APPENDIX G: AQUATIC BIODIVERSITY

AQUATIC BIODIVERSITY SENSITIVITY VERIFICATION AND COMPLIANCE STATEMENT FOR THE PROPOSED DEVELOPMENT OF A HYDROGEN DEVELOPMENT PLATFORM AT MOGALAKWENA MINE, LIMPOPO

Mogalakwena Platinum Mine

Prepared for: Anglo American Platinum (AAP) Limited - Rustenburg Platinum

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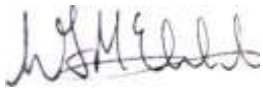

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ACRONYMS AND ABBREVIATIONS

Acronym / Abbreviation	Definition
AAP	Anglo American Platinum
CBA	Critical Biodiversity Area
DFFE	Department of Forestry, Fisheries and Environment
DWS	Department of Water and Sanitation
EIS	Ecological Importance and Sensitivity
ESA	Ecological Support Area
FEPA	Freshwater Ecosystem Priority Area
NEMA	National Environmental Management Act (No 107 of 1998)
NFEPA	National Freshwater Ecosystem Priority Areas
NWA	National Water Act (No. 36 of 1998)
ONA	Other Natural Areas
PDP	Production Development Platform
PES	Present Ecological State
RPM	Rustenburg Platinum Mines
SLR	SLR Consulting (South Africa) (Pty) Ltd
SWSA	Strategic Water Source Area

Aquatic Biodiversity Sensitivity Verification and Compliance Statement For the Proposed Development of a Hydrogen Production Development Platform at Mogalakwena Mine, Limpopo

1. INTRODUCTION

SLR Consulting (South Africa) (Pty) Ltd (SLR) were appointed by Anglo American Platinum Limited (AAP) - Rustenburg Platinum Mines (RPM) to prepare an aquatic compliance statement as per the Department of Forestry, Fisheries and Environment (DFFE) Screening tool as part of the Basic Assessment Authorisation process for the proposed Development of a Hydrogen Production Development Platform at the Mogalakwena Platinum Mine, near Mokopane in Limpopo (Figure 1-1).

1.1 Project Background

AAP - RPM proposes to expand their existing Proof of Concept hydrogen production facility with the inclusion of a hydrogen Production Development Platform (PDP) within the Mining Right area of the Mogalakwena Mine (the Project). The Mogalakwena Mine is an open pit platinum mine located approximately 20 km north-west of the town of Mokopane in the Mogalakwena Local Municipality within the Waterberg District Municipality of Limpopo Province (Figure 1-1).

The hydrogen PDP Project will be located inside the footprint of the already approved Proof of Concept hydrogen production facility on the Farm Zwartfontein 818 LR, covering an area of approximately 8 ha (Figure 1-2). As part of the hydrogen PDP Project, the Proof-of-Concept Plant will have to be expanded with additional refuelling and distribution components to supply three additional mine haul trucks with hydrogen.

The hydrogen PDP Project will ultimately connect the hydrogen production and mine haul truck application through the establishment of an Export-Transport-Refuel System, using commercially available equipment. The aim of the Project is to rapidly refuel the mine haul trucks at high pressure (Export-Transport-Refuel System), and to ensure ample hydrogen storage availability on trucks (e.g., high-capacity tube trailers) for transportation to the mine pits. This will require the development of fixed high-pressure and mobile low-pressure hydrogen storage infrastructure/ facilities.

1.2 Legislative Requirements

The following legislative requirements were taken into consideration during the assessment.

1.2.1 National Environmental Management Act (Act No. 107 of 1998)

Any development within the extent of a watercourse or within 32 m from a watercourse may require Environmental Authorisation in terms of the National Environmental Management Act (Act No. 107 of 1998) (NEMA).

A watercourse is defined in the Act as:

(a) River or spring;
(b) A natural channel in which water flows regularly or intermittently;
(c) A wetland, pan, lake or dam into which, or from which, water flows; and any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water Act (NWA).

No watercourses were encountered within the boundaries of the study area; however, the existing development footprint is located within approximately 10m from a highly modified drainage line, located on the western side of the proposed PDP Project area. This drainage line is functioning as a stormwater channel and has been piped and lined further upstream of the development. This drainage line has negligeable ecological importance and therefore no listed activities will be triggered by the PDP Project.

1.2.2 National Water Act (Act No. 36 of 1998)

The National Water Act (Act No. 36 of 1998) (NWA) allows for the protection of water resources and recognises that the entire ecosystem and not just the water itself, and any given water resource constitutes the resource and as such needs to be conserved.

No activity may therefore take place within a watercourse unless it is authorised by the Department of Water and Sanitation (DWS). Any area within a wetland or riparian zone is therefore excluded from development unless authorisation is obtained from the DWS in terms of Section 21 (c) and (i).

A wetland is located within less than 100m of the PDP and it is recommended that the proponent consult with the Department of Water and Sanitation (DWS), to determine what relevant authorisation process (if any) should be followed in terms of the requirements of the National Water Act 1998 (Act No. 36 of 1998).

Figure 1-1: Locality of the Proposed Development

Figure 1-2: Proposed layout of Development

2. SCOPE OF WORK

The requirement for this Aquatic Compliance Statement and the Scope of Works is prescribed in terms of both the National Environmental Management Act (Act 107 of 1998), as amended (NEMA), and the National Water Act (Act No. 36 of 1998) (NWA). As such the study aims to comply with both legislative requirements.

In terms of NEMA wetlands, rivers and ephemeral drainage lines fall under the identified theme of Aquatic Biodiversity. In accordance with the procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of Sections 24(5)(a) and (h) and 44 of the NEMA , when applying for environmental authorisation the current use of the land and the environmental sensitivity of the site under consideration as identified by the national web-based environmental screening tool, must be confirmed by undertaking a site sensitivity verification. The site sensitivity verification must be undertaken by either an Environmental Assessment Practitioner (EAP) or a specialist and must entail the following:

1. Desktop analysis, using satellite imagery;
2. A preliminary on-site inspection; and
3. Any other available relevant information.

The outcome of this site sensitivity verification assessment presents the recorded site assessment results so as to:

1. Confirm or dispute the current use of the land and the environmental sensitivity as identified by the screening tool;
2. Motivate and provide evidence of either the verified or different use of the land and environmental sensitivity of the site.

2.1 Outcomes of the Application of the DFFE Screening Tool

The site sensitivity for the study area as identified by the National Web-Based Environmental Screening Tool shows that the aquatic biodiversity theme is of **Low Sensitivity.**

According to the guidelines, an applicant intending to undertake an activity on a site identified as being of “very high sensitivity” for an aquatic biodiversity theme must submit an Aquatic Biodiversity Impact Assessment or if the area is identified as being of “low sensitivity” then an Aquatic Biodiversity Compliance Statement must be compiled and submitted to the competent authority.

3. APPROACH AND METHODOLOGY

Available national and provincial databases were utilised in the desktop study in order to confirm the presence or absence of watercourses within the study area and to determine the level of conservation significance of the study area.

The following data sources and GIS spatial information was consulted to inform the assessment:

- Latest Google Earth™ imagery;
- NFEPA wetlands/rivers coverage (CSIR, 2011);
- Limpopo Conservation Plan (Limpopo - CPLAN, 2013);

- South African National Biodiversity Institute: Biodiversity Geographic Information System. (bgis.sanbi.org);
- CSIR Summary analysis for Anglo American's Smart Power (hydrogen) for Mogalakwena mine Report 2022; and
- The DWS Resource Quality Information Services (RQIS) PES/EIS database (2014).

A site verification visit was completed on 26 January 2022 by a qualified freshwater ecologist, Karin Loukes from SLR. The site visit was conducted during the summer season when regular rains occur and when waterflow within the rivers and streams is likely to be present. A detailed CV and specialist declaration are provided in Appendix A.

A verification report has been prepared in accordance with the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Aquatic Biodiversity (Government Notice 320, dated 20 March 2020), as well as in line with the NWA.

3.1 Limitations and Assumptions

Limitations and uncertainties often exist within the various techniques adopted to assess the condition of ecosystems. The following assumptions and limitations apply to the aquatic assessment techniques and methods utilised to undertake this study:

- This report is based on a single site assessment, therefore temporal and seasonal trends could not be calculated; and
- The impacts for the site are specific to the proposed PDP Project.

4. ENVIRONMENTAL ATTRIBUTES OF THE STUDY AREA

4.1 Climate and Rain Fall

The study area located close to the town of Mokopane has a hot semi-arid climate. The temperatures for the area average at 19°C with summer highs of 28°C in February and winter lows of 6.9°C in July. During the year there is little rainfall with an average annual rainfall of approximately 550 mm. According to Köppen and Geiger, this climate is classified as BSh (Hot semi-arid [Steppe] climate)[1].

4.2 Ecoregion

The study area falls within the Eastern Bankenveld (Ecoregion 9) that can be described as having closed hills and mountains with moderate and high relief (Kleynhans, 2005).

4.3 Vegetation types

According to the National Biodiversity Assessment (SANBI, 2018a), the study area is located within the Central Bushveld bioregion within the Savanna Biome. The vegetation type associated with the PDP site is Makhado Sweet Bushveld and is classified as vulnerable (Musina and Rutherford, 2009). It should be noted that the vegetation unit identified within the study area is for reference purposes. In reality, the study area is completely transformed and contains existing infrastructure.

[1] https://en.climate-data.org/africa/south-africa/limpopo/mokopane-953/. Accessed 26/05/2022

4.4 Water Resources and Drainage

The proposed PDP Project is located within quaternary catchment A61G of the Limpopo Water Management Area (WMA). The Mohlosane River is located south of the proposed PDP Project and an ephemeral tributary of this river is situated to the west of the Project (Figure 4-1). The Mohlosane River, an ephemeral system, have been assigned a Moderately to Largely Modified (Class C/D) Present Ecological State (PES)[2] reflecting the impact of surrounding mining activities.

4.5 Conservation Context of Aquatic Ecosystems

4.5.1 Biodiversity Conservation Priorities

According to the Limpopo Conservation Plan the PDP Project area is located within No Natural Remaining and Other Natural Areas (ONA). ONA's are natural and intact areas but are not required to meet targets, nor have they been identified as Critical Biodiversity Areas (CBA) or Ecological Support Areas (ESA). No management objectives, land management recommendations or land-use guidelines are prescribed.

It must be noted that even though the Limpopo Conservation plan indicated that the site is partially located within an area designated as ONA, the study site is not located within a natural habitat and the footprint is occupied by existing infrastructure such as photovoltaic panels, workshops and paved roads.

4.5.2 National Freshwater Ecosystem Priority Areas (NFEPA)

According to the Atlas of Freshwater Ecosystem Priority Areas (FEPA) in South Africa (Nel *et al*, 2011), the study site falls within an Upstream Management Catchment. These areas are sub-quaternary catchments in which human activities need to be managed to prevent degradation of downstream river FEPAs and Fish Support Areas.

According to the NFEPA Database there are no wetland features associated with the study area. However, a channelled valley bottom wetland is located approximately 100m east of the proposed PDP Project.

4.5.3 Strategic Water Source Areas (SWSAs)

Strategic Water Source Areas (SWSAs) are areas of land that either: (a) supply a disproportionate quantity of mean annual surface water runoff in relation to their size and are considered nationally important; or (b) have high groundwater recharge and where the groundwater forms a nationally important resource; or (c) areas that meet both criteria (a) and (b) (Le Maitre *et al,* 2018).

The study area does not fall within a SWSA.

[2] https://www.dwa.gov.za/iwqs/rhp/eco/peseismodel.aspx accessed on 20 January 2022.

Figure 4-1: Local Drainage Context of the Project Area

5. SITE SURVEY RESULTS

Based on the outcome of the desktop database investigation, no watercourses traverse the proposed development site. The area identified for the construction of the PDP is flat and already transformed with existing infrastructure that will be removed to construct the proposed Project as indicated by Figure 5-2 below.

Figure 5-2: PDP Project Site with Existing Infrastructure

Figure 5-1: The unnamed tributary (A) with low water level and the Mohlosane River (B) with pooling within the active channel.

Aquatic features confirmed during the site investigation included ephemeral streams, namely the Mohlosane River located approximately 160m south of the site and an unnamed tributary located

approximately 15m to the west of the development site (Figure 5-1). The upstream reaches of the unnamed tributary are canalised and have poor habitat features which are not expected to support macroinvertebrates of any particular ecological importance.

A channelled valley bottom wetland is located about 100m southeast from the site and impacts of the PDP Project on the wetland are highly unlikely.

Considering the ephemeral nature of the above-mentioned streams and the existing impacts of the surrounding mine infrastructure, it is unlikely that these streams and wetlands support aquatic macroinvertebrates of any significance and if macroinvertebrates occur, these are expected to be limited to pollution-tolerant species which occur during the high flow season. Habitat quality is compromised within the small tributary lying to the west of the study area and such aquatic communities would be depauperate and of low biodiversity significance.

In-situ water quality measurements were taken upstream of mining activities and downstream of the PDP plant on the Mohlosane River. It was found that the Electrical conductivity (EC) and Total dissolved solids (TDS) exceeded the South African Water Quality Guidelines (SAWQG) for Aquatic Ecosystems, Vol. 7 (DWAF, 1996b) downstream of the tailings dam and measured 309mS/m (limit is 70mS/m) and 1530mg/l (limit is 520mg/l) respectively. No exceedances in EC and TDS were noted upstream from mining activities within the Mohlosane River. Therefore, it is likely that water quality is impacted by current mining activities and only macroinvertebrates with low sensitivity to water quality impacts could be expected, if present.

6. AQUATIC COMPLIANCE STATEMENT

Based on the results of the desktop review and the site verification, the sensitivity of aquatic biodiversity in and around the proposed PDP Project can be confirmed as **Low**. The development is unlikely to impact on freshwater biodiversity, although standard management interventions are required in this respect. These are: the provision of adequate stormwater management controls, and the implementation of pollution-control mechanisms.

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APPENDIX A: SPECIALIST INFORMATION AND CV

SPECIALIST ASSESSMENT REPORT DETAILS AND DECLARATION OF INDEPENDENCE

This is to certify that the following report has been prepared as per the requirements of Appendix 6 (1) of the National Environmental Management Act, 1998 (Act No. 107 OF 1998) Environmental Impact Assessment Regulations 2014 as per Government Notice No. 38282 Government Gazette, 04 December 2014.

Company of Specialist	SLR Consulting (South Africa) (Pty) Ltd
Postal address	PO BOX 1596, Cramerview, 2060
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Registration / Associations	Pr. Sci. Nat. 114571

I Karin Loukes, declare that:

- I act as an independent specialist;
- Results will be interpreted in an objective manner, even if the viewpoints are not favourable to the applicant;
- I have the relevant expertise to conduct a report of this nature, including knowledge of the National Environmental Management Act (Act No. 107 of 1998) and the National Water Act (Act No. 36 of 1998);
- I will comply with the act(s) and other relevant legislation;
- As a registered member of the South African Council for Natural Scientific Professions, will undertake my profession in accordance with the Code of Conduct of the Council, as well as any other societies to which I am a member;
- Based on the information provided to me by the project proponent and in addition to information obtained during the course of this study, I have presented the results and conclusion within the associated document to the best of my professional ability;
- I reserve the right to modify aspects pertaining to the present investigation should additional information become available through ongoing research and/or further work in this field;
- I understand that any false information published in this document is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.

Karin Loukes

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