

OMI Solutions (Pty) Ltd

4 August 2022

OMI SOLUTIONS (PTY) LTD: MEMORANDUM IN TERMS OF HERITAGE ASPECTS ON PORTIONS OF TURFSPRUIT 241 KR FOR THE DEVELOPMENT OF THE IVANPLATS PLATREEF SOLAR PROJECT, THE WATERBERG DISTRICT MUNICIPALITY, LIMPOPO PROVINCE

COMPILED FOR:

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1. Project Background and Brief

Ivanplats (Pty) Ltd (Ivanplats), a subsidiary of Ivanhoe Mines, is a holder of an existing Mining Right (MR) granted by the Department of Mineral Resources and Energy (DMRE) in 2014 (DMRE Reference No. LP 30/5/2/2/1/10067 MR). The MR was issued for the development of an underground mine, namely the Platreef Mine, on the farms Macalacaskop 243 KR and Turfspruit 241 KR. The mine has a Life of Mine (LoM) of 30 years. In an effort to reduce their carbon footprint and ensure continued electricity supply for the Platreef operations, Ivanplats proposes to develop a solar photovoltaic (PV) facility over three (3) identified areas namely Area 1, Area 2 and Area 3. The development will be undertaken in a phased approach, commencing with the initial phase yielding a 3MW power supply from Area 2 and 2MW power supply from Area 3. In total these areas can yield up to 7MW of electricity supply.

Area 3 has been identified as a parking area and will have solar panels mounted on the roof of the carports. Area 2 will comprise of fixed structures anchored to the ground and mounted with the latest N-type TopCON, bi-facial, double glass solar modules. The fixed structures will be 6.4 m apart, leaving sufficient space for vehicles to drive between the rows for maintenance purposes. The fixed structures will have a height of 1.25 m at the lowest point. Area 1 will be developed in future with anchored fixed mounted with solar modules similar to that of Area 2. The entire solar facility will supply up to 19MW of electricity for private consumption at the mine operations. In total, the solar PV facility will encompass an area of 19.59 hectares.

The main components of the solar PV plant will include the following:

- PV modules, which convert solar radiation into direct current (DC).
- The fixed mounting structure, which supports the PV modules.
- Central inverters, which convert DC from solar field to alternating current (AC).
- Power Transformers, which raise the voltage level from low to medium.
- Power Stations, which hold the necessary equipment to convert the DC power to AC.
- Platreef grid connection infrastructure - the solar facility will connect to the existing Platreef 8MVA substation. The power corridor will comprise a dual-circuit overhead powerline (OHL), approximately 500m in length, at a voltage level of 11kV.

Pre-design Input	Platreef Solar PV Plant Specifications
Contracted Capacity (AC)	19MW
Solar Cell	Mono
Weight	31.8 kg
Dimensions	2278±2mm x 1134±2mm x 35±1mm
Number of cells	144(6x24)
PV module type	N-Type Tunnel Oxide Passivated Contact (TOPCon), bi-facial, double glass solar modules
Number of modules	Approximately 37 200
Plant Transformer rating	8MVA/11kV
Plant grid interconnection voltage	11kV
Planned grid interconnection	800 m 11kV OHL to existing 8MVA Substation

The project will require water to facilitate both the construction and operational phases of the solar facility. Water will be sourced from the existing mine boreholes and stored in existing water storage dams on site. Water will be required for use during construction as well as during operations to clean the PV panels. No new access roads are proposed for the facility. The facility will make use of those roads already authorised for the mine. A fence around the facility will be installed for security purposes. Platreef mine plans to establish a control room which will serve the entire mine, including the solar facility. Additionally, the mine will also have permanent security patrolling the site.

The Heritage Consultant was contracted by OMI Solutions (Pty) Ltd to compile a Memorandum (Memo) based on a number of completed Heritage Impact Assessments (HIAs) and Specialist Assessment Reports conducted for the Platreef Mining Project and associated developments. The aim of the Memo is to provide a professional opinion as to potential short and long-term direct and indirect impacts of the proposed **Platreef Solar Project** and its components, on the heritage landscape, based on past and present heritage work at the Platreef Mine.

2. Project Location and Receiving Environment

The proposed Platreef Solar Project (study area) occurs on portions of Turfspruit 241KR in the Mogalakwena Local Municipality and the Waterberg District Municipality of the Limpopo Province. The farm is located directly west of the N11 road. The project site is located approximately 10km northwest of the Mokopane town centre within the grounds of the Platreef Mine. The study area appears on 1:50000 map sheet **2428BB** (see Figure 2-1) and coordinates for the proposed project are as follows.

- **S24.082966° E28.966786°**

The proposed project is situated along the north of Mokopane town in a predominantly rural residential area of the Limpopo Province, within the Savanna biome which is the largest biome in Southern Africa. The most recent classification of the area by Mucina & Rutherford is the mountainous areas to be part of the Mamabolo Mountain Bushveld, while a section forms part of the Polokwane Plateau Bushveld in the northwest, while the remainder of the plains and footslopes falls within the Makhado Sweet Bushveld vegetation type. The landscape features of the Makhado Sweet Bushveld vegetation type are slightly to moderately undulating plains, sloping generally down to the north, with some hills to the southwest, while the vegetation is characterised by short and shrubby bushveld with a poorly developed grass layer. The hills and low mountains embedded in this vegetation type are of the Mamabolo Mountain Bushveld, Much of the project area was previously exposed to intensive agricultural activities and regrowth of pioneer plant species and grasses with predominantly Sweet thorn (*Acacia karoo*), Sickle bush (*Dichrostachys cinerea*) and a variety of grasses is prevalent. The Platreef Solar

Project site is surrounded by a number of local settlements such as Ga-Magongwa, Tshamahansi, Ga-Letwaba and Ga-Kgubudi.

3. Method of Enquiry

The larger landscape around Mokopane has been well documented in terms of its archaeology and history. Numerous academic papers and research articles supplied a broad historical context for this Memorandum placed particular focus on a reappraisal of Heritage Assessments and Specialist analysis pertaining to the Platreef Mining Project. A desktop review of historical aerial photography, historical and current maps of the project area were conducted to assist with the revaluation of the baseline heritage environment. A brief site scan of the Platreef Solar Project was conducted in June 2022 whereby known heritage occurrences and remnants of sites were visited. Using a Garmin GPS, the survey was tracked and general surroundings were photographed with a Samsung Digital camera.

4. Heritage Landscape

The project area is situated in a landscape well-known for its Iron Age Farmer and Colonial Period frontier zones. As such, literature shows evidence of an archaeological heritage that spans from the Early Stone Age, to the Later Iron Age and the region bears significance historically as a frontier between hunter-gatherers and European explorers and settlers.

- Early History and the Stone Ages

According to archaeological research, the earliest ancestors of modern humans emerged some two to three million years ago. The remains of Australopithecine and *Homo habilis* have been found in dolomite caves and underground dwellings in the Riverton Area at places such as Sterkfontein and Swartkrans near Krugersdorp. *Homo habilis*, one of the Early Stone Age hominids, is associated with Oldowan artefacts, which include crude implements manufactured from large pebbles. The Acheulian industrial complex replaced the Oldowan industrial complex during the Early Stone Age. This phase of human existence was widely distributed across South Africa and is associated with *Homo erectus*, who manufactured hand axes and cleavers from as early as one and a half million years ago. Middle Stone Age sites dating from as early as two hundred thousand years ago have been found all over South Africa. Middle Stone Age hunter-gatherer bands also lived and hunted in the Orange and Vaal River valleys. These people, who probably looked like modern humans, occupied campsites near water but also used caves as dwellings. They manufactured a wide range of stone tools, including blades and points that may have had long wooden sticks as hafts and were used as spears.

The cultural historical landscape of the Polokwane area spans millions of years with evidence of hominin occupation, Stone Age traditions, Iron Age farmers and historical events. Makapansgat, a deep limestone cave near Mokopane has yielded remains of *Australopithecus africanus* that dates to more than 3 million years BP and also *Homo erectus*, dating to approximately 1 million years BP. However, Earlier Stone Age (ESA) material is scarce on the Waterberg plateau. The Middle Stone Age (MSA) is abundantly represented in the Waterberg area and archaeological excavations at sites such as the Olieboomspoor Shelter in the north-western part of the Waterberg have yielded rich MSA deposits which display a large degree of specialisation and skill in stone working (Van der Ryst 1996). These groups occupied open camps which were situated in the proximity of water sources such as pans, lakes or rivers. There is a noticeable gap in the area between MSA assemblages and material from the Later Stone Age (LSA), suggesting that the region may not have seen dense human occupation for a long period of time. However, Later Stone Age groups, including the San hunter gatherers and Khoi herders frequented the area in the last few millennia, and numerous LSA sites have been discovered and excavated. Similarly, LSA evidence such as stone implements, ceramics and a wealth of rock paintings and markings are scattered over the plateau.

- **The Iron Age Farmer Period**

Within the last two thousand years, San and Khoi groups were displaced by Iron Age farming communities moving into the Polokwane area, possibly prompted by the spread of tsetse fly into the lowveld areas. Three phases of Iron Age occupation are generally distinguished here (Aukema 1989). The first phase, known as the Eiland tradition, is characterised by herringbone decoration motives on pottery. Little to no stone walling occurs at sites dating to this phase. On the other hand, sites of the second phase of occupation dating to the Later Iron Age are commonly found on hilltops where they display elaborate stone walling. These settlements could be linked to the arrival of Nguni-speakers (Ndebele) in the region between the 16th and 17th centuries AD. The third phase of Iron Age settlement, dating to the 18th and early 19th century, contains bi and multi chrome (red and black) pottery commonly attributed to a Sotho-Tswana ceramic tradition known as Moloko (see *Sotho-Tswana History* section below). In the northern regions of South Africa at least three settlement phases have been distinguished for early prehistoric agropastoralist settlements during the Early Iron Age (EIA). Diagnostic pottery assemblages can be used to infer group identities and to trace movements across the landscape. The first phase of the Early Iron Age, known as Happy Rest (named after the site where the ceramics were first identified), is representative of the Western Stream of migrations, and dates to AD 400 - AD 600. The second phase of Diamant is dated to AD 600 - AD 900 and was first recognized at the eponymous site of Diamant in the western Waterberg. The third phase, characterised by herringbone-decorated pottery of the Eiland tradition, is regarded as the final expression of the Early Iron Age (EIA) and occurs over large parts of the North West Province, Northern Province, Gauteng and Mpumalanga. This phase has been dated to about AD 900 - AD 1200. These sites are usually located on low-lying spurs close to water. However, please note that there are no EIA sites in the Free State. The Late Iron Age (LIA) settlements are characterised by stone-walled enclosures situated on defensive hilltops c. AD 1640 - AD 1830). This occupation phase has been linked to the arrival of ancestral Northern Sotho, Tswana and Southern Ndebele (Nguni-speakers) in the northern and Waterberg regions, and dates from the sixteenth to seventeenth centuries AD. The terminal LIA is represented by late 18th/early 19th century settlements with multichrome Moloko pottery commonly attributed to the Sotho-Tswana. These settlements can in many instances be correlated with oral traditions on population movements during which African farming communities sought refuge in mountainous regions during the processes of disruption in the northern interior of South Africa, resulting from the so-called *difaqane* (or *mfecane*).

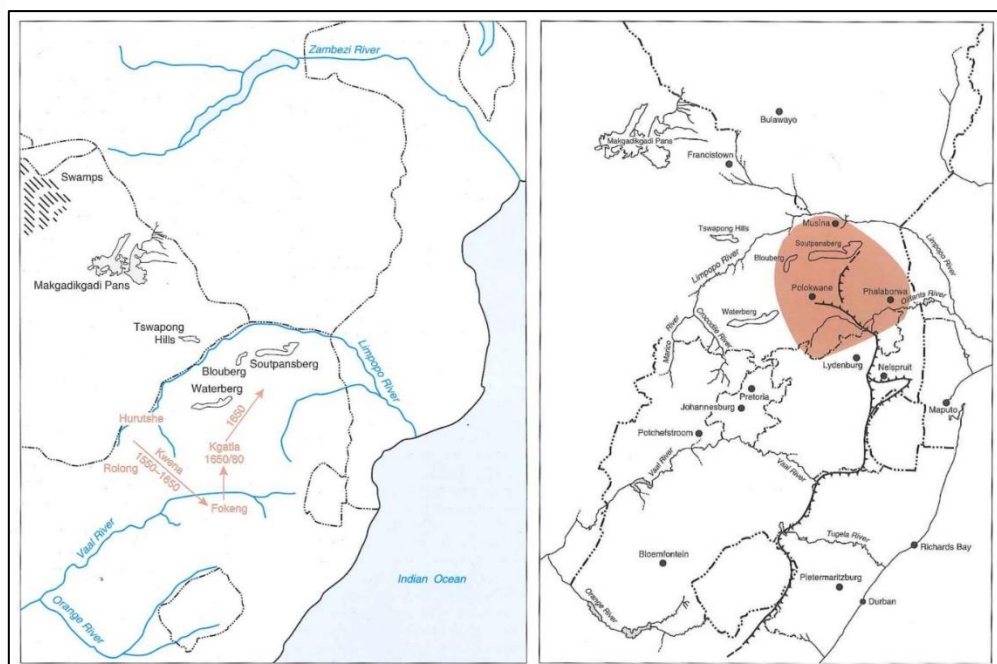


Figure 1: Maps detailing the early distribution of Sotho-Tswana speakers (left) and distribution of 16th century Moloko ceramics, specifically the Icon facies (right) (After Huffman 2007).



Figure 2: Ceramic decoration motives typical of the 15th and 16th century Icon facies (After Huffman 2007).

Early Sotho-Tswana History

Within a larger archaeological context, the Iron Age settlement representations in the Mokopane area can be traced back to ancestral Sotho-Tswana occupation and developments from the sixteenth century AD onwards. As mentioned previously, diagnostic pottery assemblages are commonly used in the South African Iron Age to infer group identities and to trace movements across the landscape. Similarly, the migration of the Sotho-Tswana speakers in South Africa in the 16th century marked a new ceramic style, known as Moloko. The Moloko Tradition can be divided into two phases: an early phase (e.g. Icon) in which sites were usually located at the foot of hills and contained little or no stone walling; and a later phase characterised by extensive stone wall complexes which were often erected on hills. The early Later Iron age sites at Makotopong and Kalkfontein display ceramic characteristics similar to that of the Icon facies. Further afield, in the Waterberg area, the later Maloko phase manifested in the Madikwe ceramic facies with pottery typically displaying stab and fingernail impression decoration motives. Sites of this period display extensive stone walls, erected to construct stock byres and to demarcate residential units where pole-and-dagha (clay) huts were placed.

- Historical and Colonial Times and Recent History

Some of the early Voortrekkers such as Hans van Rensburg and Louis Trichardt and the Boer communities that travelled with them, traversed through the survey area on their way to the Soutpansberg Mountains, in April 1836.

- Makapans Caves

The Makapans Caves are situated approximately 20km to the north-east of Mokopane and comprise a series of caves with evidence of hominid occupation (*Australopithecus africanus*) from approximately 3.3 million years ago. The Makapansgat Lime works are the oldest of the sites, spanning over a time range of 3.32 million years ago to about 1.6 million years ago. The Lime works has yielded hundreds of thousands of fossil bones amongst which are the scant remains of the hominid *Australopithecus africanus* (Dart R, 1925).

- The Cave of Hearths.

In Africa, the ESA (Early Stone Age) spans the period of ± 2.5 million years to around 250,000 years ago, and the earliest bed at the Cave of Hearths preserved stone tools and associated debris from a date of around 400,000 years ago. The cave is situated in the Makapans Valley approximately 20km to the north-east of Mokopane. The overlying beds preserved an intermittent but very long record of human occupation during the Middle Stone Age from $\pm 110,000$ -50,000 years ago, and again in the Late Stone Age from 10,000 -5,000 years ago, and from Iron Age times almost up to the present (McKee, J.K 1995).

- **Moorddrift**

The farm Moorddrift 289 KR is situated adjacent and to the south of the farm Lisbon 288 KR, directly south of the town of Mokopane. It was the scene of one of three attacks on Boer parties in this region during September/October of 1854. Twelve Boer pioneers were murdered here and a monument was erected in 1937 to commemorate this unfortunate incident. More attacks took place at Mapela and at Pruizen. The attack at Moorddrift was executed by subjects of Chief Mokopane under Headman Lekalekale who resided at Lekalekaleskop west of Mokopane. This spate of attacks forced the Z.A.R-government and its military forces to retaliate

- **Makapansgat**

This cave is most famous as the scene of a clash between the Boer Commando of Piet Potgieter and the local Langa- and Kekana Ndebele of the region. The Boer Commando was on a punitive expedition after the attacks on Boer pioneers and Chief Makapan (Mokopane) then fled to these caves to escape from them. Chief Makapan (Mokopane), his tribes' people and their livestock were besieged in the cave for nearly a month between 25 October and 21 November 1854. During this time, many hundreds died of hunger and thirst or were shot by Boers. Piet Potgieter was also killed by one of Mokopane's men during the siege. The cave was declared a National Monument in 1936.

5. The Project Heritage Landscape

5.1 Previous Heritage Work

A number of Heritage Specialist Assessment Reports were conducted for the Platreef Mining Project and associated developments. These studies identified a range of heritage resources in the mining project area and a number of burial sites were documented within the footprint of the proposed Platreef Solar. Some of these sites were assessed and further investigated. Each of the heritage reports assigned unique sites codes to the burial sites and it should be noted that Ivanplats, in conjunction with heritage specialists inventoried identified heritage resources with their own site numbers to e.g. "011_01" or "013_04".

The following heritage assessments and specialist reports bear particular reference to the Platreef Solar Project and this Memorandum:

- **Nel et al., 2013. Heritage Impact Assessment for the Proposed Platreef Mining Project on the farms Bultongfontein 866 LR, Turfspruit 241 KR, Macalacaskop 243 KR and Rietfontein 2 KS in Mokopane, Limpopo Province. DWE**

Platreef Resources (Pty) Ltd appointed Digby Wells Environmental (DWE) to conduct a Heritage Impact Assessment (HIA) as part of specialist studies required for the compilation of the ESIA for the Platreef Mining Project. The HIA was completed, informed by a primarily desktop-based Heritage Statement in support of a Notification of Intent to Develop (NID) in terms of Section 38 of the National Heritage Resources Act, 1999 (Act No 25 of 1999) (NHRA) and in compliance with requirements for an ESIA in terms of the MPRDA, NEMA and NEMWA in support of the Mining Right Application (MRA). Through a literature review, field survey and assessment, a total of 3 archaeological sites, 55 burial grounds and a historical werf were identified within the Project area in the DWE HIA. The HIA also made mention of the Makapan World Heritage Site.

The HIA recommend the implementation of feasible mitigation measures related to project design and planning. For burial grounds in particular, it was recommended that graves be preserved in situ ensuring protection during development and the long-term. It was stated that grave relocations are to take place if the sites cannot be conserved, subject to a Grave Relocation Plan (GRP) in accordance with Section 36 of the NHRA and NHRA Regulations.

- **Nienaber, C. 2016. Report on the Assessment of reported grave localities at Platreef by means of Ground Penetrating Radar (GPR) during January 2016 Ivanhoe Mines: Platreef Project Farm Turfspruit 241 KR, Mokopane, Limpopo. PGS Heritage**
- **Nienaber, W.C. 2016. Ivanhoe Mines: Platreef Project – Planned Community Centre Site. Farm Turfspruit 241 KR, Mokopane, Limpopo. Ground Penetrating Radar (GPR) Survey for graves Revision 1. Unpublished report: PGS Heritage.**
- **Nienaber, W.C. 2015. Consolidated report on the Assessment of reported grave localities at Platreef by means of Ground Penetrating Radar (GPR) and archaeological test excavation during 2015. Ivanhoe Mines: Platreef Project FARM Turfspruit 241 KR, Mokopane, Limpopo**

Ground penetrating radar (GPR) has become an established technique in the field of forensic geoscience. In recent years, several studies, focusing on the application of GPR for detecting graves, have emerged. At Platreef, at least three GPR projects were conducted by PGS Heritage based in information from the DWE HIA and in areas where members of the local community indicated locations said to contain graves. Some of these localities which were reportedly indicated by the presence of various surface features, such as rocks or low mounds, while others were reportedly obliterated by the activities on the site. Each of these localities were surveyed and individually assessed for sub surface radar anomalies that could indicate the possible presence of graves.

PGS Heritage investigated the following sites within the Platreef Solar Project area; **011C-01, 011C-02, 011C-03, 012A-01, 012A-05 and 023_01** as well as site not included in the Ivanplats site inventory (“PLR70”). Good results were achieved and the use of GPR to assess sub-surface anomalies was able to conclusively indicate the absence of sub-surface anomalies due to the well-established and known soil geology in the general area. It was therefore possible to conclusively state at which localities no graves were present. It was, however not possible to distinguish between graves and other general anomalies that are similar in size and extent. Where these are present additional ground truthing and archaeological test excavation was recommended by PGS Heritage to confirm whether the observed anomalies represent graves.

- **Van Der Walt and Hutten, 2015. Report on test excavations of two possible graves for the Ivanhoe Mines: Platreef Project, FARM Turfspruit 241 KR, Mokopane, Limpopo.**

PGS Heritage also was contracted in 2015 to investigate by means of an archaeological excavation two possible graves, which were situated within the Box Cut on the Farm Turfspruit 241 KR. Even though these sites are not located in the proposed Platreef Solar Project it should be noted that the study concluded that no evidence of either skeletal remains or a burial pit was present in these locations.

- **Various Grave Relocation Projects by PGS.**

As noted above, the HIA for the Platreef Mining Project located a number of graves. In addition, various families from surrounding communities indicated the locations of graves and potential burial sites in the project area. PGS Heritage embarked on a systematic grave relocation project and the first phase of relocations (Phase 1 and Phase 1.5) was concluded in 2017. The following phase (Phase 2) was concluded in 2021 after a period of community disputes. Single actions from Phase 2 remains pending engagements and consultations with the surrounding communities and families are on-going according to PGS Heritage records.

5.2 The Heritage Site Status Quo

5.2.1 The Historical Landscape

In terms of heritage resources, the general landscape around the project area is primarily well known for its Stone Age, Iron Age and Colonial / Historical Period archaeology primarily related to prehistoric settlement and rural farming expansion. The larger landscape around Mokopane holds a rich history (see previous section) and besides for the commercially driven heritage assessments noted above, no particular reference to archaeological

sites or features of heritage potential were recorded during an examination of literature specifically related to the Platreef Solar Project area.

A careful analysis of historical aerial imagery and archive maps reveals the:

- Large portions of Turfspruit 241KR – and particularly areas subject to this assessment have been altered extensively by recent and historical farming, presumably during the 20th century.
- A number of informal settlements are indicated on topographical maps in the landscape around the project footprints from the 1960's onwards, including Ga-Letwaba and Ga-Kgubudi.
- Extensive agriculture activities are legible in the landscape on a historical aerial image dating to 1948.
- According to Van Warmelo's ethnological survey of 1935, the larger landscape was settled by the "baxaLaka" under Henrik Masibi and Alfred Masibi as well as the "BaxaMokopane" group.

5.2.2 Status of Heritage Sites in the Project Area

As noted above, Heritage Specialist Assessment Reports identified and examined a number of burial sites within the footprint of the proposed Platreef Solar Project. Based on available literary evidence and some site observations, the following burial site status is presented for the project footprint area:

- 011_01

DWE described this site (coded by DWE as **PLA1677/S.36-037**) as an "Undetermined amount of graves within burial ground" located within a fence and the burial is assigned to the Maluleke family. PGS Heritage embarked on a number of grave relocations and exploratory excavations and the relocation of this burial site was completed successfully according to PGS Heritage records.

- 011C-01

DWE described this site as "1 grave within burial ground" located within a fence and the burial is assigned to Manamela, Lesibana Macks. This site was indicated by the Manamela family members who indicated the presence of the grave of an adult conventionally buried. In terms of GPR sampling conducted by PGS Heritage, **Site 023_01** (coded by DWE as PLA1677/S.36-062 and coded by Nienaber as IVNPGS23/01), a sub-surface anomaly consistent with the possible presence of a grave was observed and the anomaly was flagged and marked for future investigation. It was recommended that test excavation as part of the grave relocation process be conducted to confirm whether the observed anomaly was a grave and PGS Heritage embarked on a number of grave relocations and exploratory excavations. Later investigations found no evidence of a burial site, according to PGS Heritage records.

- 011C-02

This site was assumedly not captured by DWE but it is otherwise described as an "undetermined amount of graves within burial ground" located within a fence. In terms of GPR sampling conducted by PGS Heritage, the site (coded by Nienaber as X56Y73), contained a sub-surface anomaly consistent with the possible presence of a grave and the anomaly was flagged and marked for future investigation. It was recommended that test excavation as part of the grave relocation process be conducted to confirm whether the observed anomaly was a grave and PGS Heritage embarked on a number of grave relocations and exploratory excavations. Later investigations found no evidence of a burial site, according to PGS Heritage records.

- 011C-03

This site was assumedly not captured by DWE but it is otherwise described as an "undetermined amount of graves within burial ground" located within a fence. In terms of GPR sampling conducted by PGS Heritage, the site (coded by Nienaber as X6Y93), contained a sub-surface anomaly consistent with the possible presence of a grave and the anomaly was flagged and marked for future investigation. It was recommended that test excavation as part of the grave relocation process be conducted to confirm whether the observed anomaly was a grave and PGS embarked on a number of grave relocations and exploratory excavations. Later investigations found no evidence of a burial site, according to PGS Heritage records.

- **012A-01**

DWE described this site as “Undetermined amount of graves within burial ground” located within a fence and one of the burials is assigned to Moatshe, Ngwana Monama. In terms of GPR sampling conducted by PGS Heritage, **Site 023_01** (coded by DWE as PLA1677/S.36-052 and coded by Nienaber as PLAT12ADAT), a sub-surface anomaly consistent with the possible presence of a grave was observed and the anomaly was flagged and marked for future investigation. It was recommended that test excavation as part of the grave relocation process be conducted to confirm whether the observed anomaly was a grave. PGS Heritage embarked on a number of grave relocations and exploratory excavations and the relocation of this burial site was completed successfully according to PGS Heritage records.

- **012A-05**

DWE described this site as “Undetermined amount of graves within burial ground” located within a fence and one of the burials is assigned to Moatshe, Ramagohlola. In terms of GPR sampling conducted by PGS Heritage at the site (coded by DWE as PLA1677/S.36-054, PLA1677/S.36-040 and coded by Nienaber as PLAT12AOP), sub-surface anomalies consistent with the possible presence of a grave was observed and the anomalies were flagged and marked for future investigation. It was recommended that test excavation as part of the grave relocation process be conducted to confirm whether the observed anomaly was a grave. Later investigations proved to be inconclusive and further exploratory actions is required for this site, according to PGS Heritage records.

- **013_01**

DWE described this site (coded by DWE as PLA1677/S.36-061) as “3 graves within burial ground” located within a fence and one of the burials were assigned to Menu, Jacob. PGS Heritage embarked on a number of grave relocations and exploratory excavations and the relocation of this burial site was completed successfully according to PGS Heritage records.

- **013_04**

DWE described this site (coded by DWE as PLA1677/S.36-061) as “3 graves within burial ground” located within a fence and one of the burials were assigned to Menu, Jacob. PGS Heritage embarked on a number of grave relocations and exploratory excavations and the relocation of this burial site was completed successfully according to PGS Heritage GS records.

- **023_01**

DWE described this site as “1 grave within burial ground” located within a fence and the burial is assigned to Manamela, Lesibana Macks. This site was indicated by the Manamela family members who indicated the presence of the grave of an adult conventionally buried. In terms of GPR sampling conducted by PGS Heritage, **Site 023_01** (coded by DWE as PLA1677/S.36-062 and coded by Nienaber as IVNPGS23/01), a sub-surface anomaly consistent with the possible presence of a grave was observed and the anomaly was flagged and marked for future investigation. It was recommended that test excavation as part of the grave relocation process be conducted to confirm whether the observed anomaly was a grave and PGS Heritage embarked on a number of grave relocations and exploratory excavations . Later investigations found no evidence of a burial site, according to PGS Heritage records.

- **Site “PLR70”**

GPR sampling was conducted by PGS Heritage on a site within the Platreef Solar Project (coded by Nienaber as IVNPGS23/01 “PLR70”) but the site is neither captured by DWE nor included in the Ivanplats site inventory The GPR survey found anomalies not consistent with graves and no further action was recommended.

The following table provides an outline of burial sites, presumed burial sites and site status in the Platreef Solar Project area.

Ivanplats Site Code	DWE Code	Other Code	DWE Description	Other Description	Deceased Name	GPR?	Finding	Status
011_01	PLA1677/S.36-037	-	Undetermined amount of graves within burial ground	Within Fence	Maluleke, Mathhareng		Burial Site	Relocation completed
011C-01	PLA1677/S.36-037	X31Y104***	Undetermined amount of graves within burial ground	Within Fence	Unknown	Yes	No evidence of Grave	MOU Signed
011C-02	-	X56Y73***	Undetermined amount of graves within burial ground	Within Fence	Unknown	Yes	No evidence of Grave	No evidence of Grave
011C-03	-	X6Y93***	Undetermined amount of graves within burial ground	Within Fence	Unknown	Yes	No evidence of Grave	No evidence of Grave
012A-01	PLA1677/S.36-052	PLAT12ADAT*	Undetermined amount of graves within burial ground	Within Fence	Moatshe, Ngwana Monama (Titus)	Yes	Burial Site	Relocation completed
012A-05	PLA1677/S.36-054 PLA1677/S.36-040	PLAT12AOP*	Undetermined amount of graves within burial ground	Within Fence	Moatshe, Ramagohlola	Yes	Inconclusive	Reinvestigate
013_01	PLA1677/S.36-061	-	3 graves within burial ground	Within Fence	Menu, Jacob		Burial Site	Relocation completed
013_04	PLA1677/S.36-061	-	3 graves within burial ground	Within Fence	Menu, Lesiba Jan		Burial Site	Relocation completed
023_01	PLA1677/S.36-062	IVNPGS23/01**	1 grave within burial ground	Within Fence	Manamela, Lesibana Macks		No evidence of Grave	No evidence of Grave
-	-	PLR70*	-	-	-	Yes	Anomalies present but not consistent with graves .	No action required

* Code assigned by PGS (Nienaber, 2015)

** Code assigned by PGS (Nienaber, March 2016)

*** Code assigned by PGS (Nienaber, October2016)

DWE – Digby Wells & Associates

6. Conclusion and Comments

The larger landscape around the Platreef Solar Project area indicates a rich heritage horizon encompassing Stone Age, Iron Age Farming and Colonial / Historical Period archaeology primarily related to the development of agriculture resulting in farm occupation and realization. Locally, the project area has been largely transformed by rural agriculture activities and human settlement potentially sterilising surface and subsurface of *in situ* heritage remains, especially those dating to pre-colonial and prehistorical times. Still, Heritage Specialist Assessment Reports identified and examined a number of burial sites within the footprint of the proposed Platreef Solar Project. Based on available literary evidence and some site observations, the following observations are made.

- **Site 011_01**, described by DWE as an “Undetermined amount of graves within burial ground” located within a fence, was relocated by PGS Heritage completed successfully according to PGS records.
- **Site 011C-01**, described by DWE as “1 grave within burial ground” located within a fence, was further investigated by means of GPR sampling conducted by PGS Heritage where an anomaly was as flagged and marked for future investigation. Later investigations found no evidence of a burial site, according to PGS records.
- **Site 011C-02**, assumedly not captured by DWE was described as an “undetermined amount of graves within burial ground. The site was further investigated by means of GPR sampling conducted by PGS Heritage where an anomaly was as flagged and marked for future investigation. Later investigations found no evidence of a burial site, according to PGS records.
- **Site 011C-03**, assumedly not captured by DWE and described as an “undetermined amount of graves within burial ground” located within a fence, was further investigated by means of GPR sampling conducted by PGS Heritage. An anomaly was as flagged and marked for future investigation. Later investigations found no evidence of a burial site, according to PGS records.
- **Site 012A-01**, described by DWE as an “Undetermined amount of graves within burial ground” located within a fence, was further investigated by means of GPR sampling conducted by PGS Heritage where an anomaly was as flagged and marked for future investigation. PGS embarked on a number of grave relocations and exploratory excavations and the relocation of this burial site was completed successfully according to PGS records.
- **Site 012A-05**, described by DWE as an “Undetermined amount of graves within burial ground” located within a fence, was further investigated by means of GPR sampling conducted by PGS Heritage. An anomaly was as flagged and marked for future investigation. It was recommended that test excavation as part of the grave relocation process be conducted to confirm whether the observed anomaly was a grave. Later investigations proved to be inconclusive and further exploratory actions is required for this site, according to PGS records.
- **Site 013_01**, described by DWE as “3 graves within burial ground” was relocated successfully according to PGS Heritage records.
- **Site 013_04**, described by DWE as “3 graves within burial ground” located within a fence was relocated successfully according to PGS Heritage records.
- **Site 023_01**, described by DWE as “1 grave within burial ground” located within a fence was further investigated by means of GPR sampling conducted by PGS Heritage. An anomaly was as flagged and marked for future investigation. It was recommended that test excavation as part of the grave relocation process be conducted to confirm whether the observed anomaly was a grave . Later investigations found no evidence of a burial site, according to PGS records.
- **Site “PLR70”**, not included in the Ivanplats or DWE site inventories, were sampled by means of GPR by PGS Heritage where the survey found anomalies not consistent with graves and no further

action was recommended.

- Generally, a "Chance Find" procure was implemented by Ivanplats outlining required protocol for the accidental discovery of previously unidentified artefacts, human remains or graves during construction.

The following general recommendations are made with regards to the Platreef Solar Project area in terms of heritage occurrences:

- Since GPR scans and later investigations of **Site 012A-05** proved to be inconclusive, further exploratory actions is required for this site. Here, the nature and context of the features at the site should be tested by means of test excavations as part of the grave relocation process in order to confirm without a doubt whether the site contains human remains and burials.
- Relevant families should be informed and consulted about the proposed activities which could affect any potential graves in the project area.
- Agreements and Memoranda of Underrating (MOU) with communities and representatives who by tradition might have an interest in the graves regarding the future of such sites should at all times be in place and observed.
- A careful watching brief monitoring process is recommended whereby ground clearing and earth moving activities are monitored on a regular basis in order to detect possible impact on heritage resources. Earth-moving crews and contractors should be made aware of the past existence of human burials and the potential of previously undetected graves occurring in the project area.
- Should any subsurface paleontological, archaeological or historical material or heritage resources be exposed during construction activities, all activities should be suspended and the archaeological specialist should be notified immediately.
- **It should be reiterated that any grave relocation measure should be undertaken by a qualified archaeologist with proved experience in the removal and relocation of human remains in accordance with relevant legislation, permitting, statutory permissions and subject to any local and regional provisions and laws and by-laws. A full social consultation process should occur in conjunction with the mitigation of cemeteries and burials (see Section 8).**

It should be stated that this Memorandum cannot serve as statutory approval for the project and the project HIA processes as well as the contents of this letter is subjected to final review and comment from the LIHRA and the SAHRA Burial Ground and Graves Unit (BGG Unit) as commenting authorities.



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8. Addendum A: Maps

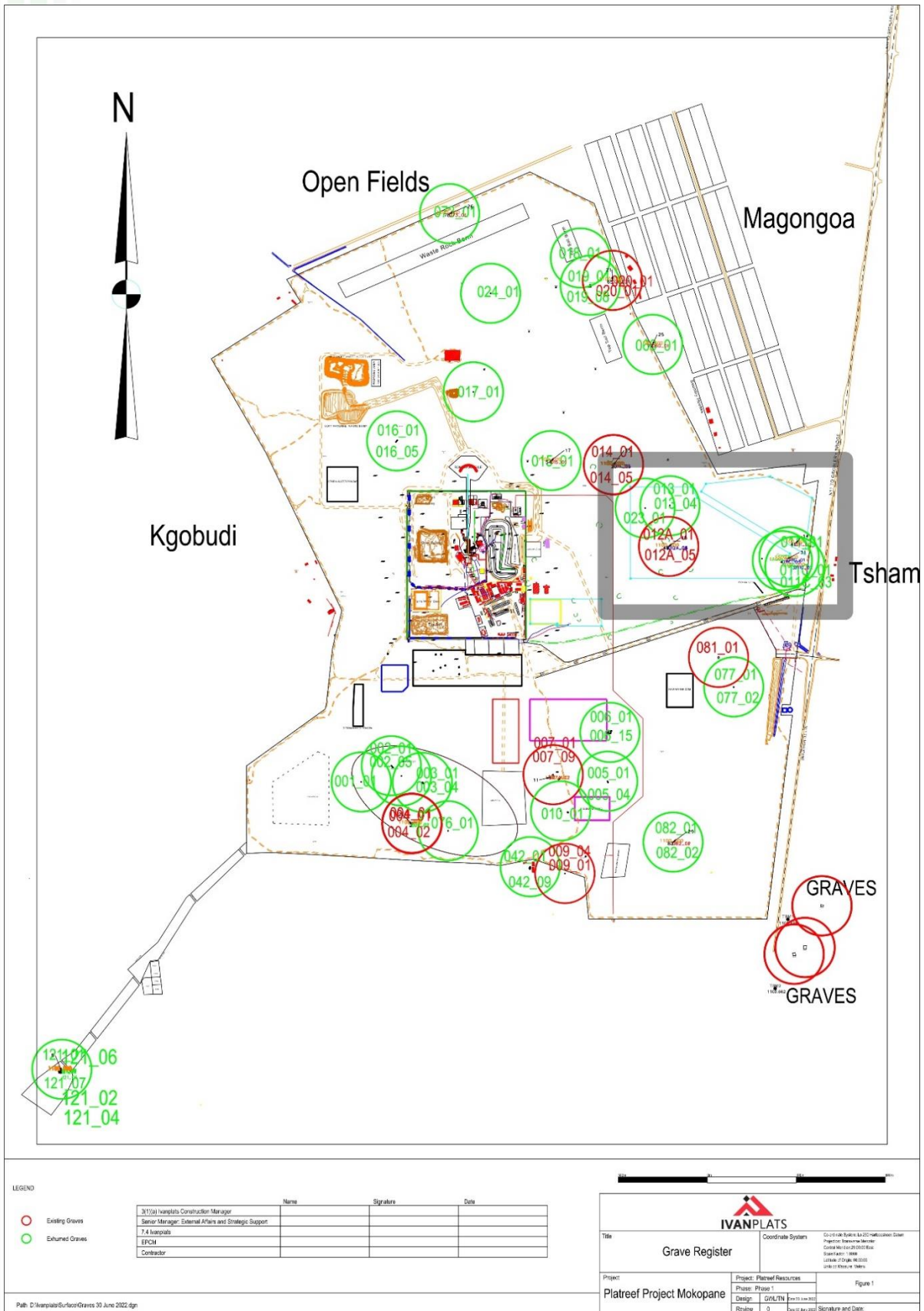
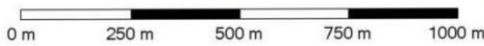


Figure 3: Map of burial sites in the Ivanplats Platreef Mining area. Graves and potential burials pertaining to the Platreef Solar Project are indicated by the grey rectangle (Ivanplats, 2022).



Garmap SA TOPO 2012.3 NT
Garmin SA Southern Africa Topo & Rec 2012.1



Platreef GPR Jan 2016

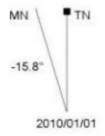


Figure 4: Map of burial sites tested by means of GPR by Nienaber in 2015 in the Ivanplats Platreef Mining area. Graves and potential burials pertaining to the Platreef Solar Project are indicated by the green rectangle (PGS, 2015).

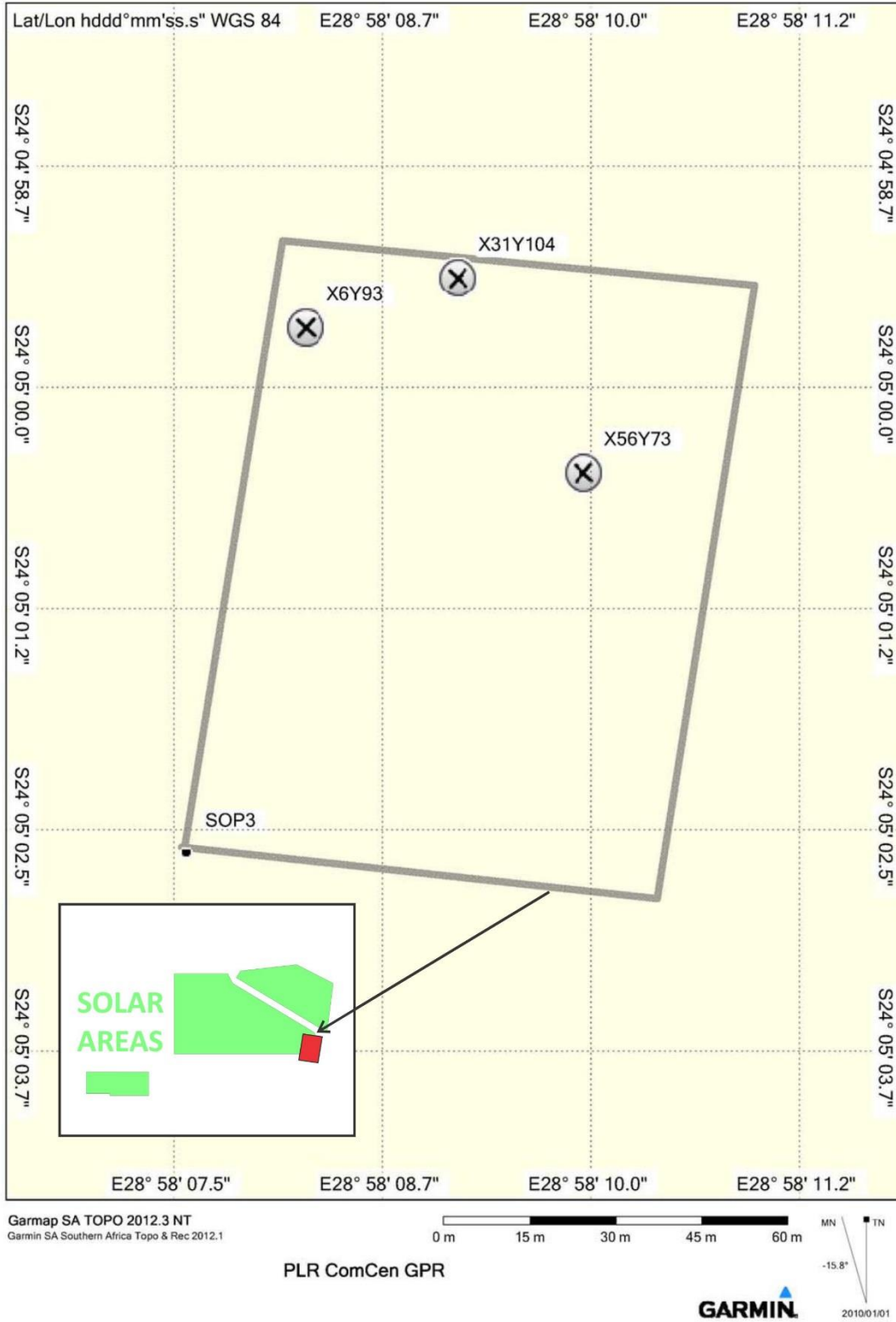


Figure 5: Three burial sites tested by means of GPR by Nienaber in 2016 for the Ivanplats Platreef Mine Community Centre project. The Platreef Solar Project is indicated by the green polygon (PGS, 2016).

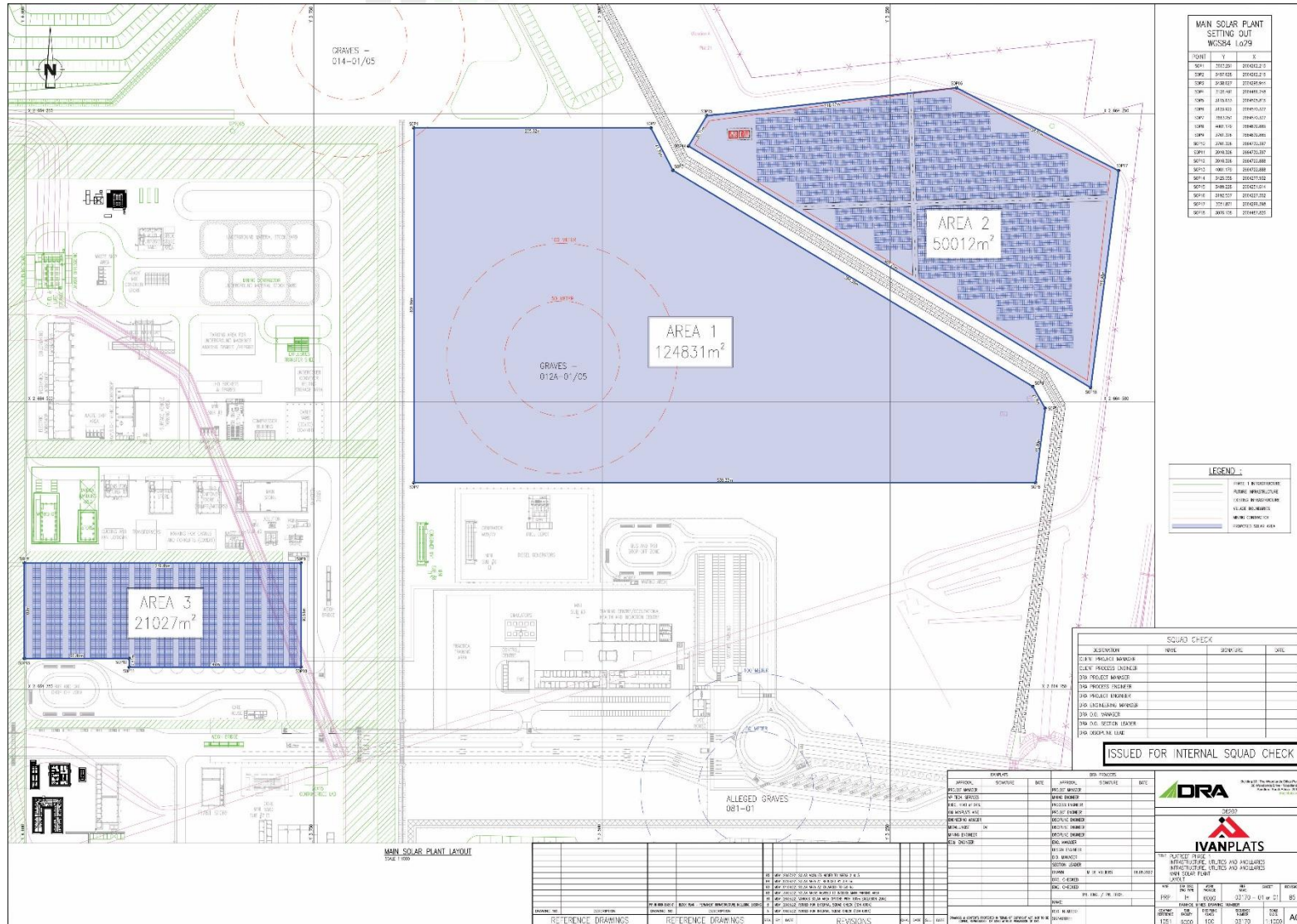


Figure 6: Infrastructure map indicating the proposed Platreef Solar Project Areas 1 – 3.

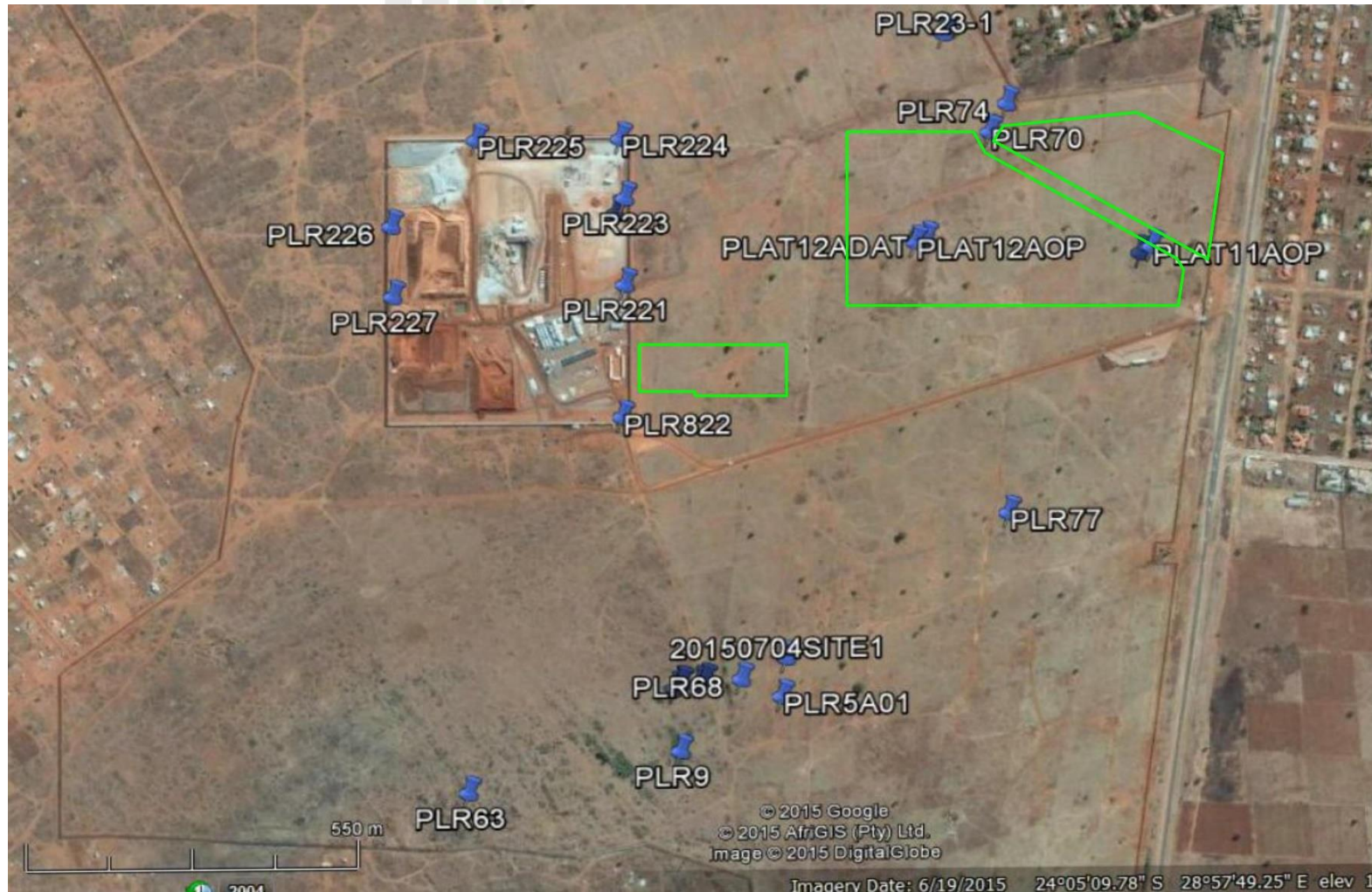


Figure 7: Further aerial map of burial sites tested by means of GPR by Nienaber in 2016 in the Ivanplats Platreef Mining area. Graves and potential burials pertaining to the Platreef Solar Project are indicated by the green polygon (PGS, 2015).

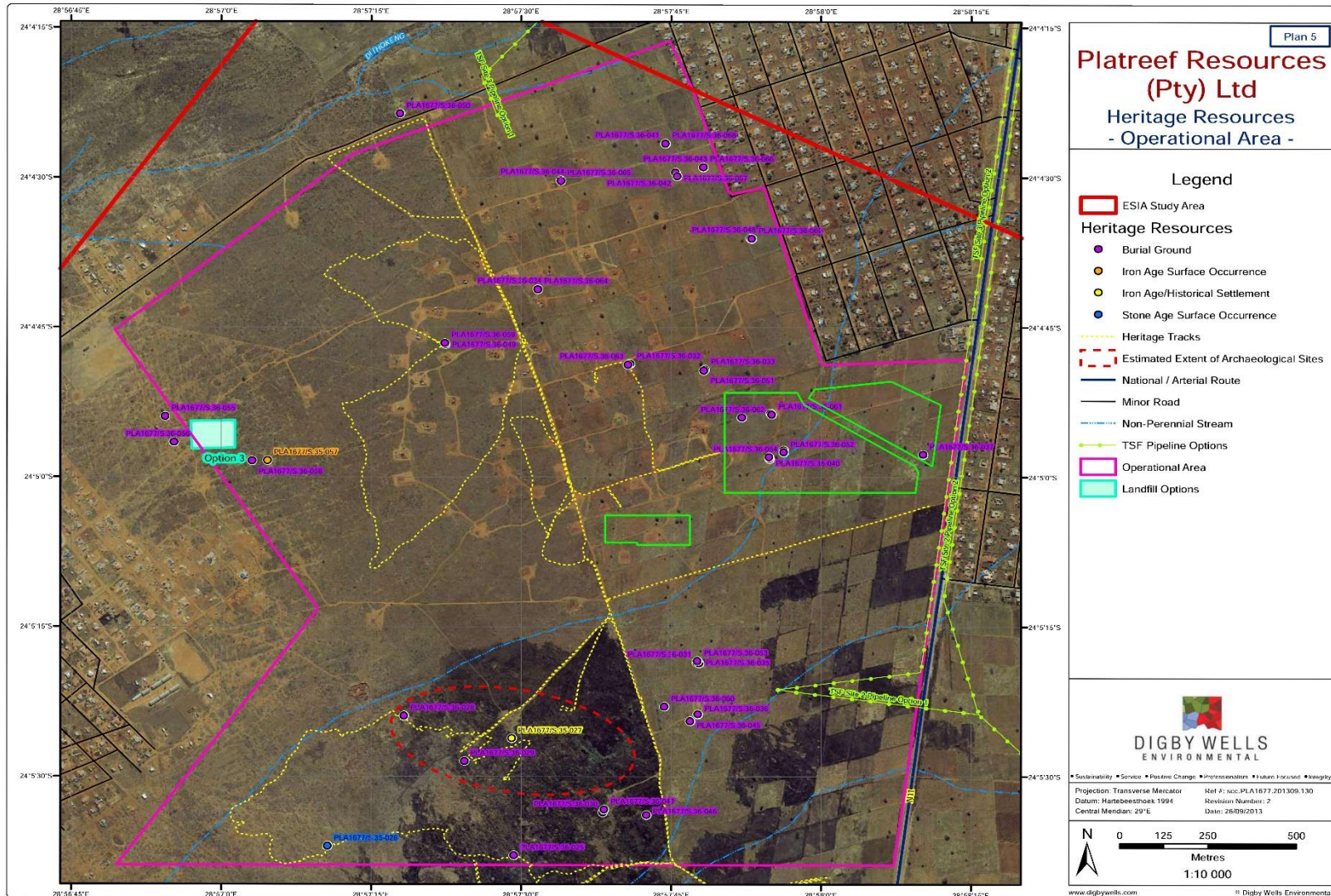


Figure 8: Map of heritage resources documented by DWE in the Ivanplats Platreef Mining The Platreef Solar Project aire indicated by the turquoise polygon (DWE 2013).

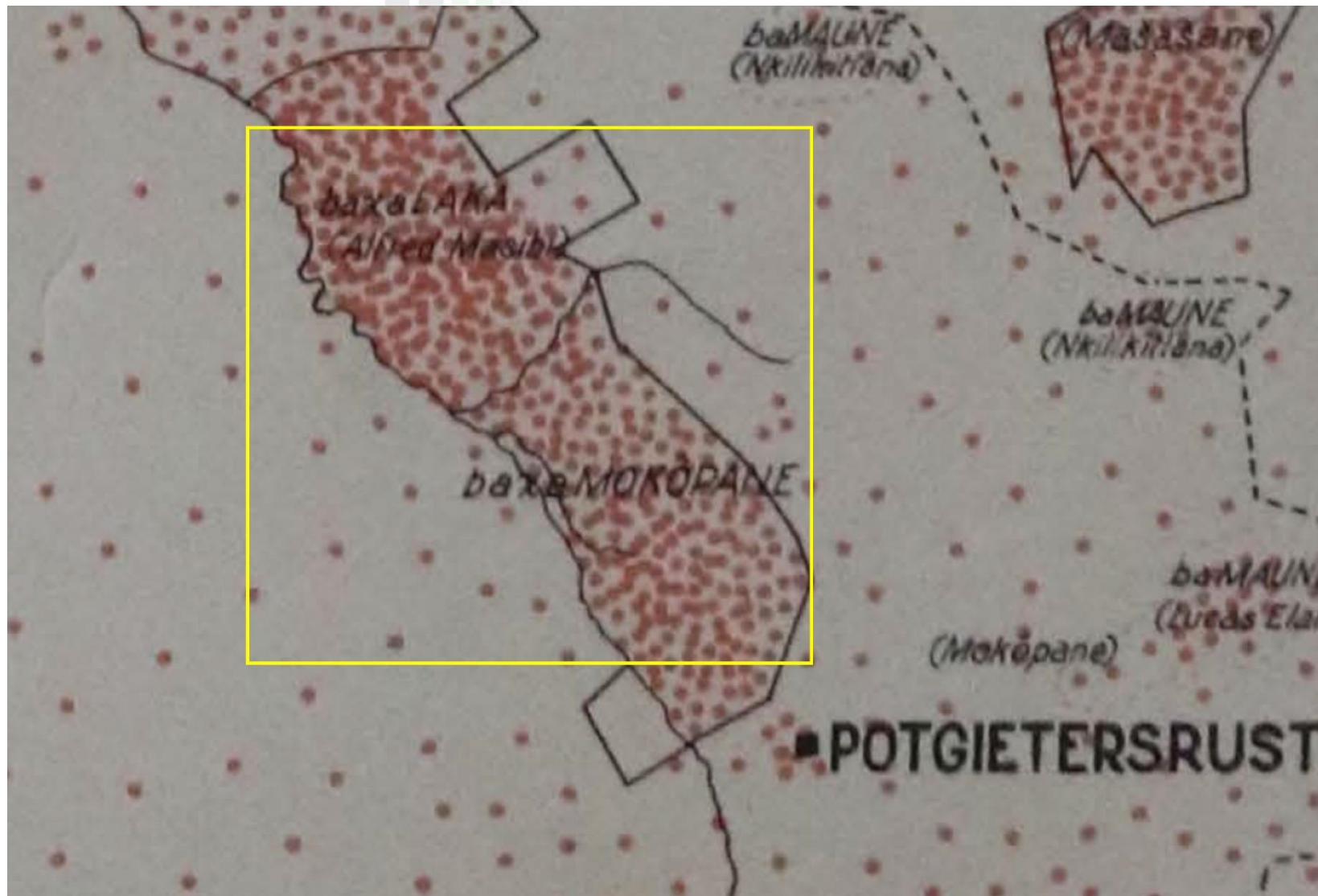
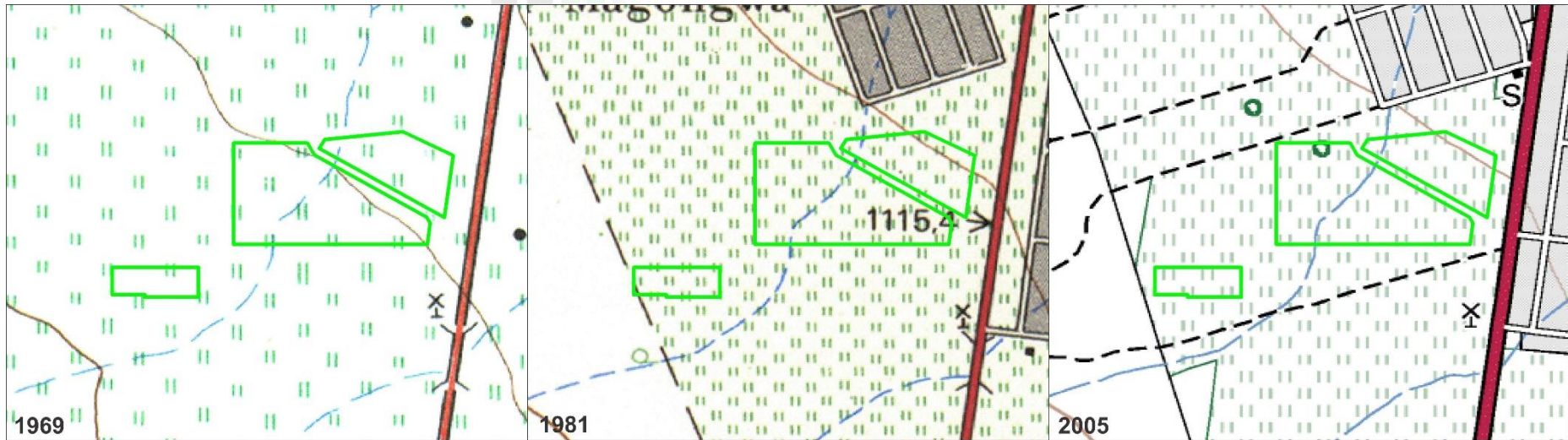


Figure 9: An excerpt of Van Warmelo's Map of the project landscape dating to 1935. Each red dot represents "10 taxpayers.



VERKLARING		REFERENCE		VERKLARING		REFERENCE		VERKLARING		REFERENCE	
Internasionale Grense.....	-----	International Boundaries	Magnetiese Stasies en Grondtekens.....	□ □	.....	Magnetic Stations and Ground Signs	Trig. Bakens (Nommer en grondhoogte).....	△ /86	.....	Trig. Beacons (Number and ground height)
Provisiale Grense.....	-----	Provincial Boundaries	Hutte.....	□	.....	Huts	Magnetiese Stasies en Grondtekens.....	□ □	.....	Magnetic Stations and Ground Signs
Veelvoudige Spoorlyne.....	-----	Multiple Track Railways	Monumente.....	I	.....	Monuments	Monumente.....	I	.....	Monuments
Enkelspoorlyne.....	-----	Single Track Railways	Dipbakke.....	I	.....	Dipping Tanks	Dipbakke.....	I	.....	Dipping Tanks
Geëlektrifiseerde Spoorlyne.....	-----	Electrified Railways	Windpompe.....	I	.....	Windmills	Windpompe.....	I	.....	Windmills
Smalspoorlyne.....	-----	Narrow Gauge Railways	Mure.....	I	.....	Walls	Mure.....	I	.....	Walls
Dienspoorlyne.....	-----	Service Railways	Grondbewaringswalle.....	I	.....	Anti-erosion Walls	Grondbewaringswalle.....	I	.....	Anti-erosion Walls
Nasionale Paale.....	-----	National Roads	Uitgrawings.....	I	.....	Excavations	Uitgrawings.....	I	.....	Excavations
Hoofpaale.....	-----	Main Roads	Standhoudende Water.....	I	.....	Perennial Water	Standhoudende Water.....	I	.....	Perennial Water
Sekondêre Paale.....	-----	Secondary Roads	Nie-standhoudende Water.....	I	.....	Non-perennial Water	Nie-standhoudende Water.....	I	.....	Non-perennial Water
Ander Paale.....	-----	Other Roads	Droë Panne.....	I	.....	Dry Pans	Droë Panne.....	I	.....	Dry Pans
Dowwe Paale en Voetpaale.....	-----	Tracks and Footpaths	Fonteine, Watergate en Putte.....	I	.....	Fountains, Springs, Waterholes and Wells	Fonteine, Watergate en Putte.....	I	.....	Fountains, Springs, Waterholes and Wells
Kraglyne.....	-----	Power Lines	Moerasse en Vleie.....	I	.....	Marshes, Swamps and Vleis	Moerasse en Vleie.....	I	.....	Marshes, Swamps and Vleis
Telefoon- en Telegraaflyne.....	-----	Telephone and Telegraph Lines	Pyplyne.....	I	.....	Pipelines	Pyplyne.....	I	.....	Pipelines
Pos- en Telegraafkantore, Polisie- stasies en -poste, Winkels, Hotelle, Skole en Plekke van Aanbidding	-----	Post and Telegraph Offices, Police Stations and Posts, Stores, Hotels, Schools and Places of Worship	Fotomiddelpeunte.....	I	.....	Photo Centres	Prominente Klipbanke.....	I	.....	Prominent Rock Outcrops
Vuurtorings en Seevaartligte.....	-----	Lighthouses and Marine Lights	Uitstaande Klipbanke.....	I	.....	Terraces	Bewerkte Lande.....	I	.....	Cultivated Lands
Seevaartbakens.....	-----	Marine Beacons	Bewerkte Lande.....	I	.....	Cultivated Lands	Boorde en Wingerde.....	I	.....	Orchards and Vineyards
Driehoeksbakens (Nommer regs en hoogte onder)	-----	Trig. Beacons (Number to right and height below)	Boorde en Wingerde.....	I	.....	Orchards and Vineyards	Bome en Bos.....	I	.....	Trees and Bush
	-----		Bome en Bos.....	I	.....	Trees and Bush		-----	.....

Figure 10: Historical topographic maps of the project area (green outline) in the past decades. Agricultural lands are prevalent across the project area.

9. Addendum B: Images

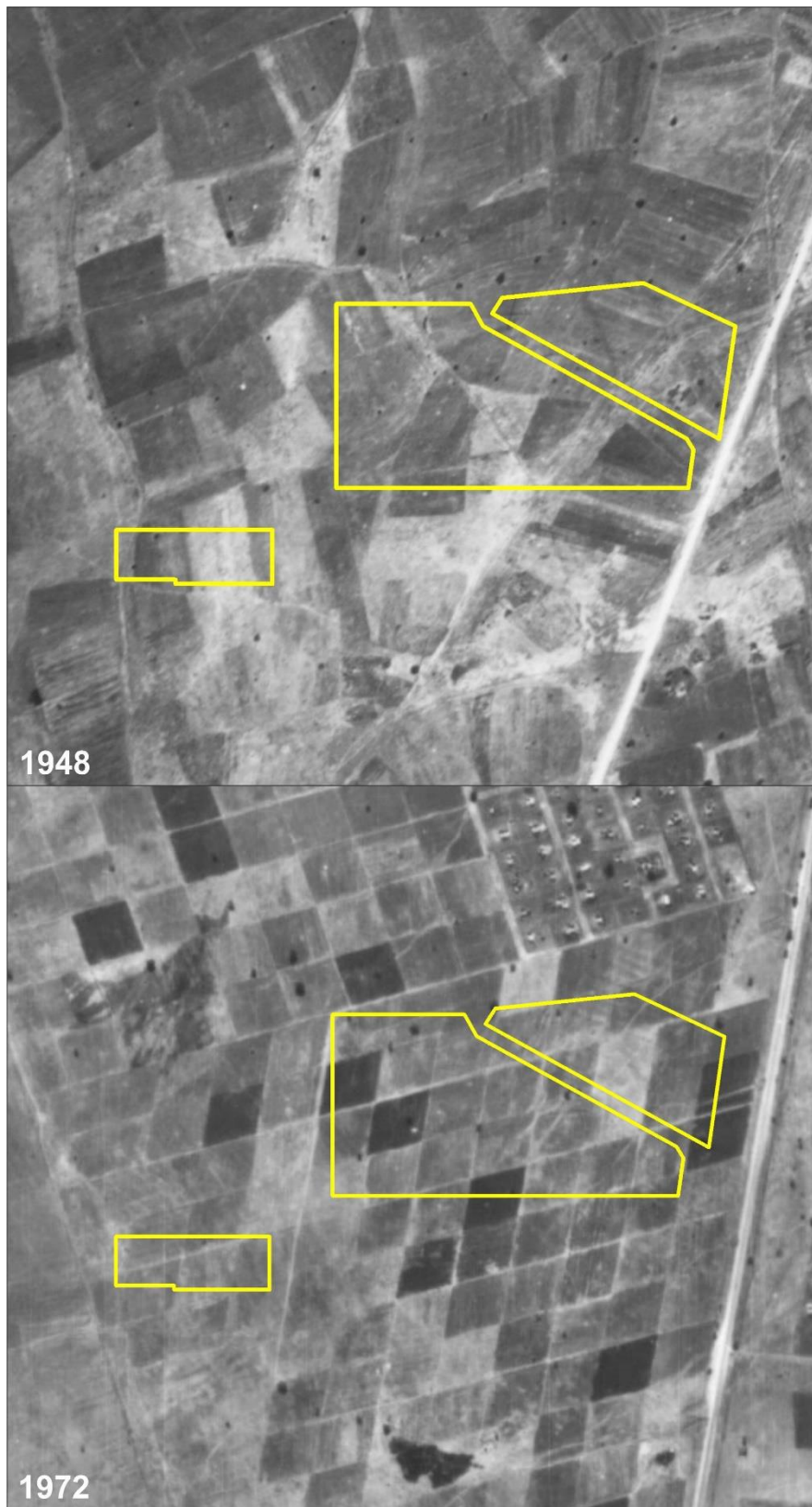


Figure 11: Historical aerial images dating to 1948 and 1972 of the project area (yellow outline). Note vast agricultural lands across the entire project area.



Figure 12: View of general surroundings in the Platreef Solar Project area.



Figure 13: View of general surroundings in the Platreef Solar Project area.



Figure 14: View Sisal Trees along old agricultural lands in the Platreef Solar Project area.



Figure 15: View of the current state of Site 013_01 (June 2022).



Figure 16: View of the current state of Site 013_01 (June 2022).



Figure 17: View of the current state of Site 023_01 (June 2022).



Figure 18: View of the current state of Site 011C-01 (June 2022).



Figure 19: View of the current state of Site 011C-02 (June 2022).



Figure 20: View of the current state of Site 013_01 (June 2022).



Figure 21: View of the current state of Site 011C-03 (June 2022).



Figure 22: View of the current state of Site 012A-05 (June 2022).