



## water & sanitation

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### **WATER USE LICENCE APPLICATION SUMMARY**

**Golden Core Trade and Invest (Pty) Ltd  
(Subsidiary of Harmony Gold Mining Company Limited)**

**Compiled by: Vukosi Mabunda**

  
**Signature:**

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## 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

Harmony Gold Mining Company Ltd (Harmony) has existing WULs authorising various water uses in terms of the National Water Act, 1998 (NWA) for its operations in the greater West Wits region such as the September 2022 WUL (08/C23E/AFGJCEI/12157) for Savuka and Mponeng Operations. The water use includes but is not limited to plant activities, Tailing Storage Facilities (TSFs), pipelines, return water dams etc. The proposed activities include the development of new infrastructure such as pipelines, bridge, culvert and upgrades to the return water dam on properties previously not covered in the existing WUL. Considering that the proposed activities trigger 21(c), 21(i), and 21(g) water uses on new properties, a full water use licence application is required.

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

One objective of the NWA is to address past racial and gender discrimination and to alleviate poverty in South Africa; therefore, it is of utmost importance to support and stimulate economic development in order to realise the upliftment of previously disadvantaged groups and/or individuals.

The Mponeng Lower Compartment TSF forms part of the greater Mponeng Mining Operations in the West Wits region of Harmony's operations. The Mponeng Mining Operations has created a significant number of employment opportunities and the recommencement of deposition on Mponeng Lower Compartment TSF will ensure that these employment opportunities are not interrupted or lost, as it will allow for the continuation of mining by providing licensed deposition space and mitigated deposition of tailings. The mine will also create a significant number of employment opportunities during the decommissioning phase of the project. The Mponeng operation continues to provide employment opportunities for the surrounding residential areas, which are Wadela, Carletonville, Westonaria, Fochville, Potchefstroom and Randfontein. These residential areas are mainly from historically disadvantaged South Africans that required employment. In addition, Elandsridge and Wedela residential areas were developed as part of the Mine's housing development and are located on the farm Buffelsdoorn 143 IO. It should be noted that the Applicant is subject to the requirements of the Mining Charter which is aimed to redress historical socio-economic inequalities, ensure broad-based economic empowerment (BBEE) and the meaningful participation of Historically Disadvantaged Persons in the mining and minerals industry within South Africa.

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

The water management system at Mponeng 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 current Integrated Water and Wastewater Management Plan (IWWMP) for the Mponeng mine has been developed in accordance with the Department of Water and Sanitation's (DWS) hierarchy of water use. Recommendations stemming from the IWWMP document have been incorporated in setting the relevant objective, targets and management plans steering towards a goal of efficient and

beneficial use of water in the public interest. The primary objective of the Mponeng operations water management strategy is to recycle as much water as possible, to minimise losses as far as possible, to prevent spillage and wastage of water and to minimise the volumes of raw water intake. The water management system is based on the principles of pollution prevention, management of affected water at source, optimal re-use / recycling of affected water as well as zero discharge of affected water to the natural surface water environment.

#### **d) Socio-economic impact –**

The proposed recommencement of deposition on Mponeng Lower Compartment TSF will result in a number of socio-economic benefits within the affected local municipalities and its' communities and prevention of negative socio-economic impacts. The details regarding the socio-economic impacts are described below.

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

The socio-economic impacts resulting from the water uses if authorised are as follows:

- During the operational and decommissioning phase, the Mponeng operation provides work for a large number of contractors and employees;
- Permanent employment opportunities during the operational phase, employees at the Mponeng operation will continue with their work activities, subsequently ensuring that families can sustain themselves. Similarly, the multiplication factor is applicable to the local Merafong City Municipality;
- Jobs (limited) will be created for Historically Disadvantaged South Africans;
- Socio-economic factor: job retention and creation at Mponeng operation will benefit the families and uplift the communities;
- The benefit of sustained income is realised in the local economy as there will be continued money available for households to purchase essential and possible luxury items; and
- The generation of business sales and employment opportunities has initiated an ongoing ripple effect through the sub-region, resulting in an increase in product and service value measured in Gross Geographical Product (GGP).

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

If the project was to not proceed, it would entail a situation where once the Mponeng Upper Compartment and Savuka TSFs reach their carrying capacity and approved height, deposition would stop which would mean the mining activities would come to a halt. That would negatively affect the future viability of Harmony's West Wits mining operations and massive socio-economic impacts would emanate due to lack of deposition space. This would also negatively affect the company's financial closure and rehabilitation plans. Subsequently, it would result in a significant negative financial impact on not only Harmony but also have a direct negative impact on the workforce on the mine and surrounding businesses and communities that are directly or indirectly linked to the operations. Failure to authorise the proposed water uses will result to the following socio-economic impacts:

- Without the necessary License, the applicant may result in the closing of several surrounding operations. This will have a profound effect on poverty and unemployment of this region
- Contractors and employees will lose their jobs and source of income.

- The loss of income would therefore further increase the poverty level of the region and dampen the social class.
- It must be noted that Golden Core Trade and Invest (Pty) Ltd (The Applicant) has already invested significantly in the mine over the years. The investments made include the construction and maintenance of all infrastructures, obtaining authorisation from the local government for mining and water use activities.

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

The proposed development site is situated within the Upper Vaal Water Management Area (WMA 8). The Mponeng Lower Compartment TSF and RWD are positioned within quaternary catchment C23J with the proposed pipelines extending to quaternary catchment C23E. The Upper Vaal WMA is responsible for assessing the availability of local surface water and groundwater resources. It is responsible for managing water quality, including long-term trends and short-term impacts. It is responsible for managing water supply to local authorities and district councils. The Upper Vaal WMA is used for industrial, mining, power generation, commercial agriculture, nature conservation, and urban and rural human settlements. The main watercourses in these quaternary catchments include the Mooirivierloop (C23E) and the Loopspruit (C23E), with several non-perennial drainages in both quaternaries. Water quality at sampling point SW06, which is a downstream point on the Loopspruit (C23J) indicate elevated concentrations of Nitrate, Chloride, Electrical Conductivity, Fluoride and Sulfate that exceeds the In-Stream Water Quality Guidelines for the Vaal Barrage subcatchment. Elevated concentration of Nitrate, Chloride, Electrical Conductivity and Sulfate that exceeds the In-Stream Water Quality Guidelines for the Vaal Barrage sub-catchment was observed in the unnamed river which is a tributary of the Mooirivierloop.

The nearest River to the study area is the Elandsfonteinspruit River to the south-east of the site, however, this river is only labelled in the 1:500,000 river dataset for South Africa. The NGI's 1:50,000 topographical map data illustrates numerous non-perennial river systems to the north and south, both of which converge to the southeast of the site. The northern system feeds the Elandsfonteinspruit, enabling perennial flows (per the NGI's classification). The northern and southern system are associated with a vlei to the east and dams both north and south to the site. There are upstream furrows directing runoff from part of the greater Mponeng Operation (south of the Old North Complex TSF) and along the Mponeng TSF trenches draining to the non-perennial rivers to the west. The southern system is characterised by two larger dams, one of which is listed as the proposed return water dam for the Mponeng TSF

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

The economy of the Upper Vaal Management area consists of widespread urbanisation, mining and industrial activity, which relate to gold and coal deposits in the area occur in the northern part of the water management area. Collectively, mining and industrial development in the Upper Vaal River water management area produce a total of 45% of South Africa's Gross Domestic Product (GDP). Economic activity in the rest of the Upper Vaal water management area mostly relates to livestock farming and rain fed cultivation (Hall and Jennings, 2007; NWRS, 2004). Due to ongoing economic growth and continued urbanisation, further growth in water demand is expected in the area. It is therefore paramount that water allocation decisions are made, taking cognisance of only marginal potential for further resource development. The main water use in the Upper Vaal is, therefore, shared by the industrial, urban and mining sectors, which account for 80% of water usage. Irrigation accounts for 9% of water usage and power generation accounts for 7%. The remainder is used for

supply to rural areas. These percentages do not include water transfer in and out of the management areas. Aside from these usages, water is also transferred in and out of the Management areas. The Upper Vaal area transfers water out to the Crocodile, Marico and Olifants Management areas and transfers water in from the Thukela, Usutu & Mhlatuze Management areas as well as from Lesotho as per the agreement between South Africa and Lesotho via the Lesotho Highlands Water Project. The Upper Vaal area has an impact on Botswana, Lesotho, Namibia, Zimbabwe, Mozambique and Swaziland (DWA, 2014).

The proposed new water uses are driven by need to meet the remaining Life of Mine (LoM). 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 mines and plants with water and preventing the wastage of water during the process. Harmony has submitted an IWULA to ensure that any water resources (surface and groundwater as well as wetlands) affected by the proposed project activities are licensed and managed in accordance with the relevant water and environmental legislation.

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

The Vaal River downstream of Vaal Dam to the outlet of C23J (Integrated Unit of Analysis (IUA) UM) includes the urban areas of Vereeniging, Vanderbijlpark, Sasolburg and Parys. In the reach between Vaal Dam and the Vaal Barrage the three main tributaries (Suikerbosrand, Klip and Rietspruit rivers) discharge into the Vaal Barrage, each conveying significant volumes of treated wastewater and mine discharge water. Management of the flow entering this reach is from Vaal Dam and is influenced by the water users in and downstream of the Vaal Barrage, the urban return flows and mine dewatering discharges as well as the releases from Vaal Dam to maintain the Total Dissolved Solids (TDS) concentration at 600 mg/l (DWA, 2012).



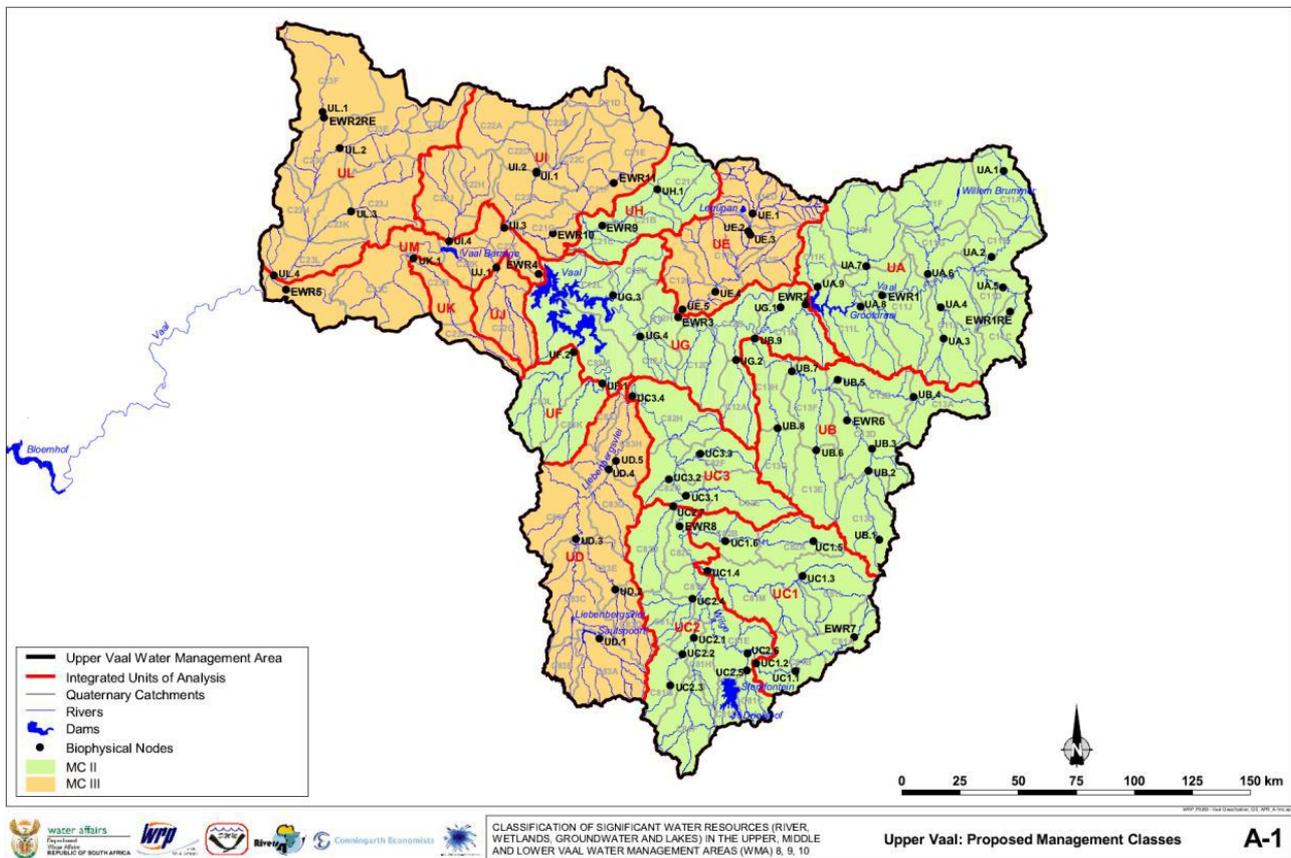


Figure 1: Classification of significant water resources (river, wetlands, groundwater and lakes) in the upper, Vaal water management areas (WMA)

Two EWR sites were defined in this IUA, one with a C Ecological Categories (EC) and the other a C/D EC state, both with a HIGH EI providing motivation that the Recommended Ecological Category (REC) should be an improvement of the Present Ecological Status (PES). However, the assessment of this scenario as part of the Reserve study indicated that the implications of this improvement have significant impacts on the economy. The operational scenario accepted for the purpose of defining the Reserve was therefore to maintain the PES. The scenarios evaluated during this study still do not achieve the REC and for that reason the PES was used in the catchment configuration for this IUA (DWA, 2012). The water quality situation of the Vaal River main stem and the tributaries are discussed below.

The water quality of the main stem of the Vaal River is not only affected by the water quality of the flow from the tributaries within the WMA but also by the water quality of the water received from the upstream Upper Vaal WMA. The water quality received from Upper Vaal WMA is considered to be relatively poor. Despite the blending practiced in the Upper Vaal WMA, with releases from Vaal Dam used to maintain the TDS concentration in the Vaal Barrage at 600 mg/l, salinity has been reported as a problem in the Vaal river main stem. Nutrients are also a water quality variable of concern. There is also the carryover of hyacinth to the Middle Vaal WMA from the Upper Vaal WMA. The water quality of the Vaal main stem is impacted on by mining activities in the Schoonspruit, Koekemoerspruit and the Sand-Vet systems in the Middle Vaal WMA

#### 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 applicant holds an approved Mining Right (MR) and Environmental Management Programme (EMPr), in terms of the Minerals and Petroleum Resources Development Act (Act 28 of 2002, as amended) (MPRDA), for the mining of gold at various operations in the West Wits Region in the Gauteng Province ((GP 30/5/1/2/2 (01)) MR. The Savuka Plant currently deposits tailings onto the Savuka 5a, 5b, 7a & 7b TSFs. However, these facilities are approaching their final and approved height, and the current planned Life of Mine (LOM) for the West Wits Region exceed the available deposition capacity of these TSFs. The Savuka tailings facility has reached the end of its lifecycle and is undergoing a short-term extension of two years. Following this period, tailings from Savuka will need to be diverted to an alternative facility. The Mponeng Lower Compartment has been identified as a viable solution to accommodate tailings until the end of life of the Savuka plant and thereafter accommodate tailings from the Mponeng plant. Tailings were deposited up to 25m on the southern half of the footprint, but deposition was ceased after a natural spring was identified within the footprint. Golden Core Trade and Invest plans to re-commission the Lower Compartment after the spring is diverted to reduce groundwater contamination. This process will allow for the operations to continue safely.

If the project was to not proceed, it would entail a situation where once the Mponeng Upper Compartment and Savuka TSFs reach their carrying capacity and approved height, deposition would stop which would mean the mining activities would come to a halt. That would negatively affect the future viability of Harmony's West Wits mining operations and massive socio-economic impacts would emanate due to lack of deposition space. This would also negatively affect the company's financial closure and rehabilitation plans. Subsequently, it would result in a significant negative financial impact on not only Harmony but also have a direct negative impact on the workforce on the mine and surrounding businesses and communities that are directly or indirectly linked to the operations.

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

The following reservations apply with respect to the transfer of water into and out of the water management area, and the provision of water for future growth:

- The existing transfer of 491 million m<sup>3</sup>/a from Lesotho, which is to be increased to 835 million m<sup>3</sup>/a after the commissioning of Mohale Dam in Lesotho. – reserved by international agreement for use in and transfer from the Upper Vaal water management area;
- Existing transfers from the Thukela water management area up to the installed capacity of 630 million m<sup>3</sup>/a. The yield benefit in the Vaal System is 736 million m<sup>3</sup>/a – reserved in the Thukela water management area;
- Future large-scale water resources development on the Thukela River is reserved mainly for transfer to the Upper Vaal water management area. Current planning allows for an additional transfer of 475 million m<sup>3</sup>/a – reserved in the Thukela water management area;
- Existing transfer of 55 million m<sup>3</sup>/a from the Buffalo River in the Thukela water management area to the Upper Vaal water management area – reserved in the Thukela water management area;
- Transfers from the Usutu to Mhlatuze water management area at the current capacity of 63 million m<sup>3</sup>/a – reserved in the Usutu to Mhlatuze water management area;
- Existing transfers from the Upper Vaal water management area to the Olifants water management area of 36 million m<sup>3</sup>/a for power generation, plus an allowance of 38 million

m<sup>3</sup>/a for future growth. (Included in Tables D8.3 to D8.6.) – reserved in the Upper Vaal water management area;

- Transfers from the Upper Vaal water management area through the Rand Water distribution system to meet requirements in the Crocodile (West) and Marico water management area which are in excess of the capacity of the local resources in the Crocodile (West) and Marico water management area. Currently this amounts to 514 million m<sup>3</sup>/a and is projected to increase to 723 million m<sup>3</sup>/a. As an upper high growth scenario, transfers may need to increase to 1 125 million m<sup>3</sup>/a. (Figures included in Tables D 8.5 and D 8.6.) – reserved in the Upper Vaal water management area;
- Releases from the Upper Vaal water management area along the Vaal River to users in the Middle Vaal and Lower Vaal water management areas to meet their realistic needs that cannot be supplied from own resources. Little change is expected from the current transfer of 828 million m<sup>3</sup>/a, although it may increase to about 910 million m<sup>3</sup>/a in 2025 under the high growth scenario – reserved in the Upper Vaal water management area;
- Current surplus transfer capacity into the Upper Vaal water management area is to be reserved for growth in urban, industrial and mining water requirements in the Upper Vaal and Crocodile (West) and Marico water management areas, and is not to be used for commercial irrigation;
- The allocation of surplus yield in the Upper Vaal water management area will be subject to national authorisation as it can be allocated to users in the Upper, Middle, Lower Vaal as well as Crocodile (West) and Marico and Olifants water management areas; and
- The Upper Vaal water management area forms the central component of the Vaal River System, which extends over several water management areas. As water resources management in the Vaal River System impacts to some degree on the water quantity and quality in all the interlinked water management areas, management of the Vaal River System is to be controlled at a national level.

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

The proposed new water uses are intended to service Mponeng Operations for the current LoM for the West Wits Region is estimated to end in 2044. It is important to bear in mind that the current LoM is only an estimation and could be extended in the future should the need arise.

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