting in 2020/21 to 2022/23. It is based on detailed expenditure, differentiating salary, overhead, outsourcing and capital repayment costs, with recovery through a combination of water use charges and financial support. It takes account of a number of issues, including non-payment by users – under recovery. As the establishment of the Vaal-Orange CMA effectively develops from scratch, this business case is an important starting point for this analysis. Table 9 provides details of the initial establishment costs associated with setting up the CMA. The costs are expected to be incurred for a two-year period as indicated in the table.

Organisational establishment costs include:

- The process to select and appoint the governing board and initially building its capacity (additional to the cost of the Board operations and administration covered in the CMA expenditure) as well as change management processes;

- The process to select and appoint the CEO;
- Processes to set up the CMA business and information management systems to enable its operation; including the first business plan and human resources strategies;
- Processes to capacitate the CMA in terms of appointing or transferring its initial staff and developing the first revised business plan; and
- Funding the initial capital expenditure on communications, computers and obtaining and/or remodelling premises.

Initial WRM costs (depending upon funding available) may include:

- extending stakeholder participation, initial empowerment/capacity building of disadvantaged communities, and awareness creation around WRM and CMA establishment (some of which would be done through the IWRM project); and
- developing the first catchment management strategy for the entire WMA (an initial function of the CMA).

The various elements of the financial model are illustrated in the table that follows below. The table illustrates the costs associated with the initial establishment of the CMA. At the same time, the CEO will be required to recruit support staff for support in managing the relevant organisational development activities, including coordinating stakeholder participation in board activities. Further, the CEO will require support in operationalizing the staff migration and change management process. All these items are treated as part of the CMA establishment item in the table below.

<b>Vaal Orange CMA</b>			
	<b>2020/21</b>	<b>2021/22</b>	<b>2022/23</b>
	<b>000</b>	<b>000</b>	<b>000</b>
<b>Revenue (R'000)</b>	<b>277 041</b>	<b>293 664</b>	<b>311 284</b>
Tariff revenue (WRMC)	277 041	293 664	311 284
Augmentation subsidy	-	-	-
Other revenue	-	-	-
<b>Expenditure (R'000)</b>	<b>150 999</b>	<b>188 059</b>	<b>197 663</b>
Staff costs	102 322	108 462	114 970
Board costs	1 164	1 234	1 308
Employee costs	101 158	107 228	113 662
Executives	4 537	4 809	5 098
Non-executives	96 621	102 419	108 564
Consultants	18 724	19 847	21 038
Travel and subsistence	7 341	7 781	8 248
Laboratory costs	-	-	-
Other operational costs	22 612	23 969	25 407
Establishment Cost	-	28 000	28 000
<b>Operational surplus or deficit</b>	<b>126 042</b>	<b>105 605</b>	<b>113 621</b>
Water volumes (ML)	7 504 506	7 504 506	7 504 506
Tariffs (R/kl)	3,69	3,91	4,15
Total assets (R'000)			
Total liabilities (R'000)			
Augmentation subsidy	126 042	105 605	113 621
Establishment Grant	-	28 000	28 000
Public interest grant	39 260	48 895	51 392

Table 9: CMA costs and projected revenue

The costs illustrated in Table 10 above are based on the existing budgets for the Vaal and Orange Proto-CMA's. Unlike a fully functional CMA, one would expect that the Vaal-Orange CMA would experience a delay between establishing the governance structures and the development of an operating expenditure. There will be a process to appoint a new Governing Board as well as a process to appoint a CEO. During this period, considerable effort will be applied in engaging stakeholders and some service provider support will be sought.

In addition to the routine operating expenditure, the process of setting up the CMA would incur various once-off costs. Such costs will be funded by DWS, and they may distinguish between those that are necessary for the CMA organisational establishment and initial WRM costs associated with functions that may also be funded through water use charges (and therefore may not require DWS support in the first few years). The proposal makes certain assumptions about this support, which are not dissimilar to the figures outlined in **Error! Reference source not found.0**.

The actual CMA expenditure will vary from the numbers in the table below, but they are indicative of the level of expenditure for the purposes of this high-level analysis.

### 9.9.2 Projected revenue

The CMA costs estimated above must be covered by user charges (under the pricing strategy) and/or by transfers from the fiscus (via DWS budgetary process), although other donor transfers for specific initiatives may be possible. This section describes four scenarios, representing different assumptions about user charges and financial support to CMAs. The aim of these is to illustrate the impact of different financial support on the CMA viability in the short and long term. The scenarios relate to:

1. **No financial support:** funding only through water use charges, with different assumptions about users and billing recovery rates. It is expected that this water use charges will eventually include a waste discharge charge that the current pricing strategy does not include. Ceteris paribus, this first scenario should enable the CMA to attain and retain its viability, with revenue collection improving over time. This scenario could be achieved despite the capping of non-domestic water use charges in terms of the pricing strategy. The revenue component illustrated in Table 10 above represents this scenario.
2. **Augmentation grant<sup>20</sup>:** This is the operating subsidy that DWS transfers to the CMA to cover revenue lost due to the price capping for non-domestic water uses. This scenario might also include supplementation of revenue due to the under registration in the water management area where yield volumes is more than registered volumes. It must be noted that this is not a stand-alone scenario since it implies that the CMA is reliant on the DWS to sustain its operations. Nonetheless, it is expected that during the early stages of the CMA establishment, while the CMA legitimises its existence, this additional source of revenue is likely to provide additional income. This scenario is represented in Table 10 as augmentation subsidy.
3. **Public-interest operating subsidy<sup>21</sup>:** DWS transfer for functions performed by the CMA that are in the public interest, such as participation, capacity building and water allocation to emerging farmers, rather than for direct water user benefit. The public interest grant is based on the recognition that some CMA functions are in the public interest and should therefore be funded from the fiscus. For completeness, this scenario is also captured in the table above.

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<sup>20</sup> Assumptions of CMA financials, DWS

<sup>21</sup> Assumptions of CMA financials, DWS

In all of the scenarios, the CMA costs were escalated by an assumed inflation rate of 6% from the base costs in 2020.

### 9.9.3 No financial support: Water use charges

The combined registered water use for urban (domestic-industrial), agriculture (irrigation) and forestry (stream flow reduction activities) for the Vaal – Orange totals 8 542 million m<sup>3</sup>/ annum. The volumes per sector are shown in **Error! Reference source not found.**

Table 10 : Registered Water use volumes per sector (million m<sup>3</sup>)

	DOMESTIC & INDUSTRIAL	IRRIGATION	FORESTRY
Vaal	2 618 768 302	1 355 209 072	11 710 000
Orange	518 211 000	4 038 789 000	-
<b>Vaal-Orange</b>	<b>3 136 979 302</b>	<b>5 393 998 072</b>	<b>11 710 000</b>
<b>Total</b>	<b>8 542 687 374</b>		

Table below indicates the total costs divided by total volume and the user charges required for full cost recovery within the CMA. While it is possible to have the CMA fully self-sufficient, it is an unlikely scenario due to a number of reasons. The first is that the CMA would not be able to collect 100% of the charges, especially from year 1 and therefore requires an establishment subsidy to cover the first 2 years of costs. This timeframe also allows for the collection system to be updated and passed to the CMA to ensure more effective collection of charges. Since current collection is between 40-80% of charges, a reasonable assumption can be made that collection of charges shall never exceed 90%. The second is that there is currently an agricultural cap of 2c/kl plus CPI, and the current charges when the system stabilises is more than double the cap amount.

Table 12: Full cost recovery and user charges for Vaal water Management Area

Full cost recovery through charges						
Year	1	2	3	4	5	6
<b>Total CMA costs (R'000)</b>	144 102	180 748	189 913	R222 785	R236 152	R247 607
<b>Approved WRM charges (c/m3)</b>	2.96	3.64	3.49	3.71	3.90	4.13
<b>WRM charges (c/m3) Full Cost</b>	4,83	5.31	5.38	5.60	5.94	6.22

The Table 13 below represents the implications of maintaining the WRM charge cap on agriculture and forestry as per pricing strategy, which was set at 1.96c/m<sup>3</sup> in 2018 is now approximated at

2.36c/m<sup>3</sup> for the 2020 financial year (increased by CPI). The analysis is based on including the establishment grant and water use charges for full cost recovery, except that there is a need for a charge-capping subsidy to be transferred to the CMA upon delegation of the charge collection function. The basis of the cap is that this is an affordability issue that must be addressed through fiscal support (not cross-subsidisation from domestic and industrial users) and that domestic and industrial users do not generally have an affordability challenge. This scenario partially addresses the affordability issue for agriculture and forestry but would need to be implemented concurrently with subsidisation and/or management of under-recovery over the medium term. It also implies that municipal users pay over 100% higher charges than agriculture, which may lead to conflict between users with some negative impact for the CMA in the long-term.

**Table 13: Charges with establishment and agricultural grants (capped charges)**

Establishment grant and Agricultural capping						
Year	1	2	3	4	5	6
WRM charge for agriculture (c/m <sup>3</sup> )	2.41	2.59	2.7	2.95	3.10	3.28
<b>Establishment grant (R'000 )</b>						
Establishment of CMA						
HR Support & Project Management						
Appointment of Board						
Setting CMA Business	28 000	28 000				
Appointment of CE and Executives (CEO), development of first order BP, and Development of CMC						
Pricing policy capping grant (R '000 )	67 238	73 899	74 875	77 975	82 653	86 663

The public interest functions are collective in nature, required to attain government's social and economic goals and cannot be achieved without collective effort and more effectively and efficiently delivered by collective effort. The public interest grant reflected in Table below recognises that some CMA functions are in the public interest and should be funded from the fiscus. This is implicit in the current situation where a part of the total DWS Regional Office proto-CMA costs is not allocated for recovery by WRM charges.

**Table 14: Charges with a public interest operating subsidy**

Public Interest Operating Subsidy						
Year	1	2	3	4	5	6
WRM charge (c/m3) Full Cost	4.83	5.31	5.38	5.60	5.94	6.22
Public Benefit grant (R '000)	28 816	31 671	32 089	33 418	35 423	37 141

#### 9.9.4 Financial support to the CMA

The aim is not to make the CMA financially self-sufficient, as the reality is that some form of fiscal financial support is required. Table 15 below indicated the combination of support as described above.

**Table 15: Financial implications for subsidy to the CMA**

Year	1	2	3	4	5	6
Establishment grant (R'000)	28 000	28 000	0	0	0	0
Pricing policy capping grant (R '000)	67 238	73 899	74 875	77 975	82 653	86 663
Public Benefit grant (R '000)	28 816	31 671	32 089	33 418	35 423	37 141
<b>Total subsidy per annum (R'000)</b>	<b>124 054</b>	<b>133 570</b>	<b>106 964</b>	<b>111 393</b>	<b>118 076</b>	<b>123 804</b>
<b>Approved WRM charges (c/m3)</b>	<b>2.96</b>	<b>3.64</b>	<b>3.49</b>	<b>3.71</b>	<b>3.90</b>	<b>4.13</b>
<b>WRM charge for agriculture (c/m3)</b>	<b>2.41</b>	<b>2.59</b>	<b>2.70</b>	<b>2.95</b>	<b>3.10</b>	<b>3.28</b>

The establishment grant is required to ensure that the CMA is set up and functional. The pricing policy cap is to ensure affordability in the agriculture and forestry sectors. The public interest grant provides for a more equitable reduction in charges and covers charges which are in the public interest.

#### 9.10 FINANCIAL VIABILITY CONSTRAINTS

In order to consider a CMA financially viable, one might need to consider whether the CMA can operate sustainably by covering its expenditure with its own revenue over the foreseeable future. As such, there are several critical risk areas for the financing of the CMA, any one of

which may result in the need for a change in the CMA expenditure or sources of funding, thereby making the CMA less financially viable or sustainable. From understanding the context within which the proposed CMA shall be operating (and of course with lessons from the BGCMA and IUCMA operational period), the following issues should be considered, and management solutions need to be explored to mitigate their impact in order to ensure the financial viability of the CMA:

- Dependence of the CMA on government financial support due to lower water use charges – the current capping of water charges means that CMAs cannot generate revenue that meets the cost of operating the institution;
- Incomplete validation and verification and registration of water users, thereby limiting the possible revenue and potentially damaging the credibility of the CMA for the registered users;
- Reductions in water use due to improved authorization & enforcement of license conditions (or compulsory licensing), particularly in water-stressed parts of the WMA;
- Non-payment of charges by registered water users, either due to unaffordable charges and/or non-acceptance of the legitimacy of the charges (willingness to pay);
- Inability to efficiently implement the administrative components of the billing and collection system by the CMA either due to inadequate capacity or system inefficiencies;
- Poor cash-flow management of the billing and collection process, resulting in delayed payment by water users mainly due to legacy issues from the Water Trading Entity; and
- The inability of the CMA to raise capital loans at low-interest rates, due to lack of a financial history.

## **10 INSTITUTIONAL AND GOVERNANCE ARRANGEMENTS**

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### **10.1 CORPORATE GOVERNANCE PRINCIPLES**

The sustainable management of water resources at catchment level (WMA) is a result of water user cooperation as well as set management arrangements as agreed between identified users within a Water Management Area (WMA). The institutional arrangements refers to the agreed and identified role and/or impact of water use stakeholders within WMA therefore needing management arrangements to manage regional (CMA context) water resources sustainably. Secondly, governance arrangements refers to set structures, administrative, management, legal tools, processes and procedures to help manage water resources (CMA Context ) in a sustainable manner within a WMA. The achievement of these two elements influence the Catchment Management Strategy (CMS) and ultimately the National Water Resource Strategy.

The narrative above is a principled reflection of what influences the corporate form, structure (including governance) and functions of the CMA. It is therefore important that it is commonly understood and implemented accordingly. Sustainability is not only a primary issue that needs to be dealt with by the CMA but the economic impact that the actions of the CMA will have on water users within its borders will be an indicator of the success for the institution.

### **10.2 GOVERNANCE AND INSTITUTIONAL CONSIDERATIONS**

To establish sound governance and institutional arrangements, the process to establish the CMA must take into account a number of considerations. These are detailed below for the attention of the CEO and the Board of the CMA.

#### **10.2.1 Governance of the CMA as a public entity**

As a public entity, the Governance of the CMA must reflect the following:

- CMAs must be managed on business principles whilst being vehicles for service delivery of essential services for government;
- CMAs should be seen as a vehicle for government's achievement of broad strategic socio-economic objectives as well as those of the department;
- CMAs need to have corporate governance (King IV Report) and financial performance (PFMA) as foundation for success of CMAs; and
- There is therefore a need for a common understanding of organization's mandate by the executive authority and board of the CMA.

Clearly, governance and decision making at CMA level is a user-based process that requires the understanding and appreciation of stakeholder issues and needs within the confines of corporate governance and requirements for sustainable financial performance.

#### **10.2.2 The enabling instruments**

The CMA must consider the following enabling instruments for institutional governance and ultimately the sustainable management of water resources:

- National Water Act, sections and /or schedules of the Act that relate to the establishment and operation of CMAs;
- Public Finance Management Act;
- Articles of association;
- Shareholders compacts; and
- Board charter, including the board committee terms of reference that describe the role of each committee and guide how these committees should perform their duties.

The CMA as a service delivery entity must reflect and achieve the principles and the elements indicated above. While corporate governance in the public sector must reflect these broad principles and good corporate governance, it is also required that those public sector institutions in the water sector should contribute to achieving government's objectives as outlined in the official strategic development goals and vision as set for South Africa. The current focus is around infrastructure development, economic development, employment creation and sustainable management of natural resources, in this context water, is a driver for socio-economic development. The CMA must achieve government's transformation objectives, relating to service delivery (Batho Pele), employment equity and preferential procurement.

### 10.3 CMA GOVERNING BOARD

#### 10.3.1 Role of the CMA Board

Based on the nature of the CMA as a public entity with service delivery and stakeholder participation elements, the board will have to have strong integrated management, financial management, legal, human resource and participatory management capabilities. The following are the important strategic considerations for the CMA Board and the executive administration:

#### **Primary Principles (PFMA)**

- Financial accountability (authority)
- Annual budgets and corporate plans
- Annual reports and financial statements
- Financial risk management
- Internal audit
- Procurement and provisioning
- Income and expenditure control

#### **Secondary (corporate governance)**

- Governing Board
- Defined roles & resp.
- Accountability
- Board composition (non/executive)
- Mix composition
- Board charter
- Shareholders compact
- Director development & training
- Risk management
- Board committees
- Monitoring (board & agency)

The role of the CMA board will be as set out in the Act as well as the service level agreement between the Executive Authority (Minister and Department) and the Accounting Authority (CMA Board). The agreement will require a board charter that will outline the roles, functions and conduct for board members. The charter will be tailored to meet conditions in the Vaal-Orange CMA. Among a number of roles for the board the following are worth mentioning:

- Ensure that CMA contributes to the achievement of national development objectives and the strategic objectives of DWS;
- Provide financial management oversight on the CMA;

- Review and monitor the CMA's performance and service delivery objectives;
- Review the performance of the CEO and senior management;
- Ensure effective stakeholder participation; and
- Ensure internal systems and controls that will facilitate effective decision making within the CMA.

Based on the nature of the CMA as a public entity with service delivery and stakeholder participation elements, the board will have to have strong integrated management, financial management, legal, human resource and participatory management capabilities.

## 10.4 BOARD MEMBERSHIP

The National Water Act sets out certain provisions regarding the membership of the governing board of a CMA. Section 81(1) states that: *"The members of a governing board of a catchment management agency must be appointed by the Minister who, in making such appointment, must do so with the object of achieving a balance among the interests of water users, potential water users, local and provincial government and environmental interest groups."*

Two issues need to be addressed in the appointment of the new Board the first of these is the appropriate size of the Board. The DWS guideline is that the Board should consist of between 9 and 14 members.

The second issue is appropriate critical skills required for exercising proper fiduciary responsibility. This is a critical matter to address to ensure the board is able to carry out its fiduciary responsibilities appropriately. It is therefore recommended that the advisory committee, in considering the membership of the Board, should take into account:

- The DWS guideline on the proposed size of the Board and the intention to appoint a small and efficient Board; and
- The need to have specific legal, financial and human resources skills represented on the Board, in addition to the *"object of achieving a balance among the interests of water users, potential water users, local and provincial government and environmental interest groups"*.

In the context of Vaal-Orange CMA, the following water use interest, amongst others, should be considered for representation:

- Industrial Water Use;
- Water Services (Local Government);
- Water for recreational use (Tourism) and environmental considerations;
- Emerging and small-scale farmers; and
- Commercial agriculture

The NWA require broad representation of stakeholders, and the board must take care to ensure that other interested parties are also identified and engaged to ensure that their interests are catered for by the CMA.

## 10.5 BOARD APPOINTMENT PROCESS

The process set out in the National Water Act for the appointment of the Board is that the Minister must establish an advisory committee to advise her on “*which organs of state and bodies representing different sectors and other interests within the water management area of the catchment management agency should be represented or reflected on the governing board; and the number of persons which each of them should be invited to nominate*”.

The Minister may also then appoint additional members selected by herself in order to-

- a) Represent or reflect the interests identified by the advisory committee;
- b) Achieve sufficient gender representation;
- c) Achieve sufficient demographic representation;
- d) Achieve representation of the Department;
- e) Achieve representation of disadvantaged persons or communities which have been prejudiced by past racial and gender discrimination in relation to access to water; and
- f) Obtain the expertise necessary for the efficient exercise of the board's, powers and performance of its duties.

Under the provisions of the National Water Act, it is therefore recommended that the Minister appoints one national Advisory Committee to advice on the Board membership of all six CMAs to be established.

## 10.6 GOVERNANCE COMMITTEE STRUCTURES

As a new institution the Vaal-Orange CMA will have a number of institutional development tasks that may require focused professional input. It is proposed that the CMA board establish the necessary committees to support its effective functioning, in line with corporate good practice. The committees will not have powers to make decisions but to make recommendations to the board for decision making, unless they have been granted powers to make decisions in writing, by the Board.



Figure 15: Board committee arrangements

The Board committees described in the figure above are described below.

### **10.6.1 Finance and Audit Committee**

The audit committee is a compulsory requirement of all public entities under Section 77 of the PFMA. Often these are separate committees, however since the CMA is in its infant stage it is recommended that the finance and audit committees be combined. The Board can decide in due course if it is appropriate to separate them. They are both chaired by a professional to be appointed to support the Board or by a Board member with the appropriate training and skills. The role of the audit committee will be to ensure the integrity of financial recording, its management and reporting, including related policies of the CMA. In performing its functions, it will work closely with internal and external auditors (possibly DWS) on how best to manage auditing related challenges of the CMA.

The audit and finance committee should consist of at least three Board members, two being non-executive Board members. The committee should be chaired by a chartered accountant or similarly qualified person, who may not be the chairperson of the Board or the CEO of the CMA. The committee should be supported by the CFO. The committee should meet at least quarterly and the terms of reference of the committee should be reviewed annually.

The finance committee will be responsible for the overall financial management and financial performance of the CMA. It will be the role of this committee to provide support that will ensure CMA is in a sound financial footing. This will be done by ensuring that financial challenges are identified, measured and rectified, secondly it will help in developing financial strategies that will ensure the CMA's financial viability.

### **10.6.2 Human Resources and Remuneration Committee**

The Human Resources Committee will provide support on organisational structure issues, conditions of employment, employment equity and staff transfer from DWS. It will help develop appropriate policies and procedures that will govern human resource related issues. Sub committees may be established to look at specific issues, such as staff contracts, job grading, and remuneration, if necessary. Initial after the CMA has been established, the Board may in written form, instruct this committee to oversee the process to employ all senior managers, including the CEO of the CMA. The function of this committee is to, on behalf of the Board, regulate and guide executive management on the development and implementation of HR policies and systems, including recruitment and remuneration of staff of the CMA.

### **10.6.3 Technical Committee**

The Technical Committee will be tasked with supporting the CMA Board to address technical issues relating to water resource management. The WMA is made up of a number of sub-catchments; a catchment management committee (CMC) for each sub-catchment with at least one Board member, will be established to assist the Technical Committee to consult with and involve the stakeholders on strategic and water resources related issues.

In essence the role of this functional committee is on ensuring that the core functions of the CMA are carried out effectively. Members of this committee must understand and oversees activities to be undertaken by the CMA, both from a technical and service delivery perspective. The committee must identify, understand and consider growth and development trends in the water sector and ensure that the response to these trends is appropriate to ensure continuous water resource management in line with the needs of water users.

#### **10.6.4 Risk management forum**

Rather than a committee of the Board, the Risk Management Forum (RMF) is a separate structure composed of both the executive management team and Board members. As such it is normally larger than a standard committee and tends to have a wider mandate that covers a broad spectrum of issues that, if managed appropriately, could pose a risk to the CMA. The RMF is primarily tasked to identify all levels of risk pertaining to water resources management as well as potential external risk that may impact the CMA negatively. The forum then defines and clarifies the risks before relaying them to the appropriate Board committee for detailed investigation and identification of appropriate management interventions.

The RMF should be composed of at least the CEO and CFO from the executive management, two non-executive Board members and the Board chairperson. Outside experts can also be invited from time to time depending on issues identified.

#### **10.6.5 Social and institutional development committee**

As indicated above, the CMA is a stakeholder-based institution, and therefore, it is crucial that care is taken to ensure that all key stakeholders, including interested parties are represented. The social and institutional development committee could be an ad-hoc committee, to deal with to deal with representation in line with the broader social and institutional development agenda of the CMA. Membership could be representatives of the general public in the WMA, including interested parties that may otherwise be unable to partake in the standing functional committees of the Board.

In this committee, the individuals and bodies that exist within a WMA are represented through the Catchment Forums. The Catchment Management Committee plays the role of coordinating and representing the interests of stakeholders represented through the forums on the CMA. These catchment Forums may develop and become formalised bodies and deal with other WRM related functions. However, this should not be encouraged, as there is already an existing legal body, the CMC.

Effectively, this committee serves to broaden participation across the WMA without over burdening the other committees, and thereby rendering them dis-functional. To be successful in understanding the various competing needs in the WMA, the CMA must conduct an audit and an analysis of stakeholders within a WMA to establish what already exist and the related dynamics.

### **10.7 APPOINTMENT OF CEO**

As soon as the CMA is established, a CEO must be appointed by the Board. Effectively, the CEO is the initiator of all management processes, starting with the appointment of members of the executive team, and supervising the development of the first CMA business plan. It is proposed that the remuneration of the CEO should not exceed that of a Chief Director in the government service, except with the express written permission of the Minister of Water and Sanitation.

## **11 MECHANISMS FOR REGULATION AND OVERSIGHT**

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Regulation and oversight of the CMA will be facilitated through a number of mechanisms which include the following:

- Ministerial and DWS oversight based on the legislation, policy as well as a service level agreement that will be entered into between the Minister and the CMA Board;
- The Board will be subject to an annual audit of performance, including a review of individual members' performance against clear criteria;
- Accordance with the requirements of the PFMA, approval of annual tariffs and the catchment management strategy as being in line with the Raw Water Pricing Strategy and the National Water Resources Strategy;
- Regulation of tariffs by an economic regulator to be established within DWS; and
- Approval of annual business plans by the Minister.

### **11.1 CMA BUSINESS PLANNING**

In terms of the NWA, Schedule 4 Item 21, the CMA Governing Board must prepare its first business plan for not less three years within a period of 6 months of its establishment. The development of a new business plan will need to be done for the Vaal - Orange CMA. In doing so, the new CMA will hopefully learn from this experience.

Schedule 4 Item 22 of the NWA indicates the contents of the business plan (in addition to the requirements of the PFMA). The business plan must:

- set out the objectives of the institution;
- outline the overall strategies and policies that the institution is to follow to achieve the objectives;
- include a statement of the services which the institution expects to provide, and the standards expected to be achieved in providing those services;
- include the financial and performance indicators and targets considered by the board to be appropriate;
- may include any other information which the board considers appropriate; and
- may include any other information determined by the Minister.

In relation to financial matters the business plan must:

- outline the overall financial strategies for the institution including the setting of charges, borrowing, investment and purchasing and disposal strategies;
- include a forecast of the revenue and expenditure of the institution, including a forecast of capital expenditure and borrowings;
- provide for capacity building amongst its board members and officials;
- include any other financial information which the board considers appropriate; and
- include any other financial information determined by the Minister.

Furthermore, the framework for strategic plans and annual performance plans provides a planning and reporting framework with which the CMA will adhere in developing the above-mentioned plan.

## **11.2 FINANCIAL CONTROL**

The CMA as a public entity under schedule 3 of the PFMA will, 6 months before the start of the financial year, submit to the Executive Authority (Minister) through the DG a budget of estimated revenue and expenditure for approval. The Minister, through the department, will ensure that the submitted budget for the CMA is appropriate. DWS will be responsible for submitting the information to the Auditor General or National Treasury as and when required.

## 12 CHANGE MANAGEMENT

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In times of uncertainty, collective processes of change are utilized to interact and engage with people to involve them in the process of change in ways that create understanding, generate the necessary insights required for new neural pathways to be formed and create a sense of employee ownership and commitment to the change process. Change management or enablement is all about purposefully and intentionally accelerating and sustaining the adoption and appropriate utilisation of desired behaviours, in order to achieve intended outcomes or results. It is important to remember that change is experienced at three different levels, the individual, the team and the organization. For the purposes of this intervention to support the CMA transition, these levels will be simplified and described as individual and collective change. It may appear that these two levels of change are separate but, in reality, they are highly interconnected. What happens at an individual level impacts the collective and what happens at a collective level impacts the individual.

In this context, managing individual change will require effective communication and direct interaction and engagement with individual employees. The change process will be designed to uncover and anticipate the types of information that will need to be communicated and the types of interaction or engagement required to bring about the necessary changes. This will require structured processes to be designed and implemented, usually by employees' line managers supported by a change specialist.

Collective change however has a different set of dynamics. It is likely that trade unions will work to protect their member's interests and job security through processes of consultation and negotiation, initiated by DWS, whose employees are those most impacted by the intended changes. It is the nature of those consultations and negotiations that will serve to influence what happens from a change perspective at CMA workplaces. If these consultations and negotiations are highly conflictual, it is likely that this will impact employees' perceptions of the overall change process. If there are low levels of trust and respect between the parties to the consultations and negotiations, it is likely that this too will impact the nature of the change to be experienced at a CMA level. It is for this reason that any intentional processes of change will need to take account of what is transpiring at a collective level so that the consequences may be mitigated at a CMA level, as far as this is practically possible.

### 12.1 KEY ELEMENTS OF THE CHANGE MANAGEMENT PROCESS

To have a successful change management process, the following key elements shall need to be considered:

- An honest, detailed assessment and understanding of different stakeholders' reality, their perceptions and expectations. This will be achieved by structured scoping processes that enable this information to be uncovered and gathered.
- Structured processes of communication, engagement, coaching & counselling if required. The messaging behind communication needs to be well thought out with the appropriate content delivered to fill any potential vacuum that would otherwise have existed if nothing had been communicated.
- **Focused interventions designed to pro-actively and timeously address potential areas of resistance to change** at both an individual and a group level. Resistance can be either a force that accelerates and guides change, or it can be a force that hinders, and retards intended change.

In the establishment of the Vaal-Orange CMA, the change management issues pertain particularly to the internal aspects of the organisation, but also relate to the perceptions of stakeholders of the organisation.

## **12.2 INTERNAL CHANGE MANAGEMENT**

Given that the both Vaal and Orange CMAs only existed on paper, there is a real opportunity for the amalgamated organisation in the new Vaal - Orange CMA to build an identity and internal culture of its own from the outset. As such, the structure and staffing of the organisation will change as and when necessary to adopt and adapt to the challenges.

One of the issues that might need to be addressed is the diverse experiences of people who will form and be part of the new Vaal - Orange CMA. This might mean a mix of experiences from government, private sector or agencies.

In light of the above, the challenge to the new Board and management of the Vaal - Orange CMA will be to:

- Ensure the building of a common identity and culture amongst staff of the Vaal – Orange CMA, and that, within this, all staff feel a commitment to and identify with the new institution. It will be important to ensure that no invisible lines exist between and among staff members from diverse backgrounds and experiences as highlighted above.
- Ensure equal commitment to and attention to the different sub-catchments within the Vaal - Orange water management area, not only within business plans and budgets, but through implementation as well.
- Manage staff concerns and fears regarding change and possible resistance to change.

To achieve this, the Vaal - Orange CMA Board and management will need to develop and ensure the implementation of a proper change management strategy. Key elements of this strategy might include:

- Understanding the assumptions, risks, dependencies, and organisational cultural issues that might affect the change, and how best to address these.
- Effective communication with staff on the need for the change, the nature of the change, and the benefits of successful implementation. Such communication should also contain information on the details of the change, such as timeframes, activities, who will be involved and how it will affect them. The communication should enable a two-way communication process so that employees are able to contribute suggestions and ask questions about the process. The people affected by the change need to agree with, or at least understand, the need for change, and have a chance to influence how the change will be implemented. Face-to-face communications for sensitive elements of the change process, particularly those affecting employees' careers should be used. Email and written reports written are very poor tools in the context of major organisational change.
- A training or capacity building programme for relevant staff so that they can benefit from the change and see it in a positive light.
- Identification and countering of resistance from staff and the alignment of the staff with the new mandate of the organisation.

- The provision of personal counselling (where required) to reduce and manage any change related fears.
- Monitoring of implementation and adjustment of the strategy as needed.

### 12.3 IMPLEMENTATION OF CHANGE MANAGEMENT

The first phase of work will involve **scoping change possibilities**. This will require use of the appropriate diagnostic tools such as a survey or structured interview process to uncover and make sense of the reality on the ground at the CMA.

The second phase of work will be directed towards **building the capacity of leaders to lead change**. This will involve a workshopping of what has been uncovered and made visible during the initial scoping phase as well as the establishment of a common change language and skillset

The third phase of work will encompass the **direct engagement and interaction with employees in accordance with the change-related issues, strategy and plan** developed in the second phase of work. These interactions will include:

- The implementation of an aligned **identity, brand and communication programme** designed to increase the visibility and understanding of the role and functioning of the CMA. This will extend to all stakeholders, not just employees. This may also include structure processes of interaction and engagement with a cross-section of important stakeholders.
- **One on one discussions between CMA leaders and their people** in accordance with a structured coaching framework that will have been taught in the leadership change training conducted during the second phase of work.
- **Mitigation of change risks** through interactions and engagement, as informed by the change risk register developed during the second phase of work.
- **Collective engagement** through a **structured workshop/s** with employees to align them behind the strategy of the CMA, its intended culture, values and behavioural norms as well as its new institutional arrangements.

### 12.4 REBRANDING AND STAKEHOLDER ENGAGEMENT STRATEGY

It will be important to ensure that stakeholders in the water management area are fully informed about the proposed changes and about the establishment, purpose and functions of the Vaal - Orange CMA. This will require a good communication and rebranding strategy which reaches all stakeholders, particularly the marginalised and disadvantaged. Amongst other things, the rebranding strategy should ensure that stakeholders understand the functions of the CMA, the purpose of the CMA, and how to contact the CMA.

In this process, there is an opportunity to engage with stakeholders about how they view the existing and future CMAs, what services they are expecting, what their requirements are etc, so that the new CMA and the rebranding strategy can address these needs and expectations.

## 13 VAAL-ORANGE CMA RISK ANALYSIS

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The purpose of this section is to provide an overview of the key risks that are likely to affect the process to establish the CMA and where they are located; to consider their likelihood; assess their potential impacts; and to develop a response framework, around which specific risks might be managed. This in turn may lay the foundations for an ordered, comprehensive, well considered risk management program.

A useful way to contextualise and understand aggregated risk is in terms of the impact and certainty of particular weaknesses and threats. The greatest risk is associated with issues that are most uncertain and therefore likely to have the highest potential impact. The CMA is likely to face numerous risks, the once below are a selection of some of them and indicative of the challenges the CMA is likely to face.

Given an understanding of the nature of the initiative and the current environment, some key risks are articulated below. Managing and mitigating these risks becomes a central function of the CMA and of DWS in its oversight and regulatory role.

### 13.1 COMPLEXITY OF THE PROJECT

The Vaal-Orange water management area is complex and is already under water stress. However, project complexity also arises as a result of the various institutional responsibilities in the Regions, within DWS, the National Treasury and the water use sectors on which the CMA depends for successful establishment. All these partners have conflicting requirements and expectations that demand expression from the onset. The management of the establishment process requires gentle balancing of the needs of highly vocal and well-resourced sectors with those of poor and marginalized communities whose success depends on water allocation reform. Therefore, a high level of dexterity is required from a technically and managerially skilled team that has social and economic analysis acumen. This must also be accompanied by an ability to drive transformation in the water sector in the catchment with a particular focus on redress and meeting the needs of poor communities.

The Vaal-Orange CMA is expected to impact on international water requirements in terms of the Orange-Senqu River Commission Agreement<sup>22</sup>. The Commission is an organisation with international and national legal personality, empowered to serve as the technical advisor of the parties on matters relating to the development, utilisation and conservation of the water resources of the Orange River Watercourse System<sup>23</sup>. The issue of capacity is dealt with below.

### 13.2 LEGITIMACY AND STAKEHOLDER ACCEPTABILITY

The CMA establishment puts forward a new “business model” based on a public entity for water resources management across three WMAs. In addition to government, it is key that this new model is accepted by stakeholders, both current water users and would-be water users across the area of jurisdiction. The CMA must manage and navigate the possible risk of duplication of roles, where the current mother department is seen as the main gateway to accessing water resource related services.

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<sup>22</sup> Transboundary river basin management regimes: The Orange basin case study (Nicole Kranz, Eduard Interwies, and Rodrigo Vidaurre, 2005)

<sup>23</sup> Orange-Senqu River Commission Agreement. November 2000

The branding of the CMA as the go to institution on any water resource related issue in the province is critical to facilitate legitimacy and stakeholder acceptability.

### **13.3 DELEGATION OF POWERS AND FUNCTIONS**

Although the CMA is expected to perform its initial functions as soon as it is established, the expectation is that performance of its designated functions will gain impetus depending on the rate at which additional water resources management functions are delegated to it. However, it must be noted that inefficiencies are expected early on during the handover period. There is likely to be an additional effort required in operating two parallel organisations namely the new CMA and the Proto-CMA. In addition to a duplication of costs, there is an additional risk of the two organisations working in a non-complementary way on operational and policy matters.

The initial risk identified above is further compounded by the fact that requisite capacity may not be in place to implement the initial functions. This will hamper the expected process to periodically delegate functions and powers. The longer the delay to delegate, in particular, the delegation of the power to authorise water use and the billing and revenue collection functions, the more the long-term viability of the CMA suffers. An agreement should be put in place between DWS and the Vaal-Orange CMA regarding the timeframes and requirements for the final delegation of functions to the CMA. More important in this regard are the pre-arrangements and a migration strategy to facilitate to transfer staff from DWS to the CMA.

It is critical that the transfer and recruitment of staff and building of capacity is done in a way that aligns with the need to implement these delegations. The three phases of CMA evolution mentioned above are important in this regard.

### **13.4 MANAGEMENT SYSTEMS**

There are a number of dimensions associated with the financial viability risk. The most critical include the inability to issue invoices and collect water use revenue as a result of either poor legitimacy of the CMA, inadequate systems and capability on the part of DWS prior to this function being delegated. However, this risk may arise soon after the establishment of the CMA. While one of the first tasks of the CEO is to set up the financial management system, the CMA may not be able to collect revenue right away. Since the systems will need to be stabilised with the relevant staff employed to perform this function. The willingness to pay by stakeholders is a critical risk that is linked to their perceptions on the current billing system. The issue of affordability is also pertinent, in relation to user groups such as resource poor farmers and the extent to which the management system caters for this category of users. Poor revenue collection will mean that the operating costs of the CMA will need to be recovered from a small base of users and as such there is the potential for higher charges that could worsen the cycle of affordability and debt collection.

Further, the CMA needs to integrate into its operational plan short term goals associated with capacitating the CMA, in particular in critical areas such as finance and human resources. The human resources risk is fairly critical and is likely to have a major impact on the CMA's ability to undertake its functions effectively. It is important that the CMA attract appropriately skilled staff and retain them for sustainability of the institution. A key concern is that the market for appropriately skilled WRM staff will become more competitive as other CMAs are established. A further risk is that the proposed transfer of staff using a Section 197 agreement under the Labour Relations Act, which facilitates a direct transfer of staff from one organisation to another may restrict the ability of the board in shaping a CMA which is truly independent of the Department of Water and Sanitation as they will essentially

inherit an existing operational structure defined by the Department. The need to protect the rights of the existing employees is recognised and a resolution to the transfer will need to be negotiated with staff and their union representatives. This risk can be mitigated to an extent through restructuring and where appropriate retraining staff to fit the roles defined in their operational structure.

### **13.5 CLIMATE CHANGE AND NATURAL DISASTERS**

Climate change and natural disasters such as droughts and floods are not always predictable, and yet they present risks that could impact on the water availability and safety within the WMA. In particular the effect of climate change could lead to changing water use patterns, reduced availability of water resources coupled with increasing allocation demands. The consequence could be reduced revenue collection as industrial and agricultural users and other water reliant enterprises become increasingly unviable. Once climate change induced drought kicks in, options for augmentation to mitigate the risk are likely to be limited as well. Accordingly, this risk should be quantified and considered carefully in the strategic planning of the Agency.

Typically, as a result of actual observations both locally and across the globe, a greater increase in variability of weather patterns can be expected over the next decades, with average ambient temperatures expected to rise by as much as 3 to 4 degrees Celsius over the next 30 to 40 years. As a result, adaptation strategies will need to take into account the following effects associated with climate change, Flash Floods; Regional Floods; Hydrological Droughts; Heat Waves; Increased Evaporation; Changes in Agricultural Demands; Impacts on Surface Water Supply; Impacts on Groundwater Supply; Water Quality Deterioration – Sediments; Chemical; Biological; Increase in average Water Temperature; Design Precipitation; Design Hydrology (peaks, hydrographs); and Environmental Degradation.

### **13.6 ORGANISATIONAL TECHNOLOGIES**

The technology risks relate to the integrity of the data to be handed over by DWS. Data of poor integrity may impact on the CMA's ability to undertake its WRM functions effectively, on its financial viability and on the credibility of the CMA. Other concerns around organisational technology relate to the adoption of DWS systems, by the CMA, and the suitability or appropriateness of this technology to the CMA, given its smaller scale.

### **13.7 IMPACT OF OFFICE LOCATIONS ON DISTRIBUTION OF STAFF**

The location of the offices is yet to be determined, with the Board and CEO of the CMA having to carry this responsibility forward. The proposed model accounts for all staff in the prospective sub-catchments (Upper, Middle and Lower Vaal, and Upper Orange and Lower Orange) to remain within those catchments. However, the model is only indicative, and the organisational structure adopted by the CMA Board may require that staff are either transferred or relocated to new office space or geographical locations. A provision has been made for facilitating these transfers within the proposed budget. However, there is a risk that staff may choose not to transfer and seek employment elsewhere which will mean recruitment of new staff along with associated costs.

This risk can be mitigated, but not eliminated, through appropriate consultations with staff during the development process.

### **13.8 RISK MANAGEMENT**

It is critical that the Vaal-Orange CMA builds its relationship with relevant institutions and stakeholder bodies in the WMA. Strong stakeholder relationships, participatory planning and management, and strong governance will go a long way to reducing a number of the risks raised above.

The complex nature of the work of the CMA, including managing complex financial arrangements, requires good strategic, organisational and financial management. Such management will be achieved through appropriate staffing of the CMA and may require moving beyond the human resource and remuneration policies and approaches of government.

Ultimately, the management of risk will be dependent on strong governance arrangements for the CMA. The role of DWS in regulating and overseeing the performance of the CMA will also be important in this regard. DWS has considerable experience in the oversight of 15 Water Boards, the WRC and the TCTA, and will draw on this experience to ensure effective oversight and regulation of the CMA. The need for requisite technical, financial and communication skills to render the governance and strategic functions of the CMA must be emphasised as a mitigating measure. A robust recruitment and migration plan (to transfer staff) is critical in this regard.

## 14 IMPLEMENTATION PLAN / CONSIDERATIONS

Process	Key Milestones	Actions	Considerations	Timeframes
<b>Institutional establishment</b>				
Finalise WMA boundaries and institutional route map	Gazetting of the NWRS	Understand institutional and legal implications  Develop priorities and route map, and institute a process to disestablish existing CMAs.	Differences between water management areas because of previous progress  Stakeholder fatigue due to continuous consultation on proposed changes.	Publish for comment: January – April 2021  Revise according to comments received: May 2021  Publish in Government Gazette: June 2021
Amend boundaries and name of CMA (S78(4))	Gazetting of amendment of boundaries and name	Amend boundaries and name of CMA (S78(4)) by publishing such in the Government Gazette		August 2021
Ring-fencing of WRMC revenue per WMA	Revenue ring-fenced	Ring-fence revenue per WMA in the Water Trading Entity and ensure systems are in place for easy transfer of funds to CMA	Timely transfer of funds to the CMA is critical for its effective functioning.	December 2021 – January 2022
Develop business case for CMA	Approval of business case by NT/DPSA JEP	Develop and submit business case  Initial meetings with NT/DPSA towards alignment	Need to ensure close working relationship with NT/DPSA	July 2021 – October 2021

Process	Key Milestones	Actions	Considerations	Timeframes
		List as Public Entity	Present Business Case to NT/DPSA	November 2022 January 2022
Stakeholder engagement		Engagement with stakeholders on the changes to the WMA boundaries and the establishment of the Vaal-Orange CMA	Careful management of stakeholder engagement in the Vaal-Orange catchments is required to ensure they buy-in to the process	August – December 2021
Establishment of CMA	Establishment of CMA via Govt Gazette	Gazette for public comment Take comments on Board Gazette for establishment	Stakeholder awareness of processes critical	January 2022
<b>Organisational development</b>				
Appoint Governing Board	Inaugural meeting of the Governing Board held  Board Committees established	Appoint Advisory Committee Advisory Committee submits recommendation to Minister Ministerial approval of Board structure Call for nominations in parallel with Advisory Committee work Minister appoints Governing Board Inaugural meeting of the Board Initial Governing Board training	Need to create strong sense of good governance and therefore, look towards stronger governance model than previous Boards that had a strong emphasis on participation	Advisory Committee makes recommendations to Minister: October 2021 Advisory Committee appointed: February-March 2021 Ministerial approval of Board structure: Oct 2021 Minister appoints Governing Board: Dec 2021

Process	Key Milestones	Actions	Considerations	Timeframes
		<p>Board charter developed, based on generic Board charter</p> <p>Board Committees established</p>		<p>Initial Board Training and Inaugural Meeting: Jan/Feb 2022</p> <p>Board Charter developed: March 2022</p>
Appoint CEO	CEO appointed	<p>Job description, contract finalised, and post advertised</p> <p>Obtain approval of CEO salary (DPSA and Minister: DWS)</p> <p>Interview candidates and appoint</p>	Consider getting blanket approval for CEO posts against a range of packages for large , medium and small CMAs	<p>Approval of CEO salary March 2022</p> <p>Post advertised: March 2022</p> <p>Interview candidates: April/May 2022</p> <p>Appoint candidate: July 2022</p>
CEO establish initial systems	Initial internal systems including financial, procurement and HR	<p>Purchase initial financial system</p> <p>Apply for permission to AG for permission to open account</p> <p>Account opened</p> <p>Pro-forma internal systems presented to the Board</p>	Must ensure there are financial controls in place prior to opening of account and any funds transferred	<p>Financial procedures and controls developed: July 2022; approved by Board by August 2022</p> <p>Apply to AG for permission to open account: August 2022</p> <p>Account opened: August 2022</p>

Process	Key Milestones	Actions	Considerations	Timeframes
				Financial system purchased: August 2022
Initiate transfer and appoint staff	DWA staff transferred New staff appointed	<p>Offices acquired – location of HO, Regional offices and satellite offices confirmed</p> <p>Ensure Proto CMA staff details and functions are documented</p> <p>Functional operational plan developed in conjunction with Regional Office</p> <p>Organisational structure developed and job descriptions developed and approved</p> <p>Identification of staff to be seconded and transferred.</p> <p>Staff transfer committee established and process to transfer staff fully monitored</p> <p>Equipment / asset plan developed</p> <p>Posts that cannot be filled by Proto-CMA staff advertised and filled.</p>	<p>Buy-in of organised labour essential – transfer agreement and staff migration plan in place</p> <p>Regional Office alignment with functional development of CMA critical</p> <p>Transfer or purchase of equipment for new staff important</p>	<p>First intake from August – November 2022</p> <p>August 2022</p>
<b>Operationalization</b>				

Process	Key Milestones	Actions	Considerations	Timeframes
Develop first Business Plan	Business plan submitted to DWS	CEO drives BP development process Submit first business plan to Minister for approval Ministerial approval of business plan	Needs to be completed within 6 months of the appointment of the Board	
Transfer of seed funds	Initial seed funding transferred to CMA	Obtain NT approval for transfers Transfer initial tranche to support BP development and initial functions Transfer second tranche upon approval of business plan	Ensure NT aligned with financial transfers and institutional development plan	
Delegation of functions	Functions delegated by Minister	Initial delegations to support initial functions Second round of delegations to support expanded mandate and implementation of Business Plan	Plan for the phased delegation of powers and duties to be developed and approved by Minister in order to streamline all processes	
Oversight and monitoring	DWA overseeing and monitoring CMAs	DWA provides support to institutional establishment and development DWA provides Governance support to Board DWA supports organisational development After receiving business plan DWA establishes monitoring routine	Monitoring schedule for all milestones for CMAs to be developed includes NWA and PFMA requirements	

Process	Key Milestones	Actions	Considerations	Timeframes
<b>Stakeholder Engagement and Capacity Building</b>				
Establish and implement engagement plan	Stakeholder Reference Group functional	Develop stakeholder engagement framework and implementation plan. Establish stakeholder database Establish new Reference groups	Some areas have long history of participation that needs to be carefully considered in order for DWA to regain lost ground	
Establish and implement capacity building and support regime	Support and capacity building programme implemented	Identify key groups requiring support Identify needs and develop appropriate support plan Provide ongoing support and guidance.	The need to support marginalised groups must not be underestimated	

## **15 STAKEHOLDER ENGAGEMENT PROCESS**

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### **15.1 PURPOSE**

The ultimate aim of the Stakeholder engagement is the effective creation and operation of the Vaal-Orange Catchment Management Agency

The Department will engage with stakeholders to determine the requirements crucial to the economic and social needs of the area, this will be an ongoing process as the needs will evolve as the country continues to develop and this will in turn feed the capabilities of the water management area. The engagement process is vital as it effectively and credibly develops the relationship between government and the end user; it captures the holistic needs of the various catchment areas, improves service delivery, allows for transparency and information disclosure and complies with international standards and best practice, further driving the South African government as a leader on the continent.

The early implementation of the stakeholder engagement ensures that a strong partnership is formed and issues that arise are managed with the utmost consideration of the stakeholder.

### **15.2 OBJECTIVES**

The stakeholder engagement has the following outcomes:

- To make stakeholders aware of the new catchment management areas;
- To mobilize stakeholders to participate in consultation engagements;
- To improve communications and stakeholder relations;
- To strengthen democratization of the management of the Vaal-Orange Catchment management areas; and
- To comply with the mandate of the current National Water Resources Strategy.

These outcomes align with those developed for the Department's Communication Plan for the establishment of the Vaal Catchment Management Agency.

### **15.3 PRINCIPLES**

The stakeholder engagement will be based on the accountability principles of inclusively, materiality and responsiveness. All identified stakeholders with material interests in the process will be included in the engagement, their material interests will be identified and addressed, and the Department will respond to their interests. The stakeholder engagement will operate in a way that makes effective use of the Department and stakeholders' resources, including time.

### **15.4 IDENTIFIED STAKEHOLDERS**

Stakeholders identified by the department include the following:

- Communities falling within the jurisdiction of the Vaal River Catchment management area;
- National Departments;

- Provincial Departments;
- Mining and Industry;
- Conservation and Environmental groups;
- Knowledge Sector/Academic Institutions;
- Agricultural representatives;
- Water Boards; and
- Municipalities.

## **15.5 MECHANISMS OF ENGAGEMENT**

The following mechanisms have been identified as engagement mechanisms for the implementation of the Stakeholder Engagement Process:

## **15.6 REGIONAL STEERING COMMITTEE MEETINGS**

The Regional Steering Committee for the Vaal-Orange is representative of the majority of the “technical” stakeholders within the catchment. The business case was presented at the following Steering Committee meetings and broad discussion was held with stakeholders in regional Steering Committee Meeting at proposed date and venue.

## **15.7 BI-LATERAL MEETINGS WITH KEY STAKEHOLDERS**

A number of organisations identified as key stakeholders have been identified as warranting direct, bilateral engagement to discuss the establishment of the Catchment Management Agency. These will include:

- Chamber of Mines;
- Agri SA, TAU, NAFU;
- SALGA;
- BUSA;
- Black Business Council;
- Political representatives; and
- Water boards.

## **15.8 EXISTING COMMUNITY FORUMS**

Reaching the communities within the Vaal-Orange Catchment is by far the most challenging activity, both logistically (the Vaal-Orange is a large catchment with many disparate communities, particularly within the lower reaches) and also technically as many citizens access water indirectly through their municipalities and may not make the distinction between municipal supply issues and the upstream resource management activities associated with the Vaal-Orange CMA. The approach that has been taken to ensure communities are appropriately engaged is to present the business case at existing Community Forums and collect and classify feedback given at these meetings. Aggregated issues will

either be addressed here or referred to the appropriate agency if the issues are not directly relevant to the establishment of the CMA.

## **15.9 STATUTORY GAZETTING OF THE BUSINESS CASE**

This document forms the current basis for the consultation process and is designed to cover not just the financial justifications for the establishment but also the DWS's current understanding of the approach, outcomes and challenges to be faced in the establishment of the agency. The Gazetting of this document in accordance with Chapter 7 of the National Water Act, Act 36 of 1998, is a critical part of the communications process.

The Minister must, in accordance with section 78(3) publish a notice in the Government Gazette for a period of no less than 60 days inviting comment on the establishment of the CMA. Once the Minister has received all the comments, and has considered these for the various implications, the Minister may establish the Vaal-Orange CMA.

## **15.10 INTERNAL CONSULTATIONS**

While the main objective of the establishment process is focused on improving management of water resources within the Vaal-Orange Catchment for the benefit of users, it must be recognised that a significant number of Staff will be impacted by the creation of the new catchment management agencies and their rights and interests must also be considered. An internal consultation process has been ongoing with the affected regional offices. This is managed within the Department under existing Change Management processes and is dealing primarily with the Human Resources consequences of the establishment. This is considered to be a separate process to the external engagement of stakeholders, although conclusions of the internal stakeholder engagement process (such as the approach to the transfer of staff) have been factored into the current business case.

## **15.11 RECORDING AND ANALYSIS OF RESULTS**

An Issues and Responses Report will be compiled and updated throughout the project. This report will list all the comments from stakeholders (to be received from comment sheets, at meetings, via e-mails etc) and responses from the project team.

The principle is to engage and identify issues with stakeholders, agree to an approach on how to address the issues that have been brought forward, define the ownership of the issue to particular parties responsible, action a solution, get feedback from the stakeholders affected by the issue and if unsatisfactory readdress the issue with relevant solutions until resolution is achieved.

Engagement	Stakeholder	Issue	Owner	Actions
e.g. Letter dated XX/XX/XX	e.g. Mr Smith	Summary of concern/issue	Agreed owner of issue	Actions required to follow up (e.g. further disclosure, technical analysis, etc.)
e.g. Meeting				
e.g. Stakeholder Workshop X				



### 15.12 FEEDBACK TO STAKEHOLDERS

Feedback to stakeholders will be done by means of:

- Feedback will be passed directly to key stakeholders engaged with the Regional Steering Committee for the Vaal;
- Direct answers to any questions or requests for additional information through letters and emails;
- Issues and Response Register will be attached to the final business case and will be published online; and
- The provision of information in the various BIDS, newsletters, websites and other communications means that have been identified. In addition to this the project and relevant information will be shared at various meetings and forums that are continually held within the WMA.

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## **ANNEXURE A: POWERS AND FUNCTIONS UNDER THE NATIONAL WATER ACT TO BE PERFORMED BY CMAS AS INITIAL, INHERENT OR DELEGATED/ASSIGNED FUNCTIONS, AND FUNCTIONS TO REMAIN WITH DWS.**

Functions highlighted in yellow are likely to be transferred to the CMA within phase 1 of its existence, highlighted in orange for phase 2, and in red for phase 3

<b>Initial Function of CMA</b>	<b>Inherent function of CMA under the NWA</b>	<b>Function of CMA to be assigned or delegated by Minister</b>	<b>Ongoing Function of DWS</b>
<b>Chapter 2: Water Management Strategies</b>			
Part 2: Establishment of a Catchment Management Strategy			Part 1: National water resource strategy Development of the National Water Resource Strategy
<b>Chapter 3: Protection of Water Resources</b>			
<b>Part 1: Classification system for water resources</b>			
			12. Prescription of classification system
<b>Part 2: Classification of water resources and resource quality objectives</b>			
		13. Determination of reserve and resource quality objectives for those resources that do not have a high	13 Determination of water resources and resource quality objectives

		protection class or are not of national significance	
			14. Preliminary determination of class or resource quality objectives
	<p>15. Giving effect to any determination of a class of a water resource and the resource quality objectives</p> <p><i>This is premised on the CMA having the powers to take any action that will impact on the class of a resource</i></p>		
<b>Part 3: The Reserve</b>			
		16, In some cases, DWS may delegate the determination of the Reserve in those resources that do not have a high protection class (e.g., Class I).	
			17. Preliminary determinations of Reserve
	18. A CMA must give effect to the Reserve as determined in terms of this Part when exercising		

	<p>any power or performing any duty in terms of this Act</p> <p><i>This is premised on the CMA having the powers to take any action that will impact on the class of a reserve</i></p>		
	<p>19. Prevention and remedying effects of pollution</p>		
<p><b>Part 5: Emergency incidents</b></p>			
	<p>S20(4)(d) The CMA may give verbal or written instructions to a responsible person on measures to be taken regarding an emergency incident. A verbal directive must be confirmed in writing within 14 days.</p>		
	<p>S20(6) – (9): The CMA may take remedial action and claim for the costs of that remedial action.</p>		
<p><b>Chapter 4: Use of Water</b></p>			
		<p>S22(3) Once the CMA has been delegated the responsible authority functions in relation to authorising water use it may use S22(3) to dispense with the requirement for a</p>	

		<p>licence if it is satisfied that the purpose of this Act will be met by the grant of a licence, permit or other authorisation under any other law.</p> <p><i>This function does not need to be delegated to a CMA but is automatic along with the delegation of the water use authorisation function</i></p>	
		<p>S22(3) Once the CMA is the responsible authority it may choose to combine licence requirements into a single licence requirement with other government departments.</p> <p><i>This function does not need to be delegated to a CMA but is automatic along with the delegation of the water use authorisation function</i></p>	
		<p>S22(4): a responsible authority may promote arrangements with other organs of state to combine their respective licence requirements into a single licence requirement</p> <p><i>This function does not need to be delegated to a CMA but is automatic</i></p>	

			<i>along with the delegation of the water use authorisation function</i>	
			<p>S22(5):</p> <p>A responsible authority may, subject to section 17, authorise the use of water before -</p> <ul style="list-style-type: none"> <li>(a) a national water resource strategy has been established;</li> <li>(b) a catchment management strategy in respect of the water resource in question has been established;</li> <li>(c) a classification system for water resources has been established;</li> <li>(d) the class and resource quality objectives for the water resource in question have been determined; or</li> <li>(e) the Reserve for the water resource in question has been finally determined.</li> </ul> <p><i>This function does not need to be delegated to a CMA but is automatic along with the delegation of the water use authorisation function</i></p>	
				S(23): Determination of quantity of water which may be allocated by responsible authority

		S24: Licences for use of water found underground on property of another person	
		S(25): Transfer of water use authorisations <i>On condition that the transfer takes place within national regulations and within the boundaries of the CMA</i>	S(25): Transfer of water use authorisations <i>Where the transfer occurs between WMAs</i>
	S25(3): Preparation of an annual report containing details of transfers of water entitlements under S25 (1) or (2)		
		S30: A responsible authority may, if it is necessary for the protection of the water resource or property, require the applicant to give security in respect of any obligation or potential obligation arising from a licence to be issued under this Act. <i>This function does not need to be delegated to a CMA but is automatic along with the delegation of the water use authorisation function</i>	S26: Making of regulations on use of water
			S33: Declaration of water use as an existing lawful use

			<i>It is recommended that this clause should not be delegated and should not be utilised in future as it was intended as a transitional clause which is now out of date.</i>
		<p>S35: Verification of existing water uses</p> <p><i>This function does not need to be delegated to a CMA but is automatic along with the delegation of the water use authorisation function</i></p>	
<b>Part 4: Stream flow reduction activities</b>			
		<p>S36(2): The Minister may, by notice in the Gazette, in relation to a particular area specified in that notice, declare any activity (including the cultivation of any particular crop or other vegetation) to be a stream flow reduction activity if that activity is likely to reduce the availability of water in a watercourse to the Reserve, to meet international obligations, or to other water users significantly.</p>	
<b>Part 5: Controlled activities</b>			

		<p>S38: Declaration of certain activities as controlled activities</p> <p><i>Within the boundaries of the WMA only</i></p>	<p>S38: Declaration of certain activities as controlled activities</p> <p><i>At a national level where appropriate</i></p>
<b>Part 6: General Authorisations</b>			
		<p>S39: General authorisations to use water</p> <p><i>Within the WMA boundaries only</i></p>	<p>S39: General authorisations to use water</p> <p><i>At a national level</i></p>
<b>Part 7: Individual applications for licences</b>			
		<p>S40(3): A responsible authority may charge a reasonable fee for processing a license application which may be waived in deserving cases</p> <p><i>This function does not need to be delegated to a CMA but is automatic along with the delegation of the water use authorisation function</i></p>	<p>S40(3): A responsible authority may charge a reasonable fee for processing a license application which may be waived in deserving cases</p> <p><i>For strategic water use only</i></p>
		<p>S40(4): A responsible authority may decline to consider a licence application for the use of water to which the applicant is already entitled by way of an existing lawful</p>	<p>S40(4): A responsible authority may decline to consider a licence application for the use of water to which the applicant is already entitled by way of an existing lawful water use or under a general authorisation.</p>

		<p>water use or under a general authorisation.</p> <p><i>This function does not need to be delegated to a CMA but is automatic along with the delegation of the water use authorisation function</i></p>	<i>For strategic water use only</i>
		<p>S41 Procedure for licence applications:</p> <p><i>This function does not need to be delegated to a CMA but is automatic along with the delegation of the water use authorisation function</i></p>	
		<p>S42: Reasons for decisions</p> <p><i>This function does not need to be delegated to a CMA but is automatic along with the delegation of the water use authorisation function</i></p>	
<b>Part 8: Compulsory licences for water use in respect of specific users</b>			
		<p>S43: Compulsory licence applications</p> <p><i>This function does not need to be delegated to a CMA but is automatic along with the delegation of the water use authorisation function</i></p>	
		<p>S44: Late applications</p>	

			<i>This function does not need to be delegated to a CMA but is automatic along with the delegation of the water use authorisation function</i>	
			S45: Proposed allocation schedules <i>This function does not need to be delegated to a CMA but is automatic along with the delegation of the water use authorisation function</i>	
			S46: Preliminary allocation schedules <i>This function does not need to be delegated to a CMA but is automatic along with the delegation of the water use authorisation function</i>	
			S47: Final allocation schedule <i>This function does not need to be delegated to a CMA but is automatic along with the delegation of the water use authorisation function</i>	
<b>Part 9: Review and renewal of licences, and amendment and substitution of conditions of licences</b>				
			S49: Review and amendment of licences <i>This function does not need to be delegated to a CMA but is automatic</i>	S49: Review and amendment of licences <i>For strategic water use only</i>

			<i>along with the delegation of the water use authorisation function</i>	
			S50: Formal amendment of licences <i>This function does not need to be delegated to a CMA but is automatic along with the delegation of the water use authorisation function</i>	S50: Formal amendment of licences <i>For strategic water use only</i>
			S51(1): Successors in title <i>This function does not need to be delegated to a CMA but is automatic along with the delegation of the water use authorisation function</i>	S51(1): Successors in title <i>For strategic water use only</i>
			S52 (2), (3), (4): Procedure for earlier renewal or amendment of licences <i>This function does not need to be delegated to a CMA but is automatic along with the delegation of the water use authorisation function</i>	S52 (2), (3), (4): Procedure for earlier renewal or amendment of licences <i>For strategic water use only</i>
<b>Part 10: Contravention of or failure to comply with authorisations</b>				
			S52: Rectification of contraventions <i>This function does not need to be delegated to a CMA but is automatic along with the delegation of the water use authorisation function</i>	S52: Rectification of contraventions <i>For strategic water use only</i>

			<p>S54: Suspension or withdrawal of entitlements to use water</p> <p><i>This function does not need to be delegated to a CMA but is automatic along with the delegation of the water use authorisation function</i></p>	<p>S54: Suspension or withdrawal of entitlements to use water</p> <p><i>For strategic water use only</i></p>
			<p>S55: Surrender of licence</p> <p><i>This function does not need to be delegated to a CMA but is automatic along with the delegation of the water use authorisation function</i></p>	<p>S55: Surrender of licence</p> <p><i>For strategic water use only</i></p>
<b>Chapter 5: Financial provisions</b>				
				<p>S56: Pricing strategy for water use charges</p>
		<p>S57(2): Application of pricing strategy: making of charges within a specific water management area and payable directly to the CMA</p>		
				<p>S57(3) Charges made on a national or regional basis and payable to DWS</p>
				<p>S58 (1): Recovery of water use charges – directive to a WMI to recover charges made by the Minister under S57(1)</p>

			S59(3)(a): Determination of interest rate on unpaid water use charges, with the concurrence of the Minister of Finance
		S59(3)(b): Restriction of the supply of water to the water user from a waterwork or the restriction or suspension of the authorisation to use water until charges have been paid <i>For charges made under S57(2)</i>	S59(3)(b): Restriction of the supply of water to the water user from a waterwork or the restriction or suspension of the authorisation to use water until charges have been paid <i>For charges made under S57(3)</i>
		S60(2): issuing of a certificate stating the amount of unpaid water charges and any interest due <i>For charges made under S57(2)</i>	S60(2): issuing of a certificate stating the amount of unpaid water charges and any interest due <i>For charges made under S57(3)</i>
<b>Part 2: Financial assistance</b>			
		S61: Financial assistance	
			S62: Regulations on financial assistance
<b>Chapter 6: General powers and duties of Minister and Director General</b>			
<b>Part 1: Delegations, directives, expropriation, condonation and additional powers</b>			
		S63(3) Delegation of a delegated power and function to another	S63: Delegation of powers and functions by Minister

			person where the delegation by the Minister allows this	
			S64: Expropriation of property <i>Where authorised by the Minister in writing</i>	S64: Expropriation of property
			S65: Expropriation for rehabilitation and other remedial work <i>For functions that fall under the CMA</i>	S65: Expropriation for rehabilitation and other remedial work <i>For functions that remain with DWS</i>
			S66: Condonation of failure to comply with time period <i>For functions falling under the CMA</i>	S66: Condonation of failure to comply with time period <i>For functions that remain with DWS</i>
			S67: Dispensing with certain requirements of the Act <i>Where this has been authorised under S67(1)(c)</i>	S67: Dispensing with certain requirements of the Act
			S68: Intervention in litigation	
<b>Part 2: General provisions regarding regulations</b>				
				S69: Making of regulations
				S70: Consideration of regulations
				S71(1): Rejected regulations

<b>Part 3: Powers relating to catchment management agencies</b>			
			S72: Powers and duties of catchment management agencies vest in Minister in certain circumstances
			S73: Assignment of powers and duties to catchment management agencies
			S74: Directives to water management institutions
<b>Part 4: Powers of Director-General</b>			
			S75: Delegation of powers by Director-General
<b>Chapter 7: Catchment Management Agencies</b>			
			S76: Appointment of persons on contract
			S78 Procedure for the establishment of CMAs
		S79: General powers and duties of CMAs	
S80: Initial functions of CMAs			

<p>(a) to investigate and advise interested persons on the protection, use, development, conservation, management and control of the water resources in its water management area;</p> <p>(b) to develop a catchment management strategy;</p> <p>(c) to co-ordinate the related activities of water users and of the water management institutions within its water management area;</p> <p>(d) to promote the co-ordination of its implementation with the implementation of any applicable development plan established in terms of the Water Services Act, 1997 (Act No. 108 of 1997); and</p> <p>(e) to promote community participation in the protection, use, development, conservation, management and control of the water resources in its water management area.</p>			
			<p>S81: Appointment of governing board of CMA</p>

			S82(1) Convening of the first meeting of the CMA
		S82(2): Recommendation by members of the governing board of members to be appointed as chairperson and deputy chairperson	
			S82(3): Appointment of the Chairperson and deputy Chairperson
		S82(5): Establishment of committees, including an executive committee and consultative bodies	
			S83: Removal of members from the governing board
<b>Part 3: Operation of CMAs</b>			
		S84(1): Funding of CMAs: A CMA May raise any funds required by it for the purpose of exercising any of its powers and carrying out any of its duties in terms of this Act.	
		S85: Documents relating to litigation: A CMA must provide to	

		the Director General copies of all pleadings, affidavits and other documents in possession of the CMA relating to any proceedings instituted against the CMA		
		S86: Delegation of powers by CMA		
<b>Part 4: Intervention, disestablishment or change of water management areas of catchment management agencies</b>				
				S87: Intervention by Minister
				S88: Disestablishment of CMA
				S89: Transfer of assets and liabilities after change of water management area or disestablishment
				S90: Regulations on CMAs
<b>Chapter 8: Water User Associations</b>				
			S92: Procedure for establishment of water user associations <i>Where the WUA does not have government owned infrastructure or government guaranteed loans</i>	S92: Procedure for establishment of water use associations <i>Where the WUA has government owned infrastructure or government guaranteed loans</i>
			S95: Directives to water user associations	S95: Directives to water user associations

			<i>Where the WUA does not have government owned infrastructure or government guaranteed loans</i>	<i>Where the WUA has government owned infrastructure or government guaranteed loans</i>
			Section 96: Disestablishment of water user association <i>Where the WUA does not have government owned infrastructure or government guaranteed loans</i>	Section 96: Disestablishment of water user association <i>Where the WUA has government owned infrastructure or government guaranteed loans</i>
			S97(1)(b); (4) Winding up affairs of disestablishment water user association <i>Where the WUA does not have government owned infrastructure or government guaranteed loans</i>	S97(1)(b); (4) Winding up affairs of disestablishment water user association <i>Where the WUA has government owned infrastructure or government guaranteed loans</i>
				S98 (5), (6), Transitional provisions for certain existing organisations – acceptance of proposal to transform an irrigation board into a water user association and declaration of such water user association
<b>Chapter 9: Advisory Committees</b>				
				S99: Establishment of advisory committees

			S100: Regulations regarding advisory committees
<b>Chapter 10: International Water Management</b>			
			S102: Establishment of bodies to implement international agreements
			S103: Governance and functions of bodies
			S106(4) The Director General must send a copy of the report to the Secretary to Parliament
			S107: Investigation of affairs or financial position of bodies
<b>Chapter 11: Government Water Works</b>			
		S109: Acquisition, construction, alteration, repair, operation and control of government waterworks <i>In relation to government waterworks pertaining to monitoring infrastructure for CMA requirements only</i>	S109: Acquisition, construction, alteration, repair, operation and control of government waterworks <i>For all government waterworks excluding CMA waterworks for monitoring purposes</i>
		S110: Consultation and environmental impact assessment	S110: Consultation and environmental impact assessment

		<i>In relation to government waterworks pertaining to monitoring infrastructure for CMA requirements only</i>	<i>For all government waterworks excluding CMA waterworks for monitoring purposes</i>
		S111: Financing of government waterworks <i>In relation to government waterworks pertaining to monitoring infrastructure for CMA requirements only</i>	S111: Financing of government waterworks <i>For all government waterworks excluding CMA waterworks for monitoring purposes</i>
		S112: Water from government waterworks <i>For all water use other than strategic water use within the WMA</i>	S112: Water from government waterworks <i>For strategic water use, and transfers between WMAs</i>
			S113: Access to and use of government waterworks for recreational purposes
		S115: Disposal of government waterworks <i>In relation to government waterworks pertaining to monitoring infrastructure for CMA requirements only</i>	S115: Disposal of government waterworks <i>For all government waterworks excluding CMA waterworks for monitoring purposes</i>
			S116: Regulations regarding government waterworks

<b>Chapter 12: Safety of dams</b>			
			S118(2), (3), (4), (5): Declaration of a dams to be dams with a safety risk, issuing of directives and intervention where directive is not complied with
			S122: Exemptions from compliance with provisions of this chapter or regulations made under this chapter
			S123: Making of regulations regarding dam safety
<b>Chapter 13: Access to and rights over land</b>			
<b>Part 1: Entry and inspection</b>			
	S124: Appointment of authorised person		S124: Appointment of authorised person
<b>Part 2: Servitudes</b>			
	S135: Ownership of waterworks on land belonging to another		S135: Ownership of waterworks on land belonging to another
	S136: Transfer of personal servitudes		S136: Transfer of personal servitudes
<b>Chapter 14: Monitoring, assessment and information</b>			

<b>Part 1: National monitoring systems</b>			
			S137: Establishment of national monitoring systems
			S138: Establishment of mechanisms to co-ordinate monitoring of water resources
<b>Part 2: National information systems on water resources</b>			
			S139: Establishment of national information systems
		S141(b): Provision of information	S141: Provision of information
			S142: Access to information
			S143: Making of regulations for monitoring, assessment and information
<b>Part 3: Information on floodlines, floods and droughts</b>			
	S145(1): Duty to make information available to the public		S145(1): Duty to make information available to the public
		S145(2) Establishment of an early warning system <i>In relation to issue pertaining within the WMA only</i>	S145(2) Establishment of an early warning system <i>In relation to issues with an impact or cause spanning two or more WMAs.</i>

<b>Chapter 15: Appeals and dispute resolution</b>			
			S146: Appointment of members of the Tribunal, determination of conditions of employment of members of Tribunal and termination of membership of Tribunal
			S147: Operation of Tribunal – provision of support to the Tribunal by the Department
			S150: Mediation: directives by the Minister for persons to settle disputes by mediation
<b>Chapter 16: Offences and remedies</b>			
	S155: Interdict or other order by High Court – CMA may apply to the High Court for an interdict against a person who has contravened the Act		S155: Interdict or other order by High Court – the Minister may apply to the High Court for an interdict against a person who has contravened the Act
<b>Chapter 17: General and transitional provisions</b>			
	S159: Effect of delegation: Delegation of a power does not prevent the exercise of that power by the person who made		S159: Effect of delegation: Delegation of a power does not prevent the exercise of that power by the person

		the delegation; delegation may be made subject to conditions;		who made the delegation; delegation may be made subject to conditions;
<b>Schedule 3: Powers which may be exercised and duties to be performed by CMAs on assignment or delegation (Sections 72, 73 and 151(1)(l))</b>				
			<p>Schedule 3(2): Power to manage, monitor, conserve and protect water resources and to implement catchment management strategies.</p> <p>A catchment management agency may</p> <ul style="list-style-type: none"> <li>(a) manage and monitor permitted water use within its water management area;</li> <li>(b) conserve and protect the water resources and resource quality within its water management area;</li> <li>(c) subject to the provisions of the Act, develop and operate a waterwork in furtherance of its catchment management strategy;</li> <li>(d) do anything necessary to implement catchment management strategies within its water management area; and</li> <li>(e) by notice to a person taking water, and after having given that person a reasonable opportunity to be heard, limit</li> </ul>	

			the taking of water in terms of Schedule 1.	
			Schedule 3(3): Catchment management agencies may make rules to regulate water use	
			Schedule 3(4): CMA may require establishment of management systems	
			Schedule 3(5): CMA may require alterations to waterworks	
			Schedule 3(6): CMA may temporarily control, limit or prohibit use of water during periods of water shortage	
<b>Schedule 4: Management and planning of water management institutions</b>				
<b>Part 1: Governing Board</b>				
		Schedule 4(1): Functions and powers of governing board		
		Schedule 4(3): Appointment of CEO by Board		
		Schedule 4(3): Removal of CEO by Board		Schedule 4(3): Directive to Board to remove CEO

			Schedule 4(8): Recovery of improper profits
		Schedule 4(9): Convening meetings of the Board	
		Schedule 4(10): Notices of meetings.	
		Schedule 4(15): Minutes of Board meetings	
		Schedule 4(16) Participation in meetings	
		Schedule 4(17): Resolutions without meetings	
		Schedule 4(18): Execution of documents	
		Schedule 4(19): Appointment of committees by the Board	
		Schedule 4(20): Power to regulate its own proceedings subject to Part 3 of Schedule 4	
<b>Part 4: Institutional Planning</b>			

		Schedule 4(21): Preparation of business plans by the Board		
				Schedule 4(21): Power of Minister to issue directive to Board to review and revise a business plan
				Schedule 4(22): Determination of form of the business plan of a CMA
		Schedule 4(25): Submission of business plan to Minister		
				Schedule 4(25): Minister may make comments on the business plan
		Schedule 4(25)(3): Board to consult with Minister and revise business plan according to changes agreed between it and the Minister		
				Schedule 4(25)(4): Minister may direct the Board to include or omit any matter from a business plan
		Schedule 4(26): Board to inform Minister of significant events that might prevent or materially affect achievement of the objectives of the institution		

			Schedule 4(28): Minister may require information from the Board
<b>Part 5: Monitoring and Intervention</b>			
			Schedule 4(29)(2): Minister may appoint a person to investigate the affairs or financial position of an institution
			Schedule 4(30): The Minister or a person authorised by the Minister may enter premises of an institution and take any book, record or asset of the institution where this is necessary to obtain information
<b>Part 6: Records and reporting</b>			
	Schedule 4(32): Board must ensure proper financial records and accountability		
	Schedule 4(33): Preparation and submission of annual report to Minister and tabling in Parliament		
<b>Schedule 6: Water Tribunal</b>			
<b>Part 1: Water Tribunal Members</b>			

				Schedule 6(3): Nominations for appointment to the Water Tribunal
<b>Part 2: Lodging and hearing of appeals and applications</b>				
		<p>Schedule 6(5)(3): A CMA against whose decision or offer an appeal or application is lodged must within a reasonable time -</p> <p>(a) send to the Tribunal all documents relating to the matter, together with the reasons for its decision; and</p> <p>(b) allow the appellant or applicant and every party opposing the appeal or application to make copies of the documents and reasons.</p>		<p>Schedule 6(5)(3): A responsible authority against whose decision or offer an appeal or application is lodged must within a reasonable time -</p> <p>(a) send to the Tribunal all documents relating to the matter, together with the reasons for its decision; and</p> <p>(b) allow the appellant or applicant and every party opposing the appeal or application to make copies of the documents and reasons.</p>