

APPENDIX I: CULTURAL, HERITAGE AND PALAEOLOGY RESOURCES

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16 May 2022

Attention: Ms. Nokukhanya Khumalo

SAHRA Case Officer Limpopo Province

South African Heritage Resources Agency (SAHRA)

Dear Ms Khumalo

Application for exemption from a Heritage Impact Assessment for the Mogalakwena Production Development Platform (PDP).

1. Introduction

Anglo American is proposing to expand its existing Proof of Concept Plant hydrogen production facility, with the inclusion of a hydrogen Production Development Platform (the Project). SLR Consulting (Africa) (Pty) Ltd (SLR), has been appointed as the independent Environmental Assessment Practitioner (EAP), to undertake the environmental authorization process for the Project that is located within the mining right area of the Mogalakwena Mine near the town of Mokopane, Limpopo Province. The central coordinate of the study area is -23.968377, 28.923593 (Figure 1.1 – 1.3). The proposed Project area was previously assessed by Roodt (2008) who recorded a low significance Stone Age site **outside** of the Project footprint and no sites of significance within the PDP area. Beyond Heritage (Pty) Ltd has been appointed to assess the potential impact of the Project on heritage resources and found that the area is totally transformed and no heritage resources in terms of Section 38 of the National Heritage Resources Act (NHRA) are expected to be adversely affected by the Project. Beyond Heritage supports an application for exemption from a full Phase 1 HIA.

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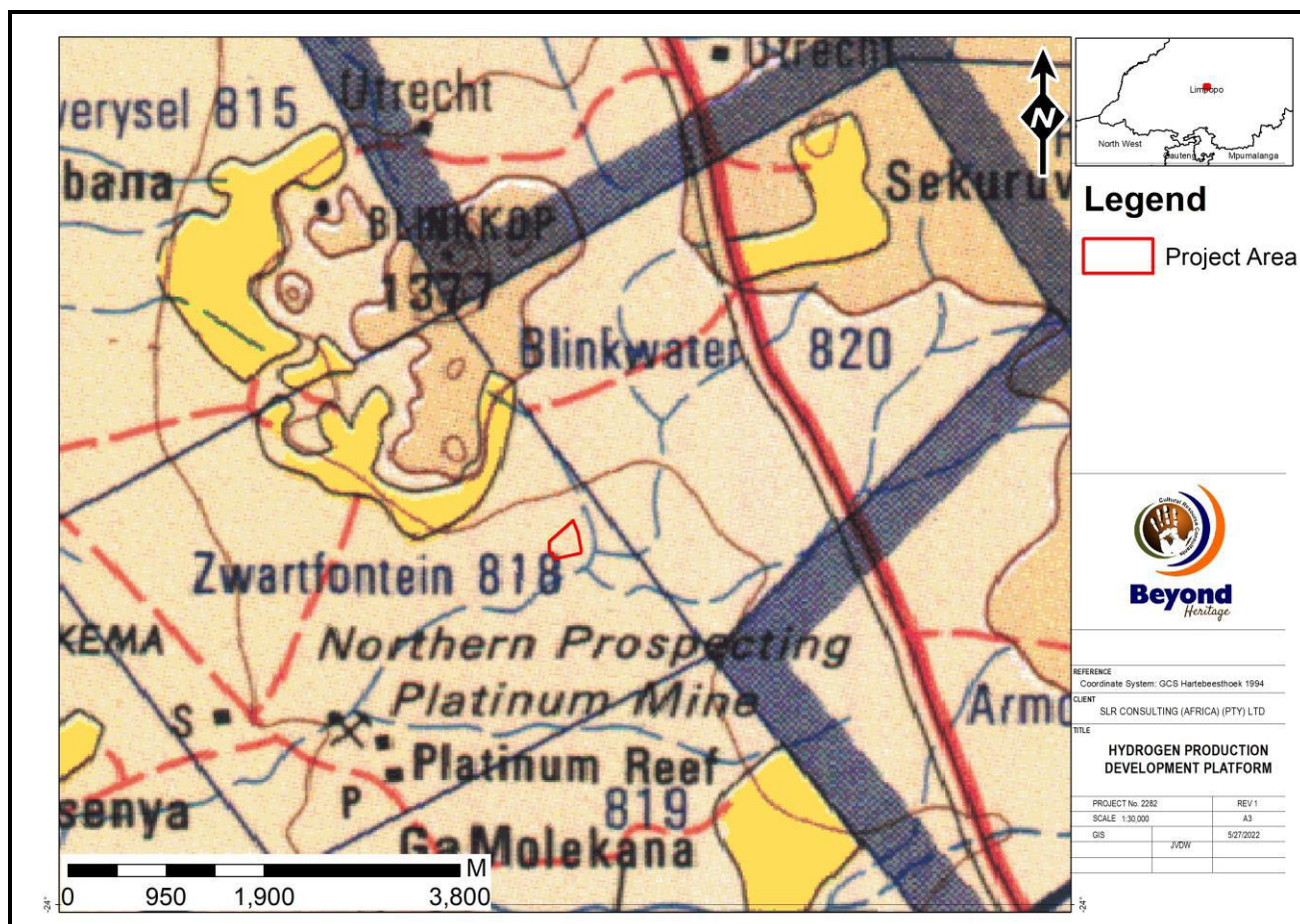


Figure 1.1. Regional setting of the Project (1: 250 000 topographical map).

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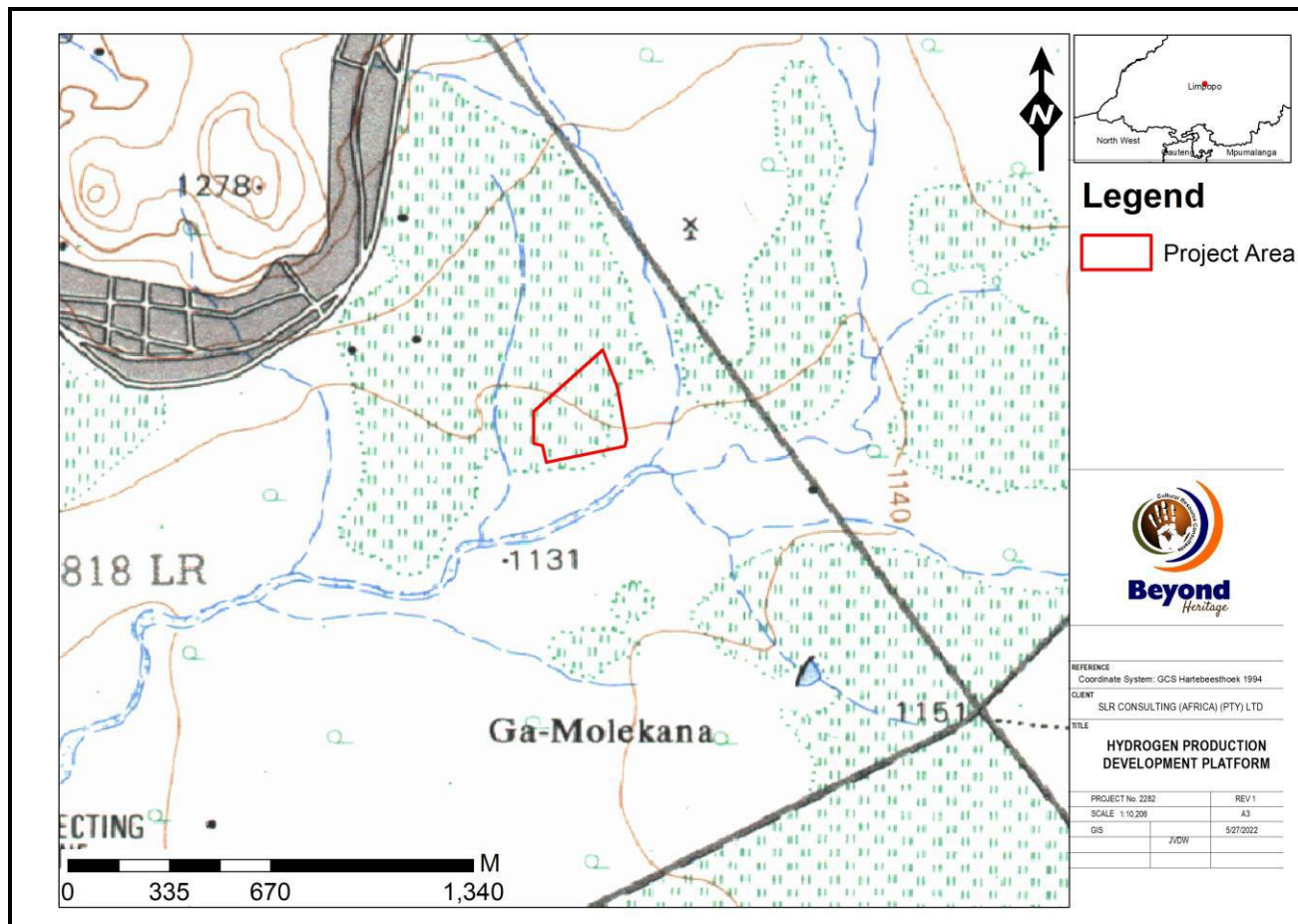


Figure 1.2. Local setting of the Project (1: 50 000 topographical map).

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Figure 1.3. Aerial image of the study area and surrounds.

1.1. Project Background

The Mogalakwena Mine has an existing and approved Proof of Concept Plant which is located on the Farm Zwartfontein 818 LR within the mine's mining right area. The Proof of Concept Plant has successfully demonstrated the practicality and operation of using hydrogen as a renewable fuel medium. The Proof of Concept Plant is comprised of three components:

- Hydrogen Generating Plant;
- Hydrogen Fuel Cell technology demonstration; and
- Solar Photo Voltaic (PV) Plant.

As part of the Project, the Proof of Concept Plant will have to be expanded with additional refuelling and distribution components to supply additional mine haul trucks with hydrogen. 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 rapidly refuel the mine haul trucks at high pressure, 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

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infrastructure/facilities. The total additional storage of hydrogen required will be approximately 184.46 m³ (fixed and mobile storage), with a total combined hydrogen storage capacity of 266.46 m³.

The Project components include the following:

- Refuelling system (Ultra-Heavy Duty);
- Refuel Fuel Cell Electric Vehicle (FCEV) haul trucks;
- Supply and Export Bays;
- High Capacity Tube Trailer;
- High Pressure Storage;
- Hydrogen refuelling station (HRS) and export compressors;
- Dispensers; and
- Truck refuelling bays.

The construction phase of the Project will include, but is not limited to the following:

- Site clearance (removal of the existing solar PV panels from the Proof of Concept Plant);
- Earthworks (including foundations, trenches, and berms) in accordance with the approved civil/structural engineering drawings; and
- The assembly and erection of already prefabricated components within the Proof of Concept Plant area.

The construction phase is expected to last 15 months. A staff complement of approximately 150 individuals will be required for the construction phase, hereby providing skilled and unskilled job opportunities. The operational phase will provide additional job opportunities for approximately five individuals. Procurement opportunities would be sourced locally, as far as possible.

The Project design is based on the expansion of the existing and authorised Proof of Concept Plant. It follows that the proposed site layout will be dictated by the current location of the Proof of Concept Plant. The Proof of Concept Plant is located within the operational area of the Mogalakwena Mine, as such, no site 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 and undisturbed land.

2. The Heritage Character of the Study area

2.1. Literature review

A brief survey of available literature was conducted to extract data and information on the area in question to provide general heritage context into which the development would be set. This literature search included published material, unpublished commercial reports, and online material, including reports sourced from the South African Heritage Resources Information System (SAHRIS).

2.2. Background to the general area

2.2.1. The Stone Age

South Africa has a long and complex Stone Age sequence of more than 2 million years. The broad sequence includes the Later Stone Age, the Middle Stone Age, and the Earlier Stone Age. Each of these phases contain sub-phases or industrial complexes, and within these we can expect regional variation regarding characteristics and time ranges. The three main phases can be divided as follows;

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-
- Later Stone Age; associated with Khoi and San societies and their immediate predecessors. Recently to ~30 thousand years ago
 - Middle Stone Age; associated with Homo sapiens and archaic modern humans. 30-300 thousand years ago.
 - Earlier Stone Age (ESA); associated with early Homo groups such as Homo habilis and Homo erectus. 400 000-> 2 million years ago.

This region of Limpopo presents deposits rich in artefacts associated with early hominids. Acheulian tool assemblages dating back to 1.1 – 1.4 million years ago were found in the Cave of Hearths in the Makapans Valley (Herries 2011). In 2005 the Makapans Valley was declared a World Heritage Site (van der Walt 2017). Fossils and archaeological deposits found within the valley show early hominid occupation dating to between 4.5 – 2.5 million years ago along with the domestication of fire in the region dating back to 1.8 - 1 million years ago.

Middle Stone Age sites within the Limpopo are mostly represented through caves and rock shelters such as the Cave of Hearths which shows a succession of ESA and MSA occupation (Herries 2011). Other MSA sites within the region show the implementation of the Pietersburg lithic industry which includes the production of elongated tools such as blades and flakes. Other notable MSA cave and rock shelter sites include Olieboomspoor and Mwulu's Cave (van der Ryst 1998).

Later Stone Age deposits of microlithics have been uncovered at Olieboomspoor, Balerno Main Shelter, Goergap 113 KR, New Belgium, and Tshisiku Shelter (van Doornum 2007). Most LSA sites in the area have been noted to have been occupied somewhat contemporaneously with Iron Age communities that settled in the region (van der Ryst 1998).

2.2.2. The Iron Age

The Iron Age as a whole represents the spread of Bantu speaking people and includes both the pre-Historic and Historic periods. It can be divided into three distinct periods:

- The Early Iron Age: Most of the first millennium AD.
- The Middle Iron Age: 10th to 13th centuries AD
- The Late Iron Age: 14th century to colonial period.

The Iron Age is characterised by the ability of these people to manipulate and work Iron ore into implements that assisted them in creating a favourable environment to make a better living.

Van Warmelo (1930) classified the Ndebele chiefdoms of Mokopane and Polokwane as the Northern Transvaal Ndebele with the Langa Ndebele and Kekana Ndebele as the most prominent chiefdoms of the region. The Langa Ndebele are thought to have migrated out of northern Kwa-Zulu Natal between 1630 and 1670 and kept their Nguni language (Huffman 2004). The exact origin of the Kekana Ndebele is not known with certainty but speculated to have also been from northern Kwa-Zulu Natal (Huffman 2004). The Langa Ndebele comprised of numerous and varied clans whereby each ward was ruled by a different sub-headmen who was ultimately ruled by the Langa chief (Jackson 1983).

In September of 1854, the Langa Ndebele and Kekana Ndebele attacked three Voortrekker groups in the region as an act of defiance against the demands set forth by the Boers for land from the Ndebele territory (Esterhuysen 2008). Prior to the attacks, the Kekana Ndebele with their chief Mugombane took refuge in Historic Cave and created their stronghold there. The first attack by the Langa Ndebele at Fothane Hill

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(Moordkoppie) saw the death of Voortrekker leader Andries Hendrik Potgieter's younger brother Hermanus Phillippus Potgieter. Makapaanspoort and Pruisen were then attacked the following day. The attacks have been speculated to have been planned ahead of time due to the preparation of the stronghold at the cave as well as the simultaneous attacks by separate Ndebele chiefdoms (Jackson 1983). Boer reinforcements from Rustenburg and the Soutpansberg were called to the area with around 500 men arriving in October of 1854 (Esterhuysen 2008). Meanwhile, the Kekana Ndebele sought refuge in the hills and the Langa in the Historic Cave. The arrival of Boer reinforcement allowed the Voortrekkers to attack the Kekana Ndebele at the Historic Cave. During their siege of the cave, 2000 Kekana Ndebele were killed along with the Commandant-General Piet Potgieter (Birkholtz and Smeyatsky 2019). In honour of Commandant-General Piet Potgieter, the nearby town of Vredenburg was renamed Piet Potgietersrust in September 1858. After the siege of the Historic Cave, the Voortrekkers proceeded to attack the Langa Ndebele at Fothane Hill on the 14th of April 1858 (Esterhuysen 2008). Eight hundred Langa Ndebele were killed with Mankopane and his remaining Langa Ndebele fleeing the hill and subsequently moving their capital to Thutlwane Hill in Magagamatala (Jackson 1983). Excavations at the base of the Historic Cave, now known as Makapan's Caves, yielded diagnostic ceramic sherds belonging to the late Moloko branch and Letaba/Phalaborwa facies. Huffman (2007), noted the potential presence of Urewe and Kalundu ceramic traditions within the region, signifying cultural material of both the eastern and western stream of the Bantu migration.

Ten years later, in January 1868, the Kekana Ndebele attacked the town of Piet Potgietersrust with the support of the Langa Ndebele. By March 1868, the conflict had escalated with Commandant Paul Kruger laying siege to the Kekana Ndebele at Sefakaulo Hill near to Piet Potgietersrust (Bergh 1999, Esterhuysen 2008). Unable to succeed in the full siege of Sefakaulo Hill, Kruger proceeded to attack Chief Mankopane and his Langa Ndebele at Thutlwane Hill on the 13th of June 1868. After the attack lasted for a few days, chief Mankopane had been triumphant and had forced Kruger and his men to retreat back to Piet Potgietersrust (Birkholtz and Smeyatsky 2019). On July 6th 1869, a peace agreement between the Langa Ndebele and the Boers was settled upon with no further development occurring in the town.

By 1870, the town had been evacuated due to Malaria and was only reoccupied in 1890 (Bergh 1999). Under the leadership of Commandant Henning Pretorius from 1890, the town of Piet Potgietersrust was then further developed and expanded into a larger town. The town has since been renamed Mokopane. Chief Mankopane died on 30 May 1877 at Thutlwane and was succeeded by his son Masebe (Jackson 1983).

Further attacks took place between 1883 and 1886 when the Langa Ndebele and Kekana Ndebele battled against each other (Jackson 1983). The war took place in several areas within the region, including a battle which took place along the Mogalakwena River. In 1886, State President Paul Kruger ordered the two chiefs to end the war and agree on peace (Jackson 1983).

In 1890, the Location Commission visited the Langa Ndebele and the Kekana Ndebele in order to demarcate territories to each chiefdom. The death of the successor of Mankopane, Chief Masebe, had created a rift within the Langa Ndebele as the two sons of Masebe were in disagreement for the new title of chief (Cartwright and Cowan 1978). This created a divide within the Langa Ndebele with some members following Hans Masebe and others following Backenberg Masebe (Cartwright and Cowan 1978). This created subsequent partitioning of the territory demarcated for the Langa Ndebele with the southern section being allocated to Chief Hans Masebe and his followers and the northern section to Chief Backenberg Masebe and his followers. The southern section included Fothane Hill, which was once the capital of Chief Mapela, and as such the southern chiefdom became known as *ba ga Mapela* (Jackson 1983). During the partition, conflicts rose between the two chiefs with both chiefdoms attacking each other. In 1901, under the British Army occupation of Pietersburg, the two chiefs were ordered to cease their attacks on each other.

2.2.3. CRM reports

Several unpublished CRM projects were conducted in the general study area (Roodt 2008; 2012; 2017, Coetzee 2011, Murimbika 2012, Hutten 2013; 2014, van der Walt 2016; 2017, Birkholtz and Smeyatsky 2019). These surveys found numerous burial grounds, Iron Age artefacts, stone tool scatters, and historical structures. A Langa Ndebele stonewalled site was also located outside of Bakenberg (Roodt 2017). Assessments by Roodt (2008) and Birkholtz & Smeyatsky (2019) covered the current study area and surrounds and known sites in relation to the Project are indicated in Figure 2.1. A Summary of studies consulted for this report is outlined in Table 1.

Table 1. Studies consulted for this project include:

Author	Year	Project	Findings
Roodt, F.	2008	Phase 1 Heritage Resources Scoping Report Mogalakwena Bulk Water Supply Scheme – Phase 1 of Zone 1 Mokopane: Limpopo.	Burial grounds.
Roodt, F.	2008	Phase 1 Heritage Impact Assessment (Scoping & Evaluation) Landfill and Salvage Yard, Anglo Platinum: Mogalakwena Section, Limpopo.	MSA Scatter
Coetzee, F. P.	2011	Cultural Heritage Survey of the Proposed Provincial Road Deviation (P4380) Project for the Mogalakwena Platinum Mine, near Mokopane, Mogalakwena Municipality, Limpopo Province.	Historical structures and burial grounds
Murimbika, E.	2012	Proposed Eskom Platreef Power Line and Substation Project within Mogalakwena Local Municipality, Waterberg District in Limpopo Province: Archaeological and Heritage Impact Assessment Report.	Homestead remains and burial grounds
Roodt, F.	2012	Phase 1 Heritage Resource Impact Assessment (Scoping & Evaluation): Maruteng Wastewater Treatment Works Mokopane, Limpopo	No sites
Hutten, M.	2013	Proposed Water Supply Infrastructure for the Residential Clusters of Tshamahansi, Sekuruwe, Seema, Phafola, Maala Perekisi, Witrivier and Millennium Park in the Mogalakwena Local Municipality, Waterberg District, Limpopo Province.	Living Heritage site.
Hutten, M	2014	Proposed Development of a Shopping Centre on Portion 1 of the Farm Kroonstad 468 LR, west of Marken in the Mogalakwena Local Municipality, Waterberg District, Limpopo Province	No sites
Van der Walt, J.	2016	Archaeological Impact Assessment for the Proposed Bulk Water Supply Pipelines from Pruissen to Piet-Se-Kop Reservoir, as Part of the Mogalakwena Water Master Plan, Mogalakwena Municipality Area, Limpopo Province.	Low significance Iron Age remains as well as some MSA stone tool scatters
Roodt, F.	2017	Proposed filling station and shopping complex at Bakenberg. Mogalakwena Local Municipality. Waterberg District. Limpopo Province.	A stone-walled settlement of the Langa Ndebele was located on top of Basogadi Hill (S23°53'03" E28°46'18).
Van der Walt, J.	2017	Heritage Impact Assessment (Required under Section 38(8) of the NHRA (No. 25 of 1999) Mogalakwena Municipality Water Master Plan: Phase 2A Bulk Water Supply Zone 1, Waterberg District Municipality, Limpopo Province.	Middle Stone Age stone tool scatters, Late Iron Age structural remains, historical stone walled structural remains and several burial grounds were recorded.
Birkholtz, P and Smeyatsky, I.	2019	Proposed Mogalakwena Mine Expansion Project near Mokopane, Limpopo Province	71 heritage sites ranging from Stone Age to living heritage features including dwelling and numerous burial sites.

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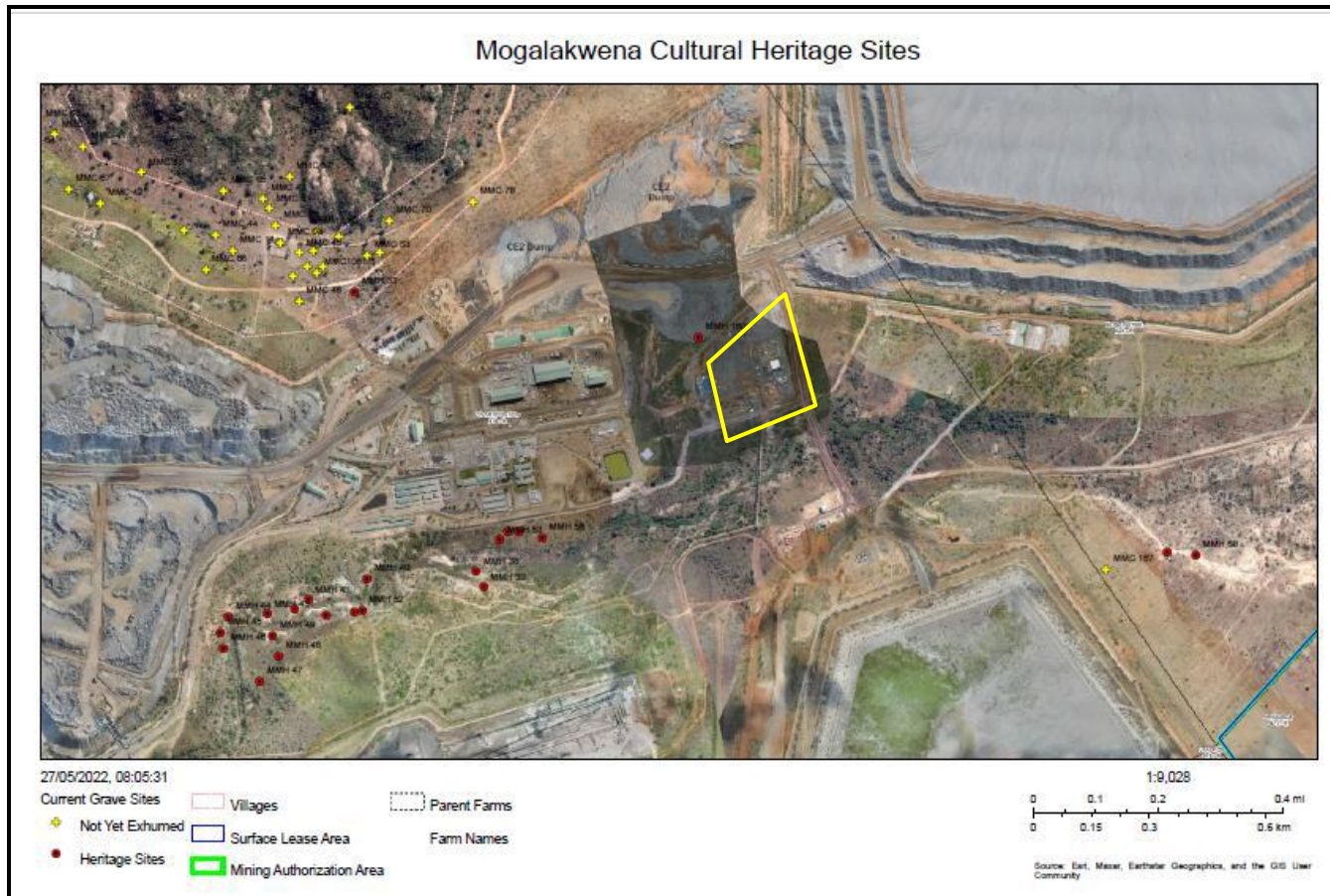


Figure 2.1. Known sites in relation to the Project (yellow polygon) as provided electronically by the Anglo Platinum: Cultural Heritage Principal (email dated 27 May 2022).

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2.3. Historical Landscape use

An assessment of available archival and historical maps was undertaken to establish a historic layering for the study area. The Project area is currently part of mining facilities and the Mogalakwena mine was established in 1993 as the largest open-pit platinum mine in the world. Since 1993 the mine has undergone several expansions along with the development of other mining-related activities in the area. Before being levelled and cleared for the current mining activities the site was impacted on by cultivation from as early as the 1960s. Landscape use and change over time in the study area is illustrated in Figures 2.2 to 2.7.

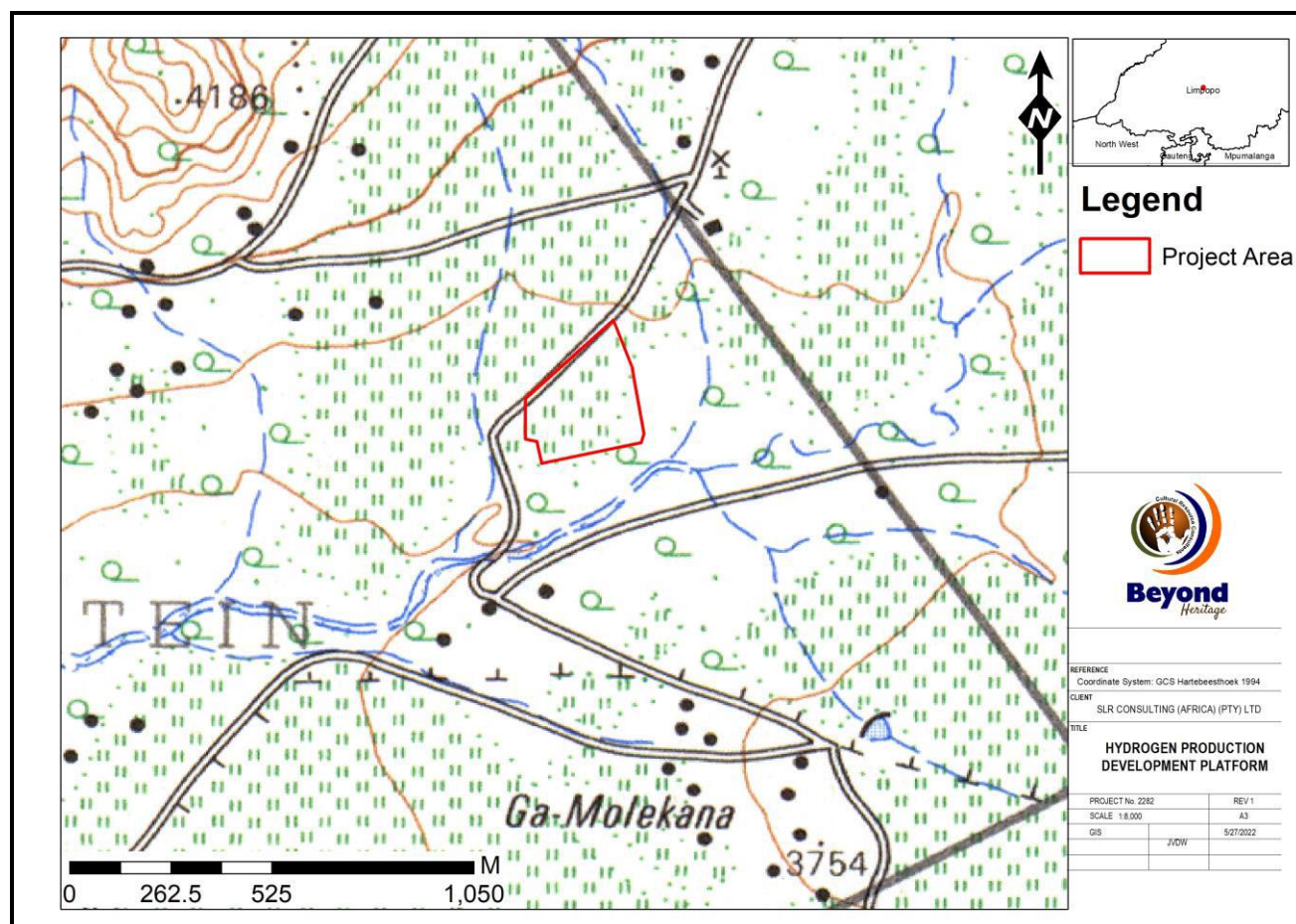


Figure 2.2. 1970 Topographical map of the study area indicating cultivation in the study area.

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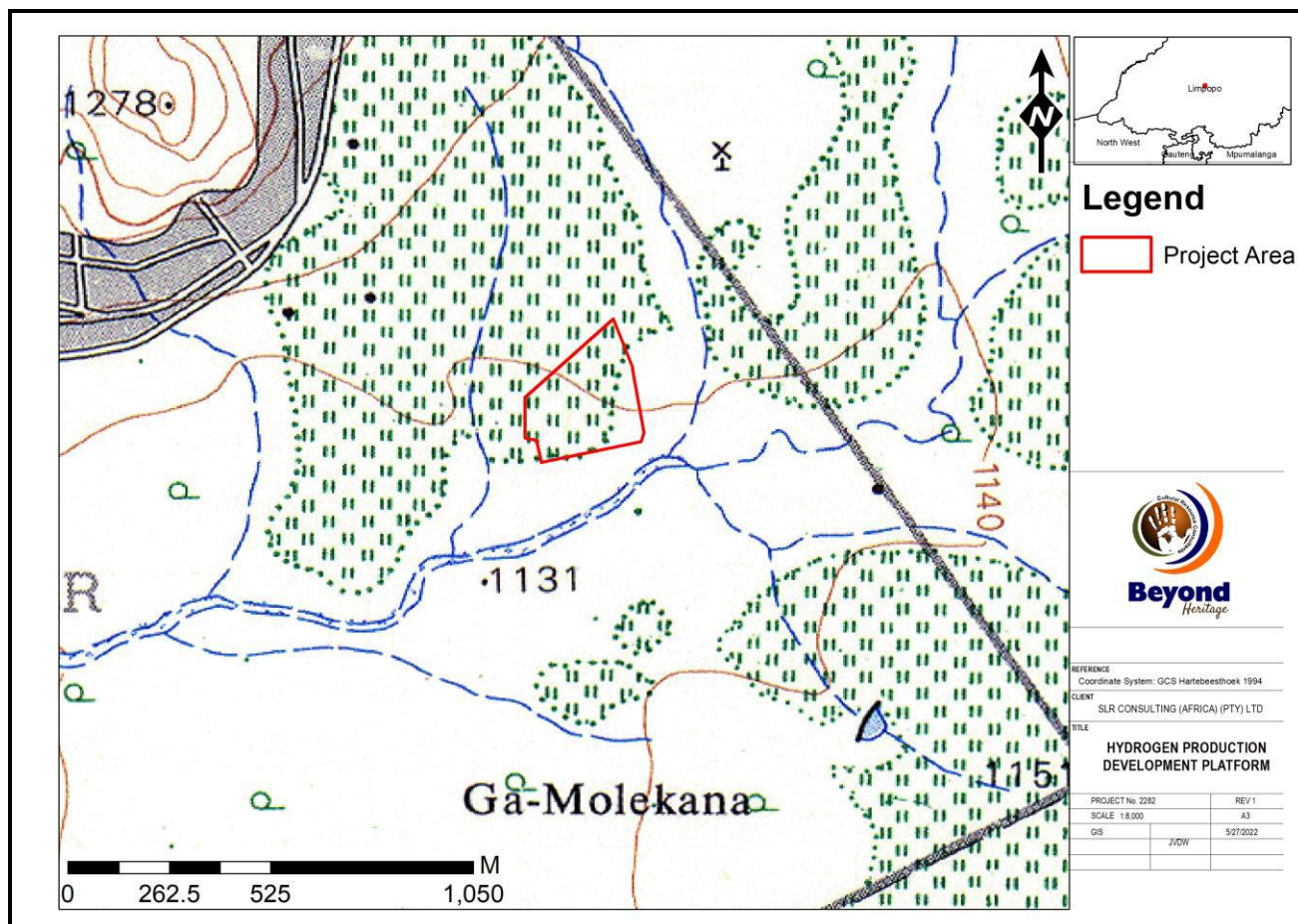


Figure 2.3. 1983 Topographical map of the study area indicating the area as cultivated.

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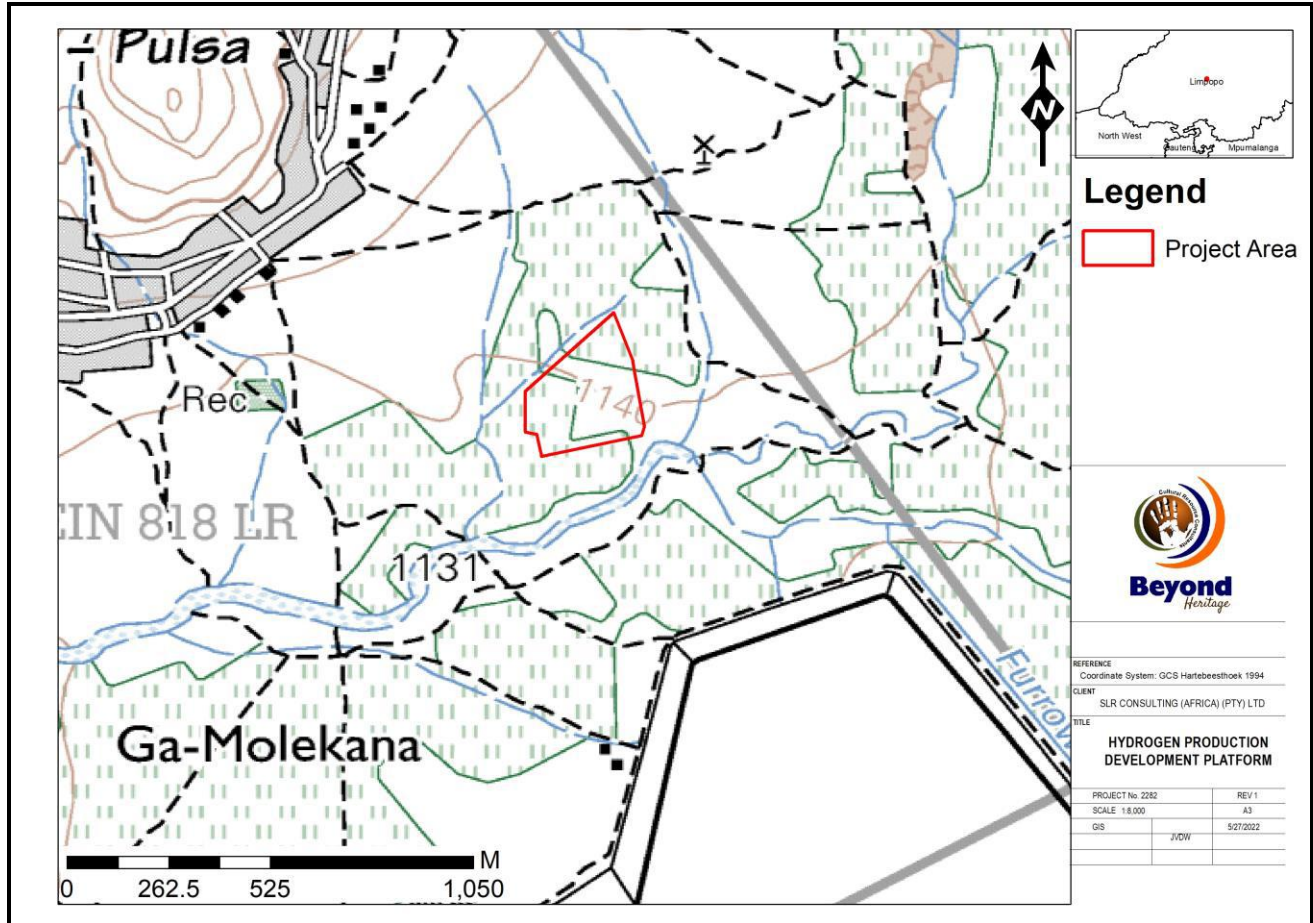


Figure 2.4. 2004 Topographic map of the study area. The area is still indicated as cultivated.

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Figure 2.5. May 2016 Google image of the study area prior to the establishment of mining facilities.



Figure 2.6. April 2021 Google image of the study area indicating the clearing and preparation prior to the establishment of the Proof of Concept Plant.

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Figure 2.7. June 2021 Google image indicating the complete transformation of the study area into the current Proof of Concept Plant.

3. Findings

3.1. Heritage resources

In line with the Anglo Social Way and the NHRA, stakeholder engagement is a key component of any Environmental Authorisation (EA) process, it involves stakeholders interested in, or affected by the proposed development. A Stakeholder consultation process is facilitated by the EAP and no heritage concerns have been raised thus far.

The entire project area has been transformed by historical cultivation activities (Figure 2.2 to 2.4) and more recently by infrastructure (Figure 2.7). Google imagery shows the initial development to the west of the project area as the first development occurring within the immediate vicinity (Figure 2.6). The entirety of the Project area was then cleared and prepared for development during April 2021 (Figure 2.3), with the full transformation occurring in June 2021 (Figure 2.7). The study area was assessed by Roodt (2008), who recorded an MSA scatter of low significance **outside** of the Project footprint (Figure 2.1 Site MMH150). The surroundings were assessed by Birkholtz & Smeyatsky (2019) that recorded numerous sites ranging from the Stone Age to living heritage sites as well as burial sites (Figure 2.1). None of these recorded features are located within the Project footprint. The extensive disturbance of the site (illustrated in Figures 3.1 to 3.6), and the fact that no *in-situ* deposit will be disturbed by the Project means that the study area is considered to be of low heritage potential and does not warrant a full Phase 1 HIA.

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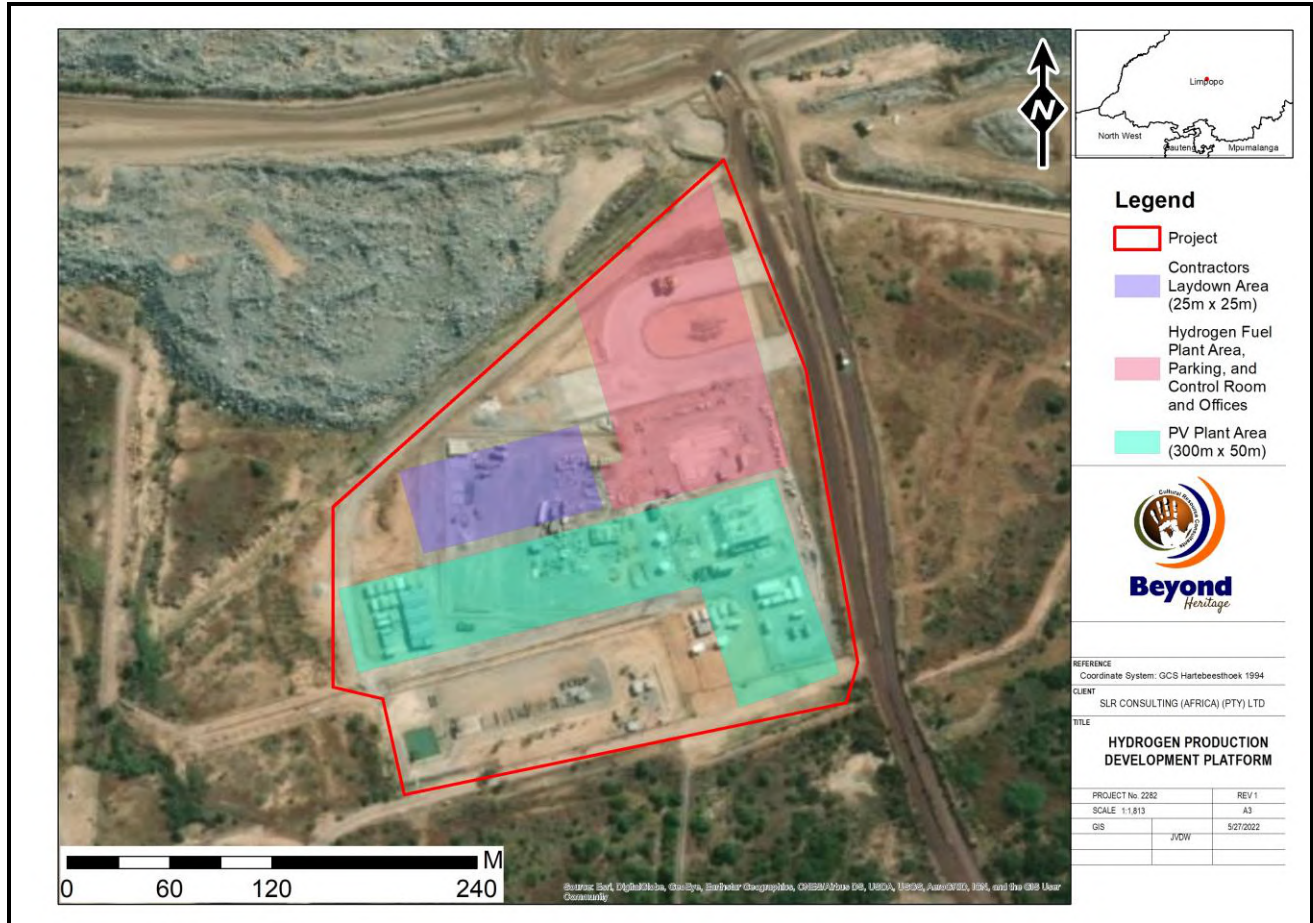


Figure 3.1. Lay out of the Proof-of-concept plant.

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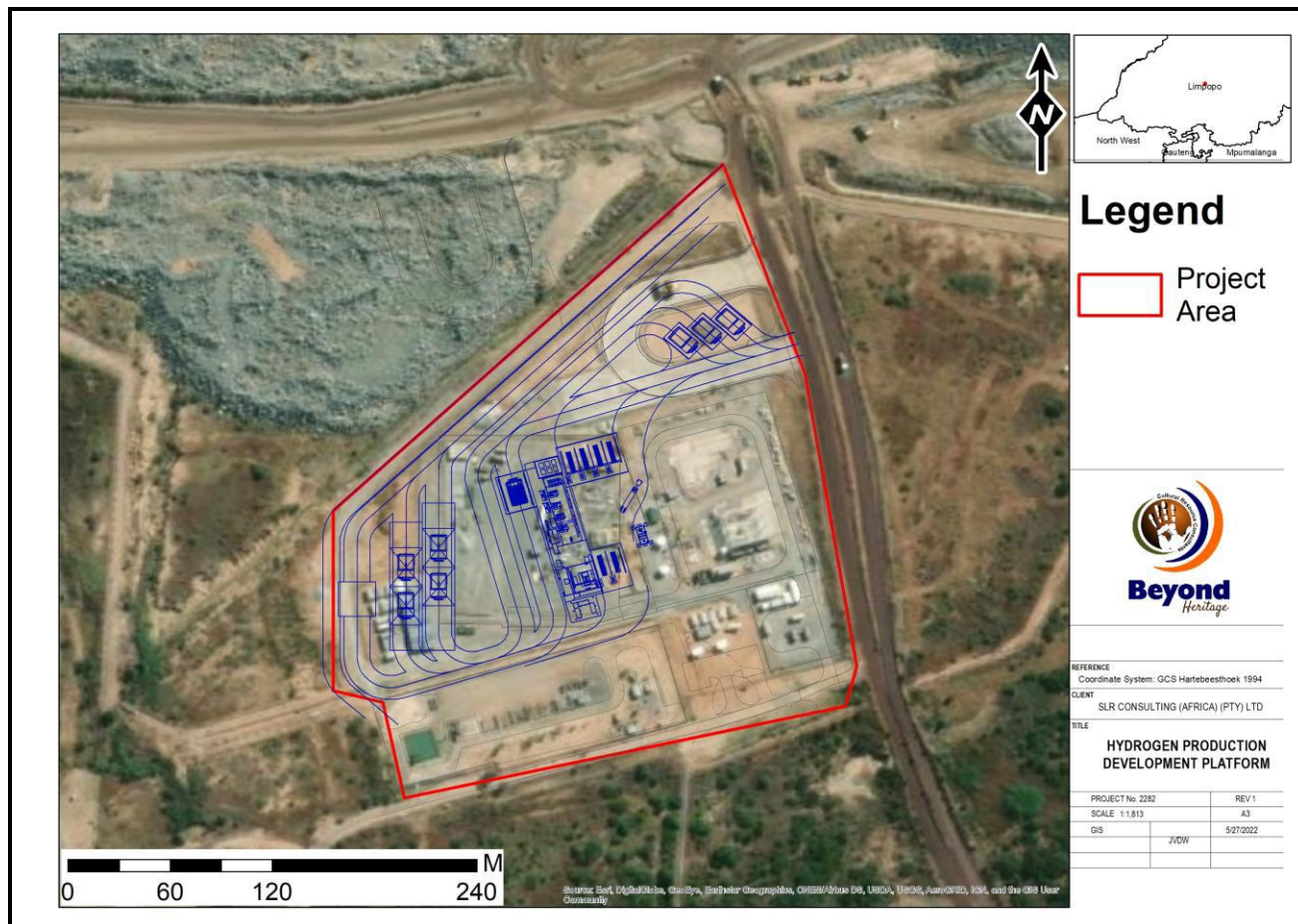


Figure 3.2. Proposed Production Development Platform Layout

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Figure 3.3. General site conditions showing existing developments.



Figure 3.4. General site conditions showing the extent of the transformation in the Project footprint.



Figure 3.5. General site conditions showing the extent of the transformation in the Project footprint.



Figure 3.6. General site conditions showing the extent of the transformation in the Project footprint.

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3.2. Paleontological Resources

Based on the SAHRA paleontological map the study area is of insignificant sensitivity (Figure 3.1) with no further palaeontological studies required for the study area.



Figure 3.1. SAHRIS palaeo-sensitivity map for the site for the proposed development shown within the yellow polygon. Background colours indicate the following degrees of sensitivity:

Colour	Sensitivity	Required Action
RED	VERY HIGH	Field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	Desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	Desktop study is required
BLUE	LOW	No palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	No palaeontological studies are required
WHITE/CLEAR	UNKNOWN	These areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

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4. Conclusion

The project area is completely transformed, firstly through cultivation (from the 1970's Figure 2.2), secondly through the establishment of mining related infrastructure. The study area and surroundings were assessed through HIA's by Roodt (2008) and Birkholtz & Smeyatsky (2019) that recorded a low significance MSA site and burial sites in the surrounding area. None of these recorded features is located within the Project footprint. The extensive disturbance of the site (illustrated in Figures 3.1 to 3.6), and the fact that no *in-situ* deposit will be disturbed by the Project means that the study area is considered to be of low heritage potential, and it is unlikely that the development of the PDP facility would impact on cultural heritage resources. If any heritage resources are uncovered a Chance Find Procedure should be implemented as included in the Anglo Social Way Section 4H. According to the palaeosensitivity map on SAHRA, the study area is of insignificant/no sensitivity and no further palaeontological studies are required. Considering the low heritage and palaeontological importance of the study area, exemption from a Phase 1 HIA is supported.

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