

# NON-TECHNICAL SUMMARY

## Basic Assessment Report and Environmental Management Programme for the Proposed Development of a Hydrogen Production Development Platform at the Mogalakwena Platinum Mine, Limpopo Province - For Public Review

### INTRODUCTION

This Non-Technical Summary (NTS) provides a synopsis of the Basic Assessment Report (BAR) and Environmental Management Programme (EMPr) prepared to inform the Environmental Authorisation (EA) application process for the Proposed Development of a Hydrogen Production Development Platform at the Mogalakwena Mine. This NTS is available in English and Sepedi and is being distributed to all registered interested and affected parties (I&APs) as a basis for notification and comment. The BAR and EMPr will be submitted to the Department of Mineral Resources and Energy (DMRE) for consideration and decision making.

Rustenburg Platinum Mine (RPM), a member of the Anglo American Platinum (AAP) group of companies, operates the open cast Mogalakwena Platinum Mine, a platinum group metals mining and processing operation located approximately 20 km north-west of the town of Mokopane, in the Modimolle Magisterial District, Limpopo Province.

The Mogalakwena Mine currently operates under a consolidated EMPr and an Integrated Environmental Authorisation (IEA) granted by the Limpopo Regional Office of the Department of Mineral Resources and Energy (DMRE) in August 2020.

In 2020, AAP implemented the nuGen™ Zero Emission Haulage Solution (ZEHS) which aims at providing end-to-end integrated green hydrogen production, fuelling, and haulage systems. The nuGen™ ZEHS technology was trialled at the Mogalakwena Mine through the development of a pilot hydrogen fuel production plant (referred to as the Proof of Concept (PoC) Plant). The main goal of the PoC PI was to produce a hydrogen fuel cell and battery-powered module which could be retrofitted on to a large mine haul truck (a 930E truck). Alongside re-equipping the truck with a hydrogen system, AAP also developed a hydrogen production, storage, and refuelling

complex at Mogalakwena Mine that incorporates an electrolyser and a solar PV field to support the 24 hour operation of the haul truck. Following the success of the trials, AAP would now like to expand the PoC Plant.

### PROJECT DESCRIPTION

The existing PoC is located on the Farm Zwartfontein 818 LR, within Mogalakwena Mine's Mining Right area (as shown in Figure 1). The PoC Plant has successfully demonstrated the practicality and operation of using hydrogen as a renewable fuel medium-sized for haul trucks.



Figure 1: Proof of Concept Plant<sup>1</sup>

The proposed expansion of the PoC Plant comprises the development of additional refuelling and distribution components to supply three additional mine haul trucks with hydrogen. The expansion is referred to as the Hydrogen Production Development Platform (PDP) (the Project) and will also include an increase hydrogen storage (fixed and mobile storage) Capacity.

The Project will ultimately connect hydrogen production to mine haul trucks through the establishment of a Deploy Ultra Heavy Duty refuelling system, using commercially available equipment. The aim of the Project is to

<sup>1</sup> Anglo American (April 2022)

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demonstrate rapid refuelling of the mine haul trucks at high pressure, and to ensure ample hydrogen storage availability on trucks for transportation of material (ore) from the mining pits to the destination (crusher area/dumps). This will require the development of fixed high-pressure and mobile low-pressure hydrogen storage infrastructure/facilities. The additional storage capacity required is approximately 184.46 m<sup>3</sup> (fixed and mobile storage), resulting in a total combined hydrogen storage capacity of 266.46 m<sup>3</sup>.

The Project components include the following:

- Export system;
- High pressure compressors (export and refuelling);
- High-capacity tube trailers;
- Transformer bay;
- Supply and export tube trailer bays;
- Hydrogen refuelling system (HRS);
- Fuel Cell Electric Vehicle (FCEV) haul trucks;
- Truck refuelling bay; and
- Truck workshop.

The proposed site layout is shown in Figure 2.

### POLICY AND LEGISLATIVE CONTEXT

Environmental Authorisation is required before AAP can commence with the proposed Project. Application for Environmental Authorisation is made in terms of the National Environmental Management Act (No 107 of 1998) (as amended) and the Environmental Impact Assessment (EIA) Regulations 2014 for activities listed under the EIA Regulations Listing Notices of 2014. The Project triggers the following listed activity :

EIA Regulations Listing Notice 1, Activity 67: "Phased activities for all activities - (i) listed in this Notice, which commenced on or after the effective date of this Notice or similarly listed in any of the previous NEMA notices, which commenced on or after the effective date of such previous NEMA Notices; where any phase of the activity was below a threshold but where a combination of the phases, including expansions or extensions, will exceed a specified threshold."

A Basic Assessment process will be required to inform the DMRE's decision on the application for Environmental Authorisation. The application process includes; a Pre-application phase, a Basic Assessment Report (BAR) and Environmental Management Programme Report (EMPr) phase, and a Competent Authority review phase.

### PROJECT ALTERNATIVES

The Project design is based on the expansion of the existing and authorised PoC Plant. It follows that the proposed site location and layout will be dictated by the current location of the PoC Plant, within the operational area of the Mogalakwena Mine. Thus, no site location or layout alternatives were considered for the Project. The chosen site layout ensures the least impact on existing land use and excludes the clearing of additional or undisturbed land.

The Project technology is based on the latest advancements in green energy supply to support a transition to zero carbon emissions on the Mogalakwena Mine. The technology selection considered the latest global approaches in hydrogen production and fuel cell technology. The Project is also based on the expansion of technology of the Proof of Concept Plant. It follows that technology alternatives were limited and only the proposed technology was assessed.

Criteria pertaining to environmental, heritage/cultural, socio-economic, commercial, and technical aspects will be taken into consideration and included in the BAR document .

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### NEED & DESIRABILITY OF THE PROJECT

Climate change is a globally recognised challenge and Anglo American is committed to being part of the solution. South Africa is particularly vulnerable to climate change impacts and has developed a strategic response, set out in the Climate Change Bill (2018), which three key objectives:

- provide for the coordinated and integrated response to climate change and its impacts by all spheres of government in accordance with the principles of cooperative governance;
- effectively manage the inevitable climate change impacts (adaptation); and
- make a fair contribution to the global effort to stabilise greenhouse gas concentrations in the atmosphere in order to keep the temperature increase well below 2°C.

Anglo American has committed to achieve carbon neutrality on direct emissions from owned or controlled sources (Scope 1), indirect emissions from the generation of purchased electricity (Scope 2) and to reduce all other indirect emissions that occur through the AA value chain (Scope 3) by 50% by 2040, across their operations. One way to achieve this is through FutureSmart Mining™, an Anglo American innovation-led approach to sustainable mining. Integral to FutureSmart Mining™ is the Sustainable Mine Plan, designed to tackle the most pressing environmental, social and governance challenges such as climate change.

The Anglo American Green House Gas emission reduction ambitions are built on the following :

- Scope 1: Deployment of FutureSmart Mining™ is central to reducing energy demand and delivering the step-change innovation required for avoiding emissions, including the capture and use of fugitive methane.
- Scope 2: The procurement and rapid roll-out of renewable power supply, including through embedded generation where necessary.

As part of this commitment, Anglo American has implemented the NuGen™ programme to develop a hydrogen-powered mining truck fleet in collaboration with leading fuel cell, electrolyser, battery, and engineering firms. The NuGen™ technology development programme is focused on decarbonising mine haulage and building onsite hydrogen production. The Mogalakwena Mine has successfully pilot tested the NuGen™ technology through their PoC Plant.

This Project will comprise of a ramp up of the trial to accommodate an additional three mine haul trucks and high-pressure storage (fixed and mobile). The Project is desirable in that it will demonstrate the practicality of a ramp up of the NuGen™ programme in preparation for future full-scale hydrogen fuelled ZEHS. The location of the Project, on disturbed ground within the Mining Right area, will also ensure limited additional environmental disturbance.

### DESCRIPTION OF THE ENVIRONMENT BEING AFFECTED

#### Physical Environment

The footprint of the PoC Plant and immediate surrounds has been completely transformed by mining activities and the PoC Plant. The footprint is a levelled platform, while the topography around the mine is moderately undulating.

The Project area falls within the summer rainfall region of Limpopo which experiences typically hot summers and cool, dry winters, with the rainy season occurring from October to April. The prevailing wind direction is predominantly from the east-northeast with lower occurrences from the, east, east-southeast, and north east.

Visually, the scenic appeal of the Project area is considered to be low as it is located amidst existing mine infrastructure (e.g., haul roads, the Blinkwater tailings storage facility, the Vaalkop tailings storage facility, water containment dams and buildings).

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The soils within proximity and adjacent to the Project area belong to the Estcourt forms. These soils are of low agricultural potential and are highly erodible. There is limited available soil resources in the Project area due to the permanent transformation that has already taken place.

The Mogalakwena Mine monitors air quality (PM<sub>10</sub>, PM<sub>2.5</sub> and dust fallout) at a network of stations in and around the Mining Right Area. The average dust fallout rates for non-residential and residential areas are below the respective standards at all monitoring points. Monitoring for the period 2015 – 2018 indicated that PM<sub>10</sub> concentrations decrease with distance from the mine and are below the annual National Ambient Air Quality Standards. Existing noise sources within the Project area are dominated by the mining operations, with traffic noises (feeder roads to the mine and N 11 road) also contributing to increase in ambient noise levels.

In terms of water resources, the Project area extends across quaternary catchment A61G of the Limpopo Water Management Area. The Mohlosane River, an ephemeral system, is located south of the Project area and an ephemeral tributary of this river is situated to the west. The Mohlosane River has been assigned a Moderately to Largely Modified (Class C/D) Present Ecological State (PES) reflecting the impact of surrounding mining activities.

The groundwater table varies between 0.5 – 24 m below surface, groundwater flows are from south-east to north-east. Potable water supply to the mine is from boreholes in three wellfields within the Mining Right area (namely PPL, Blinkwater, and Commandodrift). Groundwater is the main water supply to the communities for domestic consumption and for livestock watering. Approximately 92% of the boreholes located in villages surrounding the Mogalakwena Mine, (both upstream and downstream) are used as domestic water supply.

### Biological Environment

The Mogalakwena Mine is located within the Central Bushveld bioregion within the Savanna Biome and is represented by the Makhado Sweet Bushveld vegetation unit which is classified as vulnerable. However, natural terrestrial vegetation within the Project area has been severely compromised for at least a decade, as such, there is no available habitat to support terrestrial biodiversity and ecological functioning.

There are two isolated wetland areas, situated west of the Project area, which formed in response to the transformation of the landscape. Both artificial wetlands are seasonal, with the degree of saturation varying with rainfall. Their habitat is secondary and human-induced, and the vegetation community is dominated by widespread hydrophilic species such as *Typha capensis* and *Imperata cylindrica*, typical of wherever disturbed soils remain saturated enough to support hydrophilic species. There is a low likelihood of plant species of conservation importance occurring within these wetland areas.

The presence of faunal biodiversity is very unlikely within the Project area due to the existing severe disturbances associated with mining activities, such as noise, large vehicle movement, and dust, which discourages the permanent presence of fauna. With regard to wetland fauna, high levels of disturbance associated with current mining activities in the immediate area have resulted in a low likelihood of any wetland fauna species of conservation concern being present.

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### Cultural, Heritage and Palaeontological Environment

Extensive heritage specialist studies have been undertaken at the Mogalakwena Mine. Resources identified within the Mining Right area include graves, burial grounds, homestead, Late Iron Stone walled sites and Stone Age sites. However, the entire Project area has been transformed by historical cultivation activities and more recently by infrastructure development. No cultural or heritage features were recorded within the Project area. According to the SAHRIS Paleo - Sensitivity map the Project area is of insignificant/no palaeontological sensitivity.

### Socio-economic baseline

The Project will be located in Ward 13 of the Mogalakwena Local Municipality, within the Waterberg District Municipality in the Limpopo Province. The Mogalakwena Local Municipality consists largely of tribal/traditional settlement types and is characterised by high levels of unemployment and poverty. Community representative structures are fluid, and the area is characterised by unplanned and opportunistic urban expansion. Informal settlements are expanding in both urban and rural areas such as the Ga-Machikiri, Ga-Puka (Rooibokfontein), Ga-Sekhaolelo (Armoede) and Mapela settlements which are adjacent to the Mogalakwena Mine.

Ward 13 can be described as having a young population and high unemployment rates. Education rates are low and there are more females than males. Sepedi is the dominant language spoken. Most people live in traditional houses and access to water and sanitation inside the house is low. The levels of poverty in Ward 13 are high.

### PUBLIC PARTICIPATION UNDERTAKEN TO DATE

The following describes the public participation activities undertaken to date:

- Pre-application meeting with the DMRE and approval of a Public Participation Process.
- Development and regular update of an Interested and Affected Party (I&AP) database.
- Consultation with the Land Claims Commissioner consultation – 22 June 2022.

- Consultation with the Mapela Traditional Council, Mogalakwena Local Municipality and the Waterberg District Municipality.
- Placement of newspaper advertisements in the Bosveld Review and Polokwane Observer.
- Distribution of site notices and Background Information Documents (electronically and hard copy where necessary).
- The notification of the availability of the BAR and EMPr for public review (2 August 2022 – 2 September 2022) (electronically and hard copy).

### IMPACT ASSESSMENT FINDINGS

An impact assessment was undertaken to identify and determine the potential significance of impacts associated with the Project the biophysical, cultural/heritage and socio-economic environments. The assessment findings are included in Table 1. The potential impacts associated with the Project were of medium or lower significance in the unmitigated scenario. No high or very high impacts were identified. A series of management actions, which if successfully implemented will reduce and or enhance the significance of the impacts, were identified in the BAR for inclusion in the EMPr. None of the identified impacts were rated as significant post mitigation.

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### IMPACT STATEMENT

With the implementation of management actions, these potential impacts can be prevented or reduced to acceptable levels. It follows that provided the EMP is effectively implemented, there is no reason from a biophysical, cultural/heritage or socio-economic standpoint why the Project should not proceed.

### REVIEW OF BAR and EMP Reports

The BAR and EMP Reports for the Project have been made available for a public review period of 30 days, from 2 August 2022 – 2 September 2022. This Non-Technical Summary contains a brief synopsis of the BAR and EMP Reports. The full Reports, including specialist assessments, can be found in the following places for review:

- Mogalakwena Local Library; and the
- Machikiri community hall.
- SLR Data-free website (<https://slrpublicdocs.datafree.co/en/public-documents/>); and the SLR project website (<https://www.slrconsulting.com/en/public-documents>).

### WHAT WILL HAPPEN NEXT?

The following will happen next in the process:

- Please submit any comments on the BAR and EMPR to SLR at the email address provided (on or before 2 September 2022).
- All comments received will be collated into a Comments and Response Report.
- Where relevant, the BAR and EMPR will be updated to address the comments received.
- The final BAR and EMPR will be submitted to the Limpopo Regional Office of the DMRE to inform their decision making.
- The DMRE will have 107 days to either grant or refuse the application for Environmental Authorisation.
- I&APs will be notified of DMRE decision. SLR will provide information relating to any appeals.

#### Please send your comments to:

SLR contact: Mavisha Nariansamy or Gugu Dhlamini

Tel: (011) 467 0945

Email: [mogh2@slrconsulting.com](mailto:mogh2@slrconsulting.com)

**Comments must reach SLR by 2 September 2022**



- Legend**
- Towns / Villages
  - Roads
  - Power Lines
  - Rivers
  - Dams
  - South African Protected Areas

0 1000 2000 Meters  
 Scale: 1:62 500 @ A3  
 Projection: Transverse Mercator  
 Datum: Hartebeeshoek, Lo 29

ANGLO-AMERICAN

Figure 1: Local Setting



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720.01145.00009

2022/05/26

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



0 20 40 Meters  
 Scale: 1:3 400 @ A3  
 Projection: Transverse Mercator  
 Datum: Hartbeeshoek, Lo 29

ANGLO-AMERICAN

**Figure 2: Production Development Platform Layout**



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**Table 1: Summary of Potential Impacts**

Aspect	Potential Impact	Impact significance	
		Unmitigated	Mitigated
Geology	Loss and sterilisation of mineral resources.	Insignificant	
Topography	Altering topography.	Insignificant	
	Hazardous excavations resulting in safety risks to third parties and animals.	Insignificant	
Soil and land capability	Loss of soil resources through physical disturbance and contamination.	Very low	Insignificant
Biodiversity	Loss of terrestrial habitat and biodiversity through physical disturbance.	Insignificant	
Surface water resources	Contamination of surface water resources.	Medium	Very low
	Alteration of natural drainage patterns.	Medium	Insignificant
Groundwater	Contamination of groundwater resources.	Medium	Very low
Air quality	Air pollution.	Very low	Insignificant
Noise	Increase in disturbing noise levels affecting sensitive receptors.	Insignificant	
Visual	Negative visual views (construction and decommissioning).	Insignificant	Insignificant
	Negative visual views (closure).	Very low	Insignificant
Traffic	Road safety impacts.	Low	Insignificant
	Influence on road capacity and condition.	Very low	-
Cultural/heritage and palaeontological resources	Damage or loss of cultural, heritage and paleontological resources through physical disturbance.	Insignificant	
Socio-economic	Inward migration.	Insignificant	
	Positive economic impact (construction).	Positive medium	Not applicable
	Positive economic impact (operation).	Positive low	
Land Use	Change in land use.	Insignificant	