



**water & sanitation**

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Water and Sanitation  
**REPUBLIC OF SOUTH AFRICA**

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**WATER USE LICENCE APPLICATION SUMMARY**

**NAME OF APPLICANT: Kelvin Power**

**Compiled by: John von Mayer**

**Signature:**  
**Date : 18 August 2024**

## 11. Section 27 (1)

The requirements contained in Section 27(1) of the National Water Act, 1998 (Act 36 of 1998) have been considered and are discussed further below.

### a) Existing lawful water uses

Kelvin Power (Kelvin) has an existing WUL (03/A21C/FGH//1110) authorising various water uses in terms of the National Water Act, 1998 (NWA) for the existing coal fired power station. The existing WUL covers the same property applicable for the proposed CCGT project as the same effluent discharge point is proposed be utilized for the CCGT project as for their current coal-fired operations. The CCGT project construction triggers 21(f) and (h) water uses and a full water use licence application is required.

### b) Need to redress the results of past racial and gender discrimination

The Applicant aims to redress historical socio-economic inequalities, ensure broad-based economic empowerment (BBEE) and the meaningful participation of Historically Disadvantaged Persons within South Africa. Although certain aspects of the construction of the proposed plant are technically specialised, there remain opportunities for local contractors to become involved in components of construction, which are less plant-specific. The use of local contractors increases the number of employment opportunities for local people during the construction phase. Approximately 500 temporary job opportunities are to be created during the construction phase of the project. The project would also aid in preventing power outages in the region and the country by adding to the power generation capacity in the country. An estimate of 200 temporary skilled and 500 temporary unskilled jobs will be created during construction. 50 unskilled and 50 skilled permanent jobs are anticipated for operations at this stage. Where possible, existing local labour will be utilised. Labourers will mostly be sourced from the surrounding area.

### c) Efficient and beneficial use of water in the public interest

The water management system at Kelvin's operations is based on the principles of pollution prevention, management of affected water at source, optimal re-use / recycling of affected water as well as minimal discharge of affected water to the natural surface water environment. The mechanical cooling towers proposed for the CCGT project will also use less water than typical "wet" cooling technology.

### d) Socio-economic impact –

The CCGT construction and operations result in a number of socio-economic benefits within the affected local municipalities and its' communities. The details regarding the socio economic impacts are described below.

#### i) Of water use or uses if authorised:

- ii) The project will have a positive impact on the employment in the region through employment opportunities during construction and operation. This project will therefore directly impact the employment rate in the surrounding communities. An estimate of 200 temporary skilled and 500 temporary unskilled jobs will be created during construction. 50 unskilled and 50 skilled

permanent jobs are anticipated for operations at this stage. Where possible, existing local labour will be utilised. Labourers will mostly be sourced from the surrounding area.

**iii) Of the failure to authorise water use or uses:**

Failure to authorise the proposed water uses will result to the following socio economic impacts:

- Failure to authorise the proposed water uses will result in Kelvin not being able to construct the CCGT project.
- Without the necessary authorisation the potential employment opportunities associated with the new CCGT project will be lost. In addition the additional power generation capacity for the country would be lost.

**e) Any catchment management strategy applicable to the relevant water resource**

The Kelvin site is situated on the boundary of two quaternary catchments, A21C and A21A, with 97% of the site in quaternary catchment A21C, the Jukskei River catchment – within the Crocodile West and Marico WMA. An unnamed tributary drains north-west for approximately 1.1km to confluence with the Modderfonteinspruit from the catchment of the ash dams where effluent is discharged. The Modderfonteinspruit confluences with the Jukskei River which drains in a north westerly direction and confluences with the Crocodile River approximately 35 km downstream. The station is situated within an industrial area, however it is also close to a number of residential areas. In addition, there are large areas of Alexandra, located downstream, where it is understood that informal use of water from the Jukskei River occurs. A-station, the area now proposed for the CCGT plant, is located in an area where there are no water resources that would be directly affected by runoff.

The station is situated within an industrial area, however it is also close to a number of residential areas. In addition, there are large areas of Alexandra, located downstream, where it is understood that informal use of water from the Jukskei River occurs. Catchment A21C is 75 961 ha and the part of the Kelvin site contributing to this catchment is 154.7 ha (or 0.2%) and Catchment A21A is 48 189 ha and the portion of the Kelvin site contributing to this catchment is 5.4 ha (or 0.01%). The site is at an elevation of between 1620 and 1680 mamsl with a gentle slope of approximately 0.03 (3% or 3 meters of elevation for every 100m). The site falls within Integrated Unit of Analysis, IUA 1: Upper Crocodile/ Hennops/ Hartbeespoort, upstream of Hartbeespoort Dam and Resource Units 1.1 (Upper Hennops and Rietvlei Rivers to inflow of Rietvlei Dam, and dolomite aquifer systems) and 1.7 (Jukskei, Klein Jukskei and Modderfonteinspruit). This IUA has been classified as a Class III river. In respect of the classification of rivers, this means that it is a river that is highly used and configuration of ecological categories of that water resource are highly altered from the predevelopment condition.

The Broad Management Objectives within the Crocodile (West) and Marico WMA include:

- **Maintaining Water Quality:** Ensuring that water quality supports the ecological health of the river systems and is suitable for various uses, including domestic, agricultural, and industrial purposes.
- **Controlling Pollution:** Reducing pollution from agricultural runoff, industrial discharges, and wastewater to maintain acceptable levels of nutrients, salinity, and microbial contamination<sup>1</sup>.
- **Protecting Aquatic Ecosystems:** Preserving the natural habitats and biodiversity within the catchment by maintaining the ecological integrity of rivers and wetlands.
- **Ensuring Sustainable Use:** Balancing water use among different sectors to prevent over-extraction and ensure long-term availability.
- Kelvin has submitted an IWULA to ensure that any water resources affected by the proposed project activities are licensed and managed in accordance with the relevant water and environmental legislation.

The biggest impactors on water quality of the Crocodile River (West) Catchment are the large scale water and land users. The sprawling urban areas in the south-east of the catchment, with their undersized wastewater systems (in places) and large solid waste pollution problems (litter and

dumping along river courses) contribute to the poor water quality downstream in the Hartbeespoort Dam. Other contributors such as compost-making factories, industries and old discarded mines (acid mine drainage) also proliferate in this area.

Rietvlei Dam Catchment (A21A): Sewage from the western side of Kempton Park is treated at the Hartbeesfontein plant and the effluent is discharged into the Sesmylspruit, about 6km upstream of the Rietvlei Dam. If the treatment is not done according to specification it could have serious implications for the water quality of the Rietvlei Dam, which is used as a source of water supply to Tshwane. The Hennops catchment, adjacent to the Rietvlei catchment, has a water quality problem due to uncontrolled urban development. There is a risk of illegal settlement occurring in the Rietvlei catchment which would exacerbate the water quality situation. The Rietvlei catchment has significant dolomitic groundwater resources and informal settlements could lead to the contamination of this important water resource.

Hartbeespoort Dam Catchment (A21B-H): A number of factors, such as informal settlements without access to sanitation, sewage spills from poorly maintained or overloaded sewage networks (Sandton and Alexandria), industrial and agricultural pollutants have led to the build up of nutrients in the rivers of the Hartbeespoort catchment and the dam itself has been eutrophic for many years. This has a serious negative impact on the recreational use of the dam due to algal blooms. The impact on downstream users is that benthic algae grows profusely in the canals of the Hartbeespoort irrigation scheme that need to be cleaned out regularly. The treatment process installed at Vaalkop and Brits also needs to be very sophisticated to deal with the taste and odour problems associated with the algae. Decant from old gold mines and leachates from their mine dumps in the Mogale City (Krugersdorp) area also pose a water quality threat to the catchment. Pollution of water in the dolomitic compartments that span the Crocodile and Upper Vaal WMAs needs to be better understood.

**f) Likely effect of the water use to be authorized on the water resource and on other water users.**

The Applicant ensures that water is re-cycled and re-used in the process, therefore, reducing the need for excessive reliance on natural water resources that supply the station with water and preventing the wastage of water during the process. Kelvin has submitted an IWULA to ensure that any surface water resources affected by the proposed project activities are licensed and managed in accordance with the relevant water and environmental legislation. No groundwater resources are expected to be affected by the proposed CCGT project.

**g) Class and the resource quality objectives of the water resource**

The biggest impactors on water quality of the Crocodile River (West) Catchment are the large scale water and land users. The sprawling urban areas in the south-east of the catchment, with their undersized wastewater systems (in places) and large solid waste pollution problems (litter and dumping along river courses) contribute to the poor water quality downstream in the Hartbeespoort Dam. Other contributors such as compost-making factories, industries and old discarded mines (acid mine drainage) also proliferate in this area. Although new mines in the Rustenburg area are strictly controlled by their Environmental Management Plans (EMPs), the potential still exists for future pollution once these mines close. Agrichemicals (fertilisers and pesticides) also have negative impacts in the catchment though these are not well known. Treatment standards at certain sewerage works have been lowered because of the financial constraints of local authorities. In similar fashion, the very groundwater resources, that some rural settlements depend on, are being polluted by poor sanitation facilities in villages. Otherwise, groundwater quality is usually good, satisfying DWAF water quality guidelines and is suitable for domestic and agricultural supply.

The main objective is therefore to ensure a sound and reasonable balance between development impacts and the protection of the resource. Fitness for use by all users (especially those downstream ones in the Crocodile River System) and protection of the natural ecosystems must be used as the basis for strategy development. Limited levels of pollution will only be allowed were the river reach can absorb it. It is important that the various water quality strategies and approaches be documented

so that planners, local authorities, and evaluators of licence applications can have guidelines to work towards.

**h) Investments already made and to be made by the water user in respect of the water use in question**

At this current stage, no capital investments besides those associated with the water use licensing processes, specialist studies, designs etc have been made.

**i) Strategic importance of the water use to be authorised**

The project would also aid in preventing power outages in the region and the country by adding 600MW of additional power to the power generation capacity in the country.

**j) The quality of water in the water resource which may be required for the Reserve and for meeting international obligations**

The water quality in the Crocodile West Catchment faces several challenges. Key concerns include:

- **Nutrient Status:** High levels of nutrients, particularly phosphates and nitrates, are prevalent due to agricultural runoff and wastewater discharges<sup>1</sup>
- **Salinity Impacts:** Elevated salinity levels, indicated by high electrical conductivity and total dissolved solids (TDS), are a significant issue.
- **Microbial Contamination:** There is notable microbial contamination, primarily from wastewater discharges.
- **Mining Impacts:** Mining activities contribute to increased levels of chlorides, sulphates, and other toxicants.
- These factors collectively affect the ecological health and usability of the water resources in the catchment. Efforts are ongoing to monitor and improve the water quality through various initiatives and compliance measures

The water management for the Crocodile West Catchment is overseen by the Crocodile (West) and Marico Water Management Area. This area is managed under the broader framework of the Department of Water and Sanitation (DWS) in South Africa.

The management strategy includes a Strategy Steering Committee (SSC), which involves representatives from various provincial government departments, organized agriculture, local municipalities, water boards, and other stakeholders<sup>1</sup>. This committee ensures that water resources are managed sustainably and that the needs of all users, including ecological reserves, are met.

**k) Probable duration of any undertaking for which a water use is to be authorised**

The water use license will be required for the duration of activities which is estimated in excess of 20 years.

**[END OF WATER USE LICENCE APPLICATION SUMMARY]**