

water & sanitation

Department: Water and Sanitation REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF WATER AND SANITATION

# Department of Water and Sanitation (DWS) Guidance Note regarding water availability and water use licensing for the Coal Baseload Independent Power Producer (IPP) Procurement Programme

June 2015

**EDITION 1** 

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# APPROVAL

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Department of Water and Sanitation (DWS) Guidance Note regarding water availability and water use licencing for the Coal Baseload Independent Power Producers (IPP) Procurement Programme

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# CONTENTS

1	INTRODUCTION1						
1.1	Objective of this document1						
1.2	Water scarcity1						
2	SOME CO	ONSIDERATIONS IN WATER ALLOCATION DECISIONS	.3				
2.1	National	Development Plan	. 3				
2.2	National	Water Resource Strategy (NWRS)	.3				
	2.2.1	Status regarding water for power generation	. 4				
2.3	Water su	pplied from DWS bulk infrastructure	. 5				
2.4	Water us	e licence (WUL) or Integrated WUL (IWUL)	.6				
2.5	Water Tra	ading and Re-allocation	. 8				
2.6	Pollution	Control	.9				
2.7	Related v	vater pollution control policies and regulations	. 9				
2.8	Water pri	cing strategy	10				
3		DTES ON WATER AVAILABILITY	11				
3.1	Approach	n to assessing water requirements / availability	11				
3.2	Limpopo	Water Management Area	13				
	3.2.1	The Waterberg Cluster	13				
	3.2.2	Soutpansberg Cluster	13				
3.3	Luvuvhu	and Letaba Water Management Area	13				
3.4	Crocodile	e (West) and Marico Water Management Area	13				
3.5	Olifants V	Vater Management Area	14				
	3.5.1	Witbank Coalfields Cluster	14				
3.6	Inkomati Water Management Area14						
3.7	Usuthu to Mhlatuze Water Management Area15						
3.8	Thukela Water Management Area15						
3.9	Upper Vaal Water Management Area15						
3.10	Middle Vaal Water Management Area16						
3.11	Lower Vaal Water Management Area16						
3.12	Mvoti to l	Jmzimkulu Water Management Area	16				
Edition <sup>-</sup>	1						

3.13	Mzimvubu to Keiskamma Water Management Area	. 16
3.14	Upper Orange WMA	. 16
3.15	Lower Orange Water Management Area	. 17
3.16	Fish to Tsitsikama Water Management Area	. 17
3.17	Gouritz Water Management Area	. 17
3.18	Olifants/Doorn Water Management Area	. 17
3.19	Breede Water Management Area	. 17
3.20	Berg Water Management Area	. 17
4	References	.19
	Pre-Application Process and Requirements	. 21
	WUL / IWUL Application Process and Requirements	. 22

# FIGURES

Figure 2.1: Water Management Areas	4
FIGURE 2.2 PROCESS TO FOLLOW FOR IWUL APPLICATION	7
FIGURE 3.1: MAP OF COAL FIELDS	11
FIGURE 3.2: IDENTIFIED CLUSTERS OF PROSPECTIVE PROJECTS	12

# ANNEXURES

ANNEXURE A DETAILS OF WUL/IWUL PRE-APPLICATION, PROCESS TO APPLY FOR A NON-BINDING CONFIRMATION LETTER OF WATER						
AVAILABILITYA	ND WUL/IWUL APPLICATION PROCESS AND REQUIREMENTS	. 21				
ANNEXURE B:	LIST OF DWS / CMA CONTACT PERSONS	. 25				
ANNEXURE C: LET	TER $1-$ TEMPLATE LETTER ACKNOWLEDGING RECEIPT OF THE WRITTEN NOTICE OF INTENT TO APPLY FOR A WATER U	JSE				
LICENCE OF INT	FENT TO APPLY FOR A WATER USE LICENCE	. 27				
ANNEXURE D	LETTER 2 – TEMPLATE LETTER FROM THE RELEVANT REGIONAL OFFICE OF THE DWS / DWS HEAD OFFICE / CMA					
OFFICE TO COM	NFIRM SUCCESSFUL OR UNSUCCESSFUL CONCLUSION OF THE IWULA PRE-APPLICATION PHASE	. 29				
ANNEXURE E	: LETTER 3 – TEMPLATE FOR A NON-BINDING CONFIRMATION LETTER OF WATER AVAILABILITY FROM THE DWS	. 31				

v

# LIST OF ACRONYMS

ACC	Air Cooled Condenser
AMD	Acid Mine Drainage
CAPEX	Capital expenditure
CMA	Catchment Management Agency
CoG	Cost of generation
CO <sub>2</sub>	Carbon dioxide
CW	Cooling water
DBOMF	Design, Build, Operate, Maintain and Finance
DoE	Department of Energy
DWAF	Department of Water Affairs and Forestry now DWS
DWA	Department of Water Affairs – now DWS
DWS	Department of Water and Sanitation
EIA	Environmental Impact Assessment
FBC	Fluidised Bed Combustion
FGD	Flue Gas Desulphurisation
GW	Gigawatt
IPP	Independent Power Producers
IRP	Integrated Resource Plan
MW	Megawatt
NWA	National Water Act (Act 36 of 1998)
NWRS	National Water Resource Strategy
NWRS1	National Water Resource Strategy of 2004
NWRS2	National Water Resource Strategy of 2013
OPEX	Operating expenditure
PPA	Power Purchase Agreement
RfP	Request for Proposals
RfR	Request for Registration
SO <sub>2</sub>	Sulphur dioxide
SO <sub>x</sub>	Sulphur oxide emissions (includes SO2 and SO3)
WMA	Water Management Area
WUL	Water use license
ZLD	Zero Liquid Discharge

# 1 INTRODUCTION

# 1.1 Objective of this document

The objective of this document is to provide broad guidance to Bidders regarding the availability of water resources for power generation and associated activities (e.g. supply of coal feedstock, which might include mining or recycling of discard coal) under the Coal Baseload IPP Procurement Programme. This document aims to highlight the possible constraints that water supply, water pollution control measures and water licensing procedures may pose to the successful implementation of the Projects. It must be stressed that whenever reference is made to a 'Project' in the context of this document, it not only includes just the power generation activity itself, but also all the related activities that might be required for the successful implementation of the Project. Such activities might include, *inter alia*, the production and supply of coal feedstock to the power generation and of specific importance is the water use of such related activities.

It is important to note that the statements in this position paper are general statements attempting to describe the situation regarding water availability and water quality aspects in broad terms for fairly large areas. This approach is followed as it will be impractical to describe water availability to a higher degree of detail relevant to a specific site. The information in this document can form the basis for the required engagement between a prospective Bidder and the DWS regarding the site specific situation and circumstances of a Bidder's proposed Project.

# 1.2 Water scarcity

South Africa is a water-scarce country (annual freshwater availability is less than 1 700 m<sup>3</sup> per capita), with limited average rainfall of about 450 mm/year and unevenly distributed water resources (DWAF, 2004). South Africa has a mean annual run-off value of only 40 mm per capita, one seventh of the global average of 260 mm, and rainfall and river flow are highly variable, erratic, and seasonal. As such, the impact that any Projects established in terms of the Coal Baseload IPP Procurement Programme will have on the water resources will need to be carefully considered by the DWS when the WUL / IWUL applications are evaluated. It will ultimately be a Bidder's responsibility to ensure that a Project that participates in the Coal Baseload IPP Procurement Programme will be located in an area where water will be available for the requirements of the proposed Project and that such water will be available for the duration of the proposed term of the PPA and that all legal requirements of the DWS are adhered to.

In general, and due to the water scarcity in the country, the approach of the DWS when considering the WUL / IWUL applications is to give preference to water saving technologies in power generation such as dry cooling, etc. Whilst this is the situation in general there may be site-specific circumstances that would warrant an alternative approach and this could be clarified through timely engagement by the prospective Bidder with the DWS.

# 2 Some Considerations in Water Allocation Decisions

#### 2.1 National Development Plan

The National Development Plan (NDP) that was issued by the National Planning Commission in November 2011 specifically refers to some key policy issues to guide appropriate actions to improve the management, use and conservation of water. The geographic areas where such strategic planning decisions are necessary on general economic and social development grounds, as well as for environmental protection and it includes some of the areas where a high concentration of prospective Projects is expected.

The NDP refers to:

- Mpumalanga Highveld coal fields a balance between environmental protection, agriculture, energy requirements and water resources is required.
- Lephalale and surrounds water requirements and sources for mining and energy investments must be considered.
- Olifants River (Limpopo/Mpumalanga) careful consideration of the balance between mining, agriculture and nature conservation is required.

#### 2.2 National Water Resource Strategy (NWRS)

The NWA requires the Minister of Water and Sanitation to produce a NWRS. The purpose of the NWRS is to ensure that the country's water resources are managed towards achieving South Africa's growth, development and socio-economic priorities in an equitable and sustainable manner over time. The NWRS thus guides the water allocation to different users in society and different sectors in the economy.

The NWRS was initially developed in 2004 (NWRS1) and updated in 2013 (NWRS2). In the NWRS1, it was implied that a surplus still existed for the country (as at 2000). However, at that time, there were already water deficits in more than half of the WMAs. The implication was that there was no surplus water available for allocation in those WMAs. It is also not economically feasible to achieve a national balance by distributing all the surpluses available to areas with shortages as pumping water over long distances is very expensive and a balance at a national level is not a very meaningful concept.

The water balance developed in the NWRS1 showed that South Africa's surface water resources would be fully committed in the medium term and that a mix of water resources and interventions would be required to reconcile supply and demand to meet growing future water requirements.

The country is divided into 19 WMAs according to which the water resources of each WMA is to be managed and planned. The 19 WMAs are shown in **Figure 2.1**.

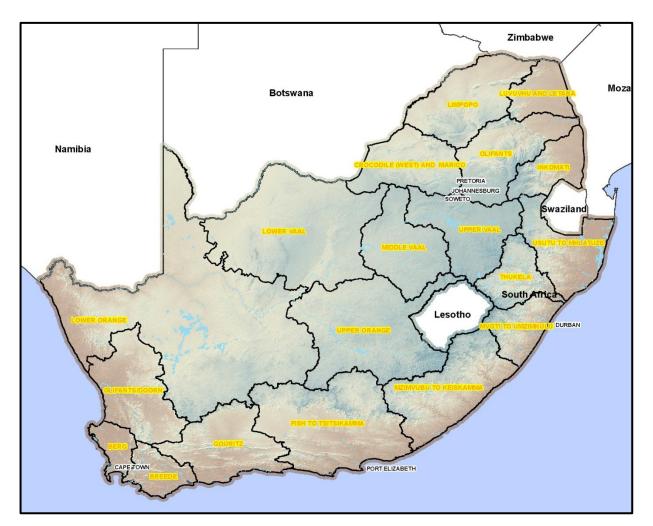


Figure 2.1: Water Management Areas

This document provides general information at WMA level and where several prospective Projects as per the responses on the RfR are in close proximity (i.e. 'clusters'); an attempt has been made to provide some guidance specific to each cluster.

As reflected in the NWRS2 (p18, p65) it has been proposed that the current 19 WMAs be consolidated into 9 new WMAs, with 9 corresponding Catchment Management Agencies (CMA's). The then Minister of Water and Environmental Affairs published the proposed new 9 WMAs in Government Notice 547 of 20 July 2012. As this proposal has yet to be finally Gazetted, the current 19 WMAs remain applicable. This Guidance Note is based on the clusters as extracted from the RfR responses or according to the boundaries of the current 19 WMAs reflected in **Figure 2.1**.

#### 2.2.1 Status regarding water for power generation

The energy sector, including Eskom, is highly dependent on reliable supplies of water for the generation of electricity (steam generation and cooling processes). An elaborate and sophisticated network of water transfer and storage schemes has been developed specifically to support this sector on the Eastern Highveld (where most power generating activities are concentrated) and to ensure high levels of reliability of water supply (also called a high assurance of supply).

In terms of section 6(1)(b)(iv) of the NWA, the NWRS2 (2013) makes provision for the allocation of water for strategic use and lists two key areas that will be targeted for this purpose in terms of the allocation priority as outlined in Chapter 6 of the NWRS2 (2013) on equitable water allocation. Strategic water use is particularly important to the National Development Outcomes and the economy as a whole and includes:

- the transfer of water from one WMA to another, and
- the continued availability of water to be used for electricity generation throughout the country.

Although water in the country is scarce and availability is variable, power generation cannot be subjected to water restrictions to the same measure as is the case with other water use sectors. This is the situation for known and documented socio and economic reasons. Thus, as power generation is considered as a strategic water user, water is normally allocated to power generation at a higher assurance of supply (99.5%) than for most other water users. However, due to the country's overall water scarcity. Eskom has committed itself to develop dry cooled power stations (NWRS2).

Although the energy sector only uses 2% of the water supplied in South Africa nationally, this sector contributes about 15% to the GDP of South Africa and creates jobs for 250 000 people (NWRS2, 2013). This may not appear to be a high water consumption; however, from a water use perspective the fact that there are relatively few power stations in the country and the fact that they are fairly concentrated in specific areas, needs to be considered. This has the result that the sector has a relatively high water-consumption in the specific areas, at high assurance, and that puts a significant burden on the management of the water resource in these areas. This has a significant impact on water availability to other sectors. Implementing measures that will improve the overall efficiency of water use within the energy sector is thus extremely important.

Given the context of the water stress that most parts of the country are experiencing, the DWS will be more inclined to approve WUL / IWUL applications for Projects that implement water saving technologies such as dry-cooling rather than wet-cooling technologies. Further considerations will be the other technologies that will be implemented (e.g. emission abatement technologies) and the extent to which water use reduction measures will be implemented. However, the DWS are cognisant of the fact that the reduction of water use by a power station negatively affects the efficiency of power generation and the effectiveness of the emission abatement. Therefore, care will be taken to not create a situation which places such stringent water use conditions on Bidders that the required power generating efficiency or emission abatement standards cannot be attained. To assist Bidders with planning for the water-use reduction measures that needs to be implemented, the Bidders can refer to the water conservation and water demand management measures which are recommended in the DWS's Reconciliation Strategy Studies for the various regions. The DWS is open for engagement to deal with any site specific arrangements, even more so for those prospective Projects that are not located in an area for which a detailed reconciliation strategy has been done.

#### 2.3 Water supplied from DWS bulk infrastructure

In the case where water is to be provided to a prospective Bidder from DWS bulk infrastructure, the following general conditions may apply.

As a guiding principle the DWS bulk infrastructure provides for a 95% availability of the infrastructure and thus 5% "downtime" for repairs and maintenance. In single supply systems such as the Mokolo Crocodile Water Augmentation Project (MCWAP) supplying water to the Waterberg Coalfields, this translates into a possibility that water may not be available for about 18 days per annum. These periods may be continuous. The water users must put measures in place to overcome such periods. Some users opt to provide adequate additional storage to bridge such gaps. In general the provision of balancing storage by the user is also a requirement.

It will be expected that the user pay the full capital and operating cost of the supply and may be required that the user enter into a water use agreement – also see sections 2.8 and 3.2.1.

#### 2.4 Water use licence (WUL) or Integrated WUL (IWUL)

Preferred Bidders will need to obtain a WUL or IWUL for all water uses which will be undertaken in terms of section 21 of the NWA. These water uses include inter alia, abstraction, storage and waste disposal. As part of their WUL / IWUL applications, Preferred Bidders will also need to provide a motivation for issuance of a licence in terms of section 27(1) of the NWA. Any WUL or IWUL which is granted by the DWS will be subject to strict conditions regarding water pollution control measures covering, inter alia, waste discharge, storm water runoff, etc. Refer to sections 2.6 and 2.7 of this document for more discussion on this.

It is required that Bidders engage with the relevant Regional DWS / CMA Office prior to submission of a Bid Response to ensure that Bidders are informed of general and any possible site specific conditions that may be applicable to their proposed sites. The contact information for the persons at the relevant Regional DWS or CMA Office is provided in **Annexure B**. A diagram illustrating the process to be followed is shown in **Figure 2.2**.

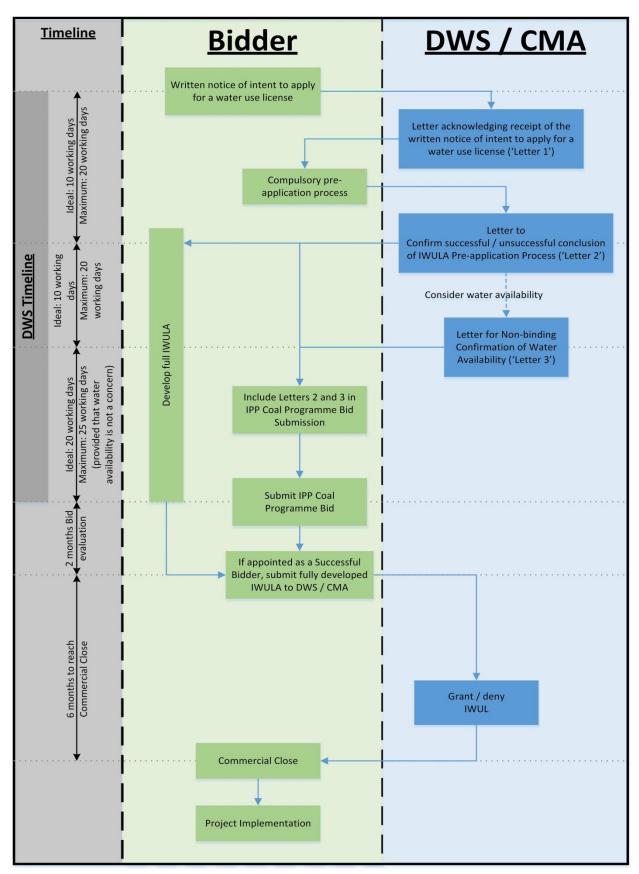


Figure 2.2 Process to follow for IWUL Application

As indicated in the Figure 2.2, Bidders need to obtain the following from DWS as part of the process of meeting the requirements for submission of a Bid Response and obtaining a WUL / IWUL in due course:

- i. Letter 1 Letter acknowledging receipt of the written notice of intent to apply for a water use licence;
- ii. Letter 2 Letter from the relevant Regional Office of the DWS / DWS Head office / CMA Office to confirm successful or unsuccessful conclusion of the IWUL application Pre-Application Phase. If the Pre-Application Phase has been successfully completed, the letter confirming this must be submitted by the Bidder in its Bid Response as it is an environmental Specific Qualification Criteria; and
- iii. Letter 3 A non-binding confirmation letter of water availability from the DWS that must be submitted by the Bidder in its Bid Response, if all or part of the water needs of Bidder's Project are to be satisfied under a WUL / IWUL as it is an environmental Specific Qualification Criteria.

Bidders need to demonstrate that they have consulted with the DWS regarding all of their water uses that will be undertaken for the Projects and that their WUL or IWUL application is complete and ready for submission to the DWS should they be selected as a Preferred Bidder. Therefore, **Bidders must submit Letters 2 and 3 with their Bid Response**.

Letter 3 is issued based on the prevailing facts and circumstances at the time of its issue and is subject to the assumptions and / or qualifications included in the letter. It is not a guarantee that water will be available if the Bidder is appointed as a Preferred Bidder as (amongst other things) the Bidder might be competing with other Preferred Bidders for the same water allocation.

Notwithstanding, the inclusion of certain qualifications and / or assumptions in the non-binding confirmation letter of water availability, it remains the Bidder's risk to ensure that there will be water available for its Project and to identify all matters which may impact on the viability and feasibility of its Project and which may impact on the Preferred Bidder's ability to timeously reach Commercial Close. DWS gives no assurance that the qualifications and / or assumptions in the non-binding confirmation letter of water availability are an accurate reflection of all obstacles that the Bidder may experience in securing the water necessary for the construction and operation of its Project and the Bidder should investigate these thoroughly.

It needs to be understood that prior to submission of a Bid Response, DWS will have the abovementioned interactions with Bidders and will provide general information to assist Bidders but will not receive applications or engage in the evaluation process of any WUL or IWUL application until Preferred Bidders are selected.

Further information on the process to obtain Letters 2 and 3 is included as **Annexure A.** . The Regional representatives to be contacted in this process and for the WUL / IWUL application process are set out in **Annexure B**.

# 2.5 Water Trading and Re-allocation

Whilst the NWA provides for trading of water allocations the current revised policy forbids any form of temporary and permanent trading between authorised water users. However it is possible that water can

be reallocated by the DWS from one sector or user to another under certain circumstances (NWA 36:1998 section 25). In certain WMAs where there is no surplus water available it may be the only option available to a user to obtain water. This would not only apply to surface water but may also be applicable to groundwater.

# 2.6 **Pollution Control**

In general it can be accepted that as part of the WUL or IWUL conditions, the DWS will require that each Project Site of a power station follow a zero liquid discharge (ZLD) approach. A ZLD power station is where a power station has no waste water streams leaving the Project Site boundary. Waste water is eliminated through the recycling and re-use of power station waste streams, and from drains and storm water, or by concentrating the waste water to the point where contaminants can be removed as a solid.

The concept of ZLD is typically employed where there are strict environmental restrictions imposed on a power station, but it also has significant water saving benefits. A number of the concepts used in a ZLD system can be utilised to reduce the water consumption of a power station.

To achieve ZLD, as many waste streams as possible must be recycled and re-used within the power generation processes. To accommodate this, it is important to segregate relatively clean and contaminant free water from dirty and highly contaminated waste streams. This typically means that more infrastructure such as proper storm water management filtration, settling ponds, other water treatment, water storage and pumping and piping systems may be required. This may have the result that infra-structure may be required and the impact thereof needs to be included in the capital and operating costs of the power station.

In respect of all waste streams it should be noted that pollution is to be avoided as reflected in section 19 of the National Water Act, Act 36 of 1998. It should also be noted that DWS in considering water use license compliance with pollution control standards requires the applicant to demonstrate compliance with the Norms and Standards in Regulation 636 of August 2013 for waste disposal, depending on the classification of that particular waste stream. Alternative designs of equivalent performance will be taken into consideration. In all cases a design report and drawings signed off by a registered civil engineer demonstrating the site specific designs performance standard is the point of departure for such consideration. (It should be noted that where evaporation and other similar means are pursued to concentrate pollutants, the classification of waste type must recognise the concentrated end waste product.)

#### 2.7 Related water pollution control policies and regulations

It will be the responsibility of the Bidders to familiarise themselves with all the related polices, guidelines, etc. that may be applicable to the planned activities for their Project. Such documents include, but are not limited to:

- Department of Water Affairs and Forestry, Second Edition, 1998. Waste Management Series:
  - > Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste;
  - > Minimum Requirement for Waste Disposal by Landfill; and
  - > Minimum Requirements for Water Monitoring of Waste Management Facilities;

9

- The National Environmental Management Act, Act 107 of 1998, clause 2 addressing principle by which decisions affecting the environment should be made;
- National Water Act, section 19 on pollution control;
- National Environmental Management Waste Act, Regulation 634, 635 and 636 of 23 August 2013;
- Minimum Requirements documents as listed in bullet 1 above because although classification has been superseded by regulations, the Regulation 636 addresses the contaminant containment barrier standard and conditions with all other standards of the MR2 of 1998 still applying;
- Engineering Professions Act, Act 46 of 2000 and in particular Board Notice 256 of December 2013 reflecting the duties of the engineer to take public safety and the environment into consideration;
- National Waste Management Strategy of 2012;
- The minimum requirements for the mining industry as contained in GN R704 of 1999;
- A series of five documents addressing waste water: "Guidelines for the Utilization and Disposal of Wastewater Sludge" Volume 1 to 5 dated March 2006. These include:
  - 1) Selection of Management Options;
  - 2) Requirements for Agricultural Use of Wastewater Sludge;
  - 3) Requirements for the on-site and off-site disposal of sludge;
  - 4) Requirements for the beneficial use of sludge at high loading rates; and
  - 5) Requirements for thermal sludge management practices and for the commercial products containing sludge; and
- Dam Safety Regulations, Regulation 139 of February 2012.

This list is not inclusive of all legislation such as area specific ordinances or by-laws.

#### 2.8 Water pricing strategy

In terms of the DWS Water Pricing Strategy, water supply to industry and ventures like Projects established in terms of the Coal Baseload IPP Procurement Programme would be considered as a full commercial undertaking. This means that the full capital (capex) and operating (opex) cost for the infrastructure to make water available would be recovered from the users.

In the situation where new infrastructure will be necessary such as is the case for the Waterberg area, successful Bidders will be required to enter into a water use agreement with the DWS. In such an agreement, matters such as, inter alia, the taking of the water, the operational rules applicable, the fixed and variable charges will be dealt with. Such agreement would most probably follow an independent process from the application for a WUL or IWUL, but the WUL or IWUL may contain a specific condition which requires that such agreement needs to be in place.

# **3 BRIEF NOTES ON WATER AVAILABILITY**

#### 3.1 Approach to assessing water requirements / availability

It is expected that the Bidders for the Coal Baseload IPP Procurement Programme will mostly be located at the known coal fields in South Africa which are indicated in **Figure 3.1**.

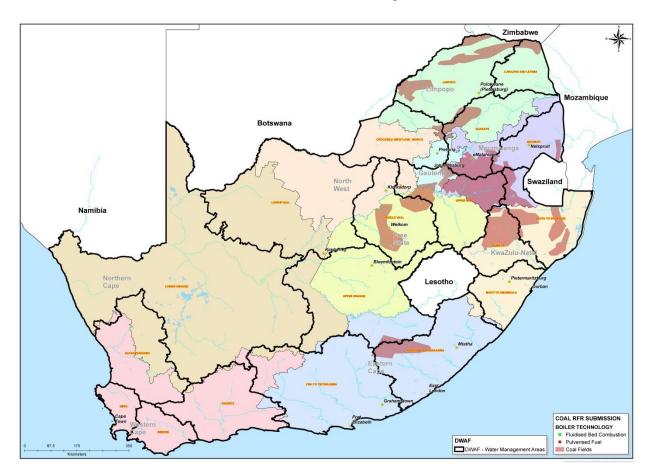


Figure 3.1: Map of Coal Fields

From the knowledge where coal is available in the country and from the responses of the RfR, several clusters of where potential Projects may be situated, were identified (i.e. groupings of prospective Projects in close proximity to each other). These are provided for ease of reference and are not considered as "cast-in-concrete" or all inclusive. The clusters are shown in **Figure 3.2**.

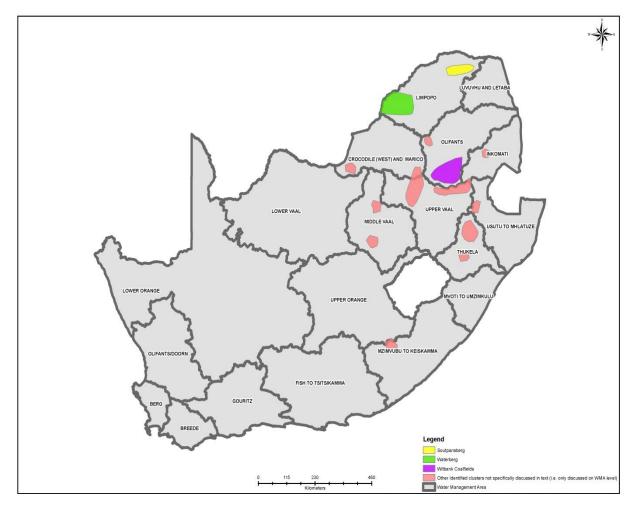


Figure 3.2: Identified Clusters of prospective Projects

General comments on the water availability are made for some of the WMAs, and where necessary, comments are provided for clusters of prospective IPP Projects that can be identified so far. This is based on the best information that is available on a macro level and is deemed to be appropriate for guiding the decisions of the Bidders. DWS staff will be available for engagement with Bidders in order to consider or to provide information regarding any site specific situation. The list of DWS staff to be engaged with is attached as **Annexure B**.

It is important to note that there are some WMAs, particularly in the south-western parts of the country, where no Projects are foreseen and thus no general comments have been provided for these. If there are Bidders intending to provide a Bid Response for a proposed Project to be located in any of these areas, the specific situation will need to be assessed through engagement with the DWS.

If DWS does grant a WUL or IWUL for a Project in any cluster, the WUL or IWUL will likely include a requirement that water saving technologies must be utilised.

# 3.2 Limpopo Water Management Area

#### 3.2.1 The Waterberg Cluster

At this locality there are no local surface water resources that are readily available, thus water will likely have to be transferred from the neighbouring Crocodile River (West) to support the Projects. The implementation of Phase 2A of the Mokolo-Crocodile Water Augmentation Project (MCWAP Phase 2A), comprise such works and awaits finalisation of funding to proceed. Once funding is secured, it may take up to four years to implement the works. The water supplied from the MCWAP Phase 2A will likely be very expensive in comparison to other sources and may even be in the order of R15 to R20/m<sup>3</sup>. The DWS will require any Preferred Bidder to conclude an offtake agreement with the DWS for the taking of water (refer to section 2.8). Such agreement may include a fixed monthly minimum payment even if no water is used.

The single supply system to the Waterberg area provides for downtime of the bulk water infrastructure of 5% (18 days), translating into an availability of the infrastructure of 95%. It may thus be required that all Projects in the Waterberg area that are expecting water to be supplied through the MCWAP Phase 2A pipeline, implement measures to bridge this requirement. This may be such as providing own on-site storage for 18 days' operation. Any such requirement is normally reflected in the WUL or IWUL, and / or the off-take agreement.

In this cluster the DWS will likely require dry cooling technology when granting a WUL or IWUL for any power generation development as was the case with Matimba and Medupi power stations. Engagement with DWS in an early stage of the bidding process is required.

#### 3.2.2 Soutpansberg Cluster

In this cluster water is scarce and the area is in deficit. The availability of bulk infrastructure is also not likely and site specific engagement will need to take place with DWS. In the case that significant volumes of water is required in this area, such water will most likely need to be sourced by reallocation of water that is currently used for other purposes, since the neighbouring catchments are also stressed and transfers from there will be unlikely. Engagement with DWS regarding water use in this cluster will be important.

# 3.3 Luvuvhu and Letaba Water Management Area

No Projects are expected in this area. The conditions for granting a WUL or IWUL to possible Preferred Bidders, if any, will have to be assessed on an individual basis.

# 3.4 Crocodile (West) and Marico Water Management Area

The water balance in the Crocodile (West) River system was assessed in the Reconciliation Strategy. This was done through undertaking sophisticated risk analyses, including salinity modelling. Projected water balances were compiled for the planning period until the year 2040. It was found that the system has surplus water originating from increasing treated wastewater generated in the urban areas of

Northern Gauteng and discharged to the Crocodile River (West) as part of the river system in the Crocodile and Marico WMA.

The possible utilisation of the projected surplus water in the Crocodile (West) River system could be available for transfer to the Waterberg coal fields in the Lephalale area or for water reuse schemes within the catchment. The latter, such as the proposed Tshwane Potable Water Augmentation Program, will reduce the requirement for the transfer of large quantities of water from the Vaal River System and may have some impact on the quantum of water available for transfer to the Waterberg coal fields.

The resulting water balance for the Crocodile (West) River system, including the transfers to the Lephalale area, indicated that shortages could occur over the medium-term planning period. However, these shortages are relatively small in volume and only temporary as the return flows in the Crocodile (West) River are expected to continue to grow. These shortfalls may require further interventions that could be in the form of infrastructure developments (further transfers from the Vaal River system), implementing water demand management measures or reallocation of water from irrigation on a permanent or temporary scale.

For the Marico and upper parts of the Molopo rivers that are included in the WMA, the water resources are very limited and utilised for mostly domestic and agricultural purposes. There are significant groundwater resources (dolomitic) available and the possible utilisation of these will need to be considered carefully. The protection of this resource against pollution will be extremely important.

# 3.5 Olifants Water Management Area

All power generation facilities in this area receive water that is transferred from neighbouring catchments.

#### 3.5.1 Witbank Coalfields Cluster

This cluster is situated on the Eastern Highveld in the Olifants WMA. The Olifants River is possibly the most water stressed river in the country. The current resources are all fully committed and the mine water reuse (acid mine drainage (AMD)) is in general required to serve the potable water needs in Middelburg and eMalahleni or to augment the supply in the Middle Olifants River. However, in cases of very small water use it may be available locally and it may be considered to utilise AMD as the water source for such development. Generally, for most instances it may be required that water allocations for irrigation use be obtained and allocated for power generation use. There are currently not known plans to augment the supply by transferring more water into the catchment from other rivers.

#### 3.6 Inkomati Water Management Area

This WMA falls within one of only two CMAs that has been established to date. The area of jurisdiction of the Inkomati-Usuthu Catchment Management Agency (IUCMA) comprises the full Inkomati WMA plus the north-western part of the Usuthu to Mhlatuze WMA.

Water is transferred from this catchment to supply water for mining and power generation use in the Olifants River catchment. This is done through integrated infrastructure such as dams, pumping stations, pipelines, etc., to deliver water to numerous consumers on the Eastern Highveld.

The former ICMA developed a Catchment Management Strategy and found that the catchment is stressed. The latest Inkomati Water Availability Assessment Study confirms a state of stress (allocation is higher than availability). There may be slight differences in the different sub-catchments such as the Komati, Crocodile and Sabie rivers. The current level of water use within the Komati and Sabie catchments appears to be sustainable with users receiving water at acceptable levels of assurance. The Crocodile system is more stressed than the remainder of the WMA.

Generally, no new water is available for allocation for any possible development of power generating facilities in the area. Engagement with the DWS will be required to discuss the water availability for any prospective Bidders in this area.

#### 3.7 Usuthu to Mhlatuze Water Management Area

Water is transferred from this WMA (the Usuthu River) to power stations and other users on the eastern Highveld and the Vaal Catchment. The water availability for any new user from the resources and the bulk infrastructure in the Usuthu River Catchment needs to be carefully considered.

In this WMA the Mhlatuze River is over allocated and water shortages are experienced from time-to-time. It is not clear what water source any potential Projects in this WMA may want to utilise. It needs to be investigated if it is surface water, groundwater, treated AMD, use of waste water or even the desalination of sea water. If it is to be surface water from the catchment, it will most probably require the re-allocation of water from agriculture to the prospective Project. The NWA provides that a user may procure allocations from another user such as agriculture. In order to make use of it such acquired allocation then needs to be adjusted to compensate for the difference in the assurance of supply of the users before it can be transferred to the new user through the WUL or the IWUL process. However, the current policy of the DWS does not support such action but rather supports a possible state controlled and government initiated reallocation of water allocations from one user group to another.

The Pongola River in the WMA has a surplus of water available in the lower reaches (Pongolapoort Dam) but it is not in close proximity to any coal reserves.

# 3.8 Thukela Water Management Area

More water in this catchment may in future be transferred to serve the Vaal River System. The proximity to existing water supply infrastructure needs to be obtained from the DWS, or the prospective Preferred Bidder will need to provide their own system to bring water from the Thukela or any of the tributaries. With coal mining prevalent in this area there may be opportunities for re-use of water such as treated AMD. In the Newcastle area there may be some water available from the Ntshingwayo Dam but the lack of bulk water distribution infrastructure may be a constraint.

# 3.9 Upper Vaal Water Management Area

The situation is about the same as that of the Olifants River and although the proposed Projects are in close proximity to bulk infrastructure the water requirements within the WMA and water infrastructure capacity need to be considered carefully. In this WMA the water resources of Vaal River system are

stressed. Water is already transferred into this area from neighbouring catchments at high cost to meet current requirements. It needs to be noted that water pollution in this WMA (i.e. the catchment of the Vaal Dam) is a serious concern and appropriate measures need to be taken to safeguard and protect the catchment area's water sources. For prospective Bidders close to Secunda there may be capacity available locally in the Vaal River Eastern Highveld Augmentation Project (VRESAP); and also Bidders near the Vaal Dam where it is considered that the water source will be available and that the bulk water infrastructure may be adequate. This still needs to be cleared with the DWS.

#### 3.10 Middle Vaal Water Management Area

For any development the local surface water resources in this WMA are under pressure and more details are required of the local water supply system. However, there may be capacity available from the reduction in activities of the gold mining industries and this water could be available from the river or even from infrastructure of the Midvaal Water Company or Sedibeng Water. The infrastructure of the Sand-Vet Government Water Scheme would normally be fully utilised, but these options need to be clarified with the DWS and the relevant Water Service Providers.

#### 3.11 Lower Vaal Water Management Area

There are only limited coal reserves in this WMA and thus no extensive IPP interest is expected. Possible Projects, if any, will have to engage with the DWS on an individual basis.

#### 3.12 Mvoti to Umzimkulu Water Management Area

There are only limited coal reserves in this WMA and thus no extensive IPP interest is expected. Possible Projects, if any, will have to engage with DWS on an individual basis.

#### 3.13 Mzimvubu to Keiskamma Water Management Area

If any prospective Bidders respond with proposals that are located in this WMA, it will most probably be located at the coalfields near the town of Molteno. In this area it is expected that the water resources may be available, depending on the magnitude of the prospective development. Conveyance infrastructure to transfer water to Project locations might be lacking. Engagement with the DWS will be necessary to determine whether a WUL or IWUL for such development will be granted and what the requirements for a WUL or IWUL will be (wet-cooling or dry-cooling, emission abatement technology, etc.).

#### 3.14 Upper Orange WMA

There are only limited coal reserves in this WMA and thus no extensive IPP interest is expected.

The construction of the Lesotho Highlands Water Project (LHWP) Phase II (i.e. the Polihali Dam) will lead to a reduction in the yield of the Orange River Project (ORP, i.e. the Gariep and Vanderkloof Dams) to such an extent that shortages will be experienced in the ORP system. Therefore, if any Projects in this

WMA proceed, it is foreseen that such Projects will have to be dry-cooled in order for a WUL or IWUL to be granted.

In particular, Bloemfontein and surroundings are definitely already experiencing a serious water shortage. There are not adequate local sources available and the transfer scheme from the Caledon River is utilised to full capacity.

#### 3.15 Lower Orange Water Management Area

There are only limited coal reserves in this WMA and thus no extensive IPP interest is expected. Potential Projects, if any, will have to engage with the DWS on an individual basis.

#### 3.16 Fish to Tsitsikama Water Management Area

A reconciliation strategy study was done for the Algoa Water Supply System (AWSS) in 2011. This study showed that in 2009 the total water usage from the AWSS was 157.8 million m<sup>3</sup>/annum, which is basically in balance with the yield of the system of 159.4 million m<sup>3</sup>/annum. The strategy report states that any increase in the water requirements would put the system at risk and that measures to solve this problem had to be proceeded with immediately on account of the lead times necessary for implementation. The measures/interventions recommended in the strategy are in the process of being implemented and it is unlikely that sufficient additional yield would now be available to support significant power generating activities. Consideration of a WUL for any Project in this area will require engagement with the DWS and local water service providers or authorities.

#### 3.17 Gouritz Water Management Area

No Projects are expected in this area. Possible Projects, if any, will have to engage with the DWS on an individual basis.

#### 3.18 Olifants/Doorn Water Management Area

No Projects are expected in this area. Possible Projects, if any, will have to engage with the DWS on an individual basis.

#### 3.19 Breede Water Management Area

No Projects are expected in this area. Possible Projects, if any, will have to engage with the DWS on an individual basis.

#### 3.20 Berg Water Management Area

No Projects are expected in this area. Possible Projects, if any, will have to engage with the DWS on an individual basis.

# 4 **REFERENCES**

Dam Safety Regulations, Regulation 139 of February 2012.

DEA 2011, National Waste Management Strategy

DWA 2004, National Water Resource Strategy, September 2004 First Edition

DWA 2013, National Water Resource Strategy, June 2013 Second Edition

DWA 1998, Waste Management Series, Second Edition

DWS Projects and Programmes – Reconciliation Strategies for WMAs or water supply systems where applicable (http://www.dwaf.gov.za/projects.aspx)

Government Gazette No 35062, published 24 February 2012, Regulation 139 – Regulations regarding the safety of dams in terms of section 123(1) of the National Water Act, 1998

Government Gazette No 36784, published 23 August 2013, Regulation Gazette No 10008, Regulations 634, 635 and 636 – Waste classification and management regulations

Government Gazette No 38465 published 12 February 2015, General Notice No 126 of 2015 - Draft regulations regarding the procedural requirements for licence applications in terms of section 26(1) (k) of the National Water Act, 1998

NPC 2011, National Development Plan, Vision for 2030. ISBN: 978-0-621-40475-3, RP270/2011. November 2011.

#### ANNEXURE A Details of WUL/IWUL Pre-Application, process to apply for a nonbinding confirmation letter of water availability and WUL/IWUL Application Process and Requirements

#### **Pre-Application Process and Requirements**

Any Bidder wishing to obtain a non-binding confirmation letter of water availability from the DWS and intending to apply for a WUL / IWUL upon appointment as a Preferred Bidder shall submit written notice of such intent to apply for a WUL / IWUL and request for non-binding confirmation letter of water availability ("notice of intent to apply") to the DWS prior to submission of a Bid Response. The list of DWS or CMA staff to be engaged with is attached as **Annexure B**. Upon receipt of the written notice of intent to apply, the responsible authority shall, within five days, issue a letter to the applicant, acknowledging the receipt of the written notice of intent to apply indicating the subsequent processes to be followed. The applicant must conduct compulsory pre-application processes with the responsible authority, involving meetings and site inspection of facilities of proposed water uses following from the notice of intent to apply.

It can be expected that in preparation for the pre-application and non-binding confirmation consultation (*i.e.* meeting with DWS / CMA) the Bidder should have at least the following information available in written form to be discussed and to be submitted after the consultation:

- Name and description of the water resource to be utilised.
- The amount of water to be taken per year, expanded into monthly figures.
- The exact point (co-ordinates) where the water is planned to be taken from the water resource.
- Property descriptions where the water will be taken from the water resource, as well as where it will be utilised, with suitable locality plans.
- Name and relevant information of the person or legal entity who will be the water user.
- If the water is to be taken on or transported over property not belonging to the water user, an indication of the likelihood that permission will be granted by the relevant owners.
- A short summary of the following:
  - How the water will be utilised and the processes involved, from where the water is taken from the resource to where it is either disposed of or discharged. It should be stated clearly whether wet cooling or dry cooling will be used.
  - The planned infrastructure for the taking and transportation of the water from the water resource to the plant.
  - Any impacts on streams and watercourses by roads, pipelines, etc.

The details of the information required for this pre-application and non-binding confirmation process will be stipulated by the relevant authority DWS/CMA in the letter acknowledging receipt of the written notice of intent to apply.

Following the abovementioned WUL / IWUL pre-application process, the Bidder will receive a letter from the relevant Regional Office of the DWS / DWS Head office / CMA Office to confirm the successful or unsuccessful conclusion of the pre-application process. Furthermore, if the DWS is of the preliminary view, following any preliminary investigations undertaken in this process that the required volumes of water are available for the Project, the DWS will issue a non-binding confirmation letter of water availability to the Bidder.

#### **WUL / IWUL Application Process and Requirements**

This section gives a brief overview of the requirements for a WUL / IWUL application compilation and submission. The information provided herein is for information and could change pending further interactions between DWS and other role players. This process should only be followed immediately upon appointment as a Preferred Bidder.

An application for a WUL / IWUL must be made to the responsible authority (DWS Regional Office / CMA Office) and must:

- be made on an official application form obtainable from the relevant responsible authority for the different water uses; and
- be supported by supporting technical documents as specified and required by the responsible authority;
- be accompanied by the prescribed non-refundable application fee;

In the case of an IWUL application, one application fee shall be paid for all water uses applied for. The Preferred Bidder will be required to submit the following as part of their fully developed water use licence application:

- Fully completed licence applications forms as will be provided to the Preferred Bidder by the relevant authority.
- Licence application fee
- Certified ID copy of the applicant/representative
- If a company, company registration documents/certificate
- Title deeds in respect of the land on which proposed water uses will be undertaken
- Signed Lease Agreement if land not owned by the applicant,
- Community resolutions for communally owned land
- Public participation process report
- Motivation in terms of Section 27 (1) of the National Water Act

#### A1 APPLICANT, PROPERTY AND OWNERSHIP INFORMATION FORMS

- DW756/769 Licensing Part 1: Individual
- DW757/770 Licensing Part 1: Water Services Provider (including Water Boards)

- DW758/771 Licensing Part 1: Company, Business or Partnership; National or Provincial Government
- DW759/772 LICENSING PART 1: WATER USER ASSOCIATION, INCLUDING:
  - Irrigation Boards
  - Subterranean Water Control Boards
  - Water Boards For Stock Watering
  - Settlement Boards
  - Water Conservation Boards

#### **A2 WATER USE FORMS**

Description	Type of Form	Technical supporting documents		
SECTION 21 ((a) and (b)) water use				
Taking of water from a water resource Storing Water	DW760 DW761	<ul> <li>Technical documents that explain the water requirements</li> <li>A comprehensive groundwater study in case of groundwater abstraction</li> <li>Design drawings of the dam</li> </ul>		
SECTION 21 C & I				
Impeding or Diverting the Flow of Water in a Watercourse	DW763 DW768	<ul> <li>Environmental Impact Assessment</li> <li>Wetland studies in case a wetland is impacted upon</li> </ul>		
Altering the Bed, Banks, Course or Characteristics of a Watercourse	500700	Record of Decision from Department Environmental Affairs		
SECTION 21 (e, f and g) water uses				
Engaging in a Controlled Activity: Irrigation of any land with waste or water containing waste	DW765 DW766	Groundwater studies Water quality report		
Discharging Waste or Water Containing Waste into a Water Resource through a Pipe, Canal, Sewer, Sea Outfall or other Conduit	DW780	Water quality report Hydrological studies of the surface water resources involved		
Disposing of water which contains Waste from, or which has been heated in, any industrial or power generation process				

#### A3 SUPPLEMENTARY FORMS

- DW784 Taking Water from a Water Resource: Pump Technical Data.
- DW788 Taking Water from a Water Resource: Power Generation, Industrial or Mining Use.
- DW790 Storing Water: Dam and Basin Technical Data.
- DW799 Discharging or Disposing of Waste Water: Quality
- DW781/DW775 Supplementary forms for section 21 (c) and (i).
- DW901 Property where water uses occurs
- DW 902 Details of property owner
- DW 903 Compliance Management Information; Actual/ Monitored Waste Discharge Details applicable for sections 21(f) and (h)
- DW904 Compliance Management Information: Actual/ Monitored Waste Discharge Details applicable for sections 21(e) and (g)
- DW905 Supporting technical information for waste disposal facilities 21(g) water uses.

#### A4 TECHNICAL SUPPORTING INFORMATION

- Integrated Water and Waste Management plan (IWWMP) (Operational guideline: for the preparation of the Water Quality Management Technical Documents)
- Method of operations (e.g. mining plan/ method, solar, wind, hydropower generation process)
- Impact on of the water use activities assessment on water resources and the mitigation measures
- Rehabilitation Plan
- Wetland/Aquatic Studies
- Proof of Public Participation specifically for water related issues
- Motivation in terms of Section 27 (1) of the National Water Act.
- Topographic maps at sufficient scale to show the operations (e.g. 1: 50 000)
- Design drawings for mine and energy infrastructure on at least A2 size, signed by registered professional engineer as applicable.

# ANNEXURE B: List of DWS / CMA contact persons

DWS Region	WMA	CMA WULA Representative	Contact Details	DWS Regional Representative Name and Contact Details		DWS Head Office Representative		WUL Representat ive
Gauteng	Upper Vaal	Mr K. Khorommbi	0828065305	Mr M Keet	012 392 1306	Mr T Nditwani Mr S Rademeyer	012 336 8189 012 336 8358	Mr S Skosana
Limpopo	Limpopo,	Ms D Maumela	0828857193	Ms L Kobe	015 290 1231	Mr T Nditwani, Mr OJS	012 336 8613	012 336
	Levhuvhu	Ms W Ralekoa	0828754158			van den Berg		7677
North West	Crocodile Marico	Ms D Maumela	0828857193	Mr C Lobakeng	018 397 9547	Mr T Nditwani	012 336 8189	
Mpumalanga	Olifants	Ms W Ralekoa	0828754158	Mr F Guma	013 759 7310	Mr T Nditwani	012 336 8327	
	Inkomati- Usuthu	Dr Gyedu-Ababio	0621505050			Mr N van Wyk		
Free State	Middle Vaal	Mr K Khorommbi	0828065305	Mr TNtili	051 405 9281	Mr T Nditwani	012 336 8189	
	Upper Orange	Mr M Mahunonyane	0828057553			Mr S Rademeyer	012 336 8358	
KwaZulu Natal	Umhlatuze, Thukela, Mvoti Mzimkulu	Mr Jay Reddy	0828031817	Mr A Starkey	031 336 28 62	Mr T Nditwani Mr N van Wyk	012 336 8189 012 336 8327	
Eastern Cape	Mzimvubu Keiskamma, Fish- Tsitsikamma	Ms P Gasa- Lubelwane M. Sirenga	0828876251 0832723127	Ms. P Makhanya	0837829916	Mr T Nditwani Me I Thompson	012 336 8189 012 336 8647 012 336 8647	
Western Cape	Gouritz, Breede,	Mr P Buthelezi	0824465149	Mr K Khan	021 941 6004	Mr T Nditwani Ms I Thompson	012 336 8189 012 336 8647	
	Berg, Olifants-Doorn	Ms A Petersen	0823208228					
Northern Cape	Lower Vaal	Mr K Khorommbi	0828065305	Mr A Abrahams	053 830 8802	Mr T Nditwani	012 336 8189	
	Lower Orange	Mr M Mahunonyane	0828057553	-		Mr S Rademeyer	012 336 8358	

Note: The details as listed above are subject to change. In the event that it does, Bidders are requested to consult with DWS on who the appropriate person is for submitting correspondence regarding the IWULAs or enquiries

Edition 1

Edition 1

ANNEXURE C: Letter 1 – Template letter acknowledging receipt of the written notice of intent to apply for a water use licence of intent to apply for a water use licence



water & sanitation

Department: Water and Sanitation REPUBLIC OF SOUTH AFRICA

	(012) 336 8947	$\bowtie$	P/Bag X313	Ľ
e-mail:	enquiry@dwa.gov.za		PRETORIA	
			0001	
			0001	

#### <insert title>>

<<insert company name>> <<insert address line1>> <<insert address line 2>>

<<insert address line 3>>

#### Attention: <<insert name>

# ACKNOWLEDGING RECEIPT OF THE WRITTEN NOTICE OF INTENT TO APPLY FOR A WATER USE LICENSE

The Department of Water and Sanitation hereby acknowledges receipt of the written notice of intent to apply for a water use licence / integrated water use licence and of the request for a non-binding confirmation letter of water availability. This was received on <<date>>.

<<Respective Bidder>> are hereby advised that they should proceed with the IWUL Pre-Application Process and submit the required documents to <<relevant authority>>. The process and requirements for the IWUL Pre-application are as set out in Annexure A of the DWS document titled: 'Department of Water and Sanitation (DWS) Guidance Note regarding water availability and water use licensing for the Coal Baseload Independent Power Producers (IPP) Procurement Programme'. All documents pertaining to the Pre-application must be submitted to this Regional Office of the DWS / CMA office and be addressed to the << Provincial Operations Head/ Chief Executive Officer – CMA>>>>.

Once the pre-application has been received and other requirements have been met (e.g. site inspection), the DWS / CMA will consider your pre-application where after it will issue a letter to you to confirm the successful or unsuccessful conclusion of the pre-application process. Furthermore, the DWS / CMA will consider whether the required water is or is not available for your Project and decide whether or not to issue you with a non-binding confirmation letter of water availability.

Yours faithfully

<<< insert name>>> <<< date>>>

<< Provincial Operations Head/ Chief Executive Officer – CMA>>>

#### ANNEXURE D Letter 2 – Template letter from the relevant Regional Office of the DWS / DWS Head office / CMA Office to confirm successful or unsuccessful conclusion of the IWULA Pre-Application Phase



Water & sanitation Department: Water and Sanitation REPUBLIC OF SOUTH AFRICA

	(012) 336 8947	P/Bag X313	K
e-mail:	enquiry@dwa.gov.za	PRETORIA	<b>A</b>
		0001	
		0001	

<insert title>> <<insert company name>> <<insert address line1>> <<insert address line 2>> <<insert address line 3>>

#### Attention: <cinsert name>

#### CONFIRMATION OF IWULA PRE-APPLICATION PROCESS

The Department/ CMA hereby confirms the conduct and <-successful/ unsuccessful>> conclusion of the requisite pre-application processes for your water use licence comprising the following:

- 1. submission of the written notice of intent to apply for a water use licence;
- 2. issuance of the letter acknowledging the written notice of intent to apply for a water use licence to the applicant, and the subsequent processes to be followed within the requisite 5 days; and
- the compulsory pre-application processes with the responsible authority, involving meetings and site inspection of facilities of proposed water uses following from the notice of intent to apply, within the requisite 20 days.

Yours faithfully

<<< insert name>>>

<< Provincial Operations Head/ Chief Executive Officer – CMA>>>

# ANNEXURE E : Letter 3 – Template for a non-binding confirmation letter of water availability from the DWS



Water & sanitation Department: Water and Sanitation REPUBLIC OF SOUTH AFRICA

	(012) 336 8947	$\bowtie$	P/Bag X313	
e-mail:	enquiry@dwa.gov.za		PRETORIA	
			0001	Ê
			0001	

- <<mark>insert title>></mark>
- <<insert company name>>

<<insert address line1>>

<<insert address line 2>>

<<insert address line 3>>

#### Attention:

#### NON-BINDING CONFIRMATION OF WATER AVAILABILITY

Following a written request from <respective Bidder> to the Regional Head of the relevant Regional Office / CMA of the DWS <or the CEO of the relevant CMA>, and after a consultation with the intended water user and a subsequent investigation into the matter (*i.e.* the IWULA Pre-application Process), it was determined that the volume of water (?? million<sup>3</sup> per annum) that <respective Bidder> intends to abstract from <water resource in a catchment> should be available for utilisation in the power generation and related activities for <respective Bidder> 's proposed Project, subject to any catchment management and / or site specific qualifications and assumptions.

The abovementioned volume of water may be indicated as available to more than one Bidder. Even though a non-binding confirmation of water availability is made at this stage based on the prevailing facts and circumstances and subject to the assumptions and / or qualifications outlined above, this is not a guarantee that water will be available if <respective Bidder> is appointed as a Preferred Bidder as

(amongst other things) the Preferred Bidder might be competing with other Preferred Bidders for the same water allocation.

In consideration of water availability and in the issuance of an IWULA for the proposed Project forming part of the Coal Baseload IPP Procurement Programme, the water use applied for will be treated as a strategic water use or user receiving water at a high assurance as is applicable in the relevant catchment.

Notwithstanding the issue of this non-binding confirmation of water availability, for a water use licence to be issued, apart from water availability, a number of other requirements are necessary to comply with as prescribed in the National Water Act, Act No 36 of 1998 (NWA 36:1998). This indication that water may be available should not be regarded as confirmation of or a guarantee that water will in fact be available for the Project or that a water use licence will eventually be issued. The responsibility rests on <respective Bidder> to comply with all other reasonable requirements in terms of the NWA 36:1998 before a licence could be considered for issuance.

This non-binding confirmation of water availability is issued to <<u>respective Bidder></u> following the completion of the "IWULA Pre-application Process" and issuance of a letter by DWS (Confirmation of IWULA Pre-application Process).

The function of the Pre-application Process was to inform <respective Bidder> of the process to be followed and what will be required should <respective Bidder> decide to apply for a water use licence. The Pre-application Process has produced the necessary information to enable the DWS Regional Head <Region> / CMA CEO to confirm that water availability should not prevent the issuance of a licence, if <respective Bidder> is appointed as a Preferred Bidder(subject to (amongst other things) the constraints that may arise if Bidders are competing for the same water supply). If successful, the full licence applications will then be submitted, processed and considered for approval by the Minister's delegated official.

You may now proceed with the preparation of your water use application (WULA), at your own discretion and for your own risk to have it ready for submission but you should only formally submit the application if and when you are selected as a Preferred Bidder for the IPP Coal Baseload Programme.

Yours faithfully

<<< insert name>>>

#### <<Provincial Operations Head/ Chief Executive Officer – CMA>>>