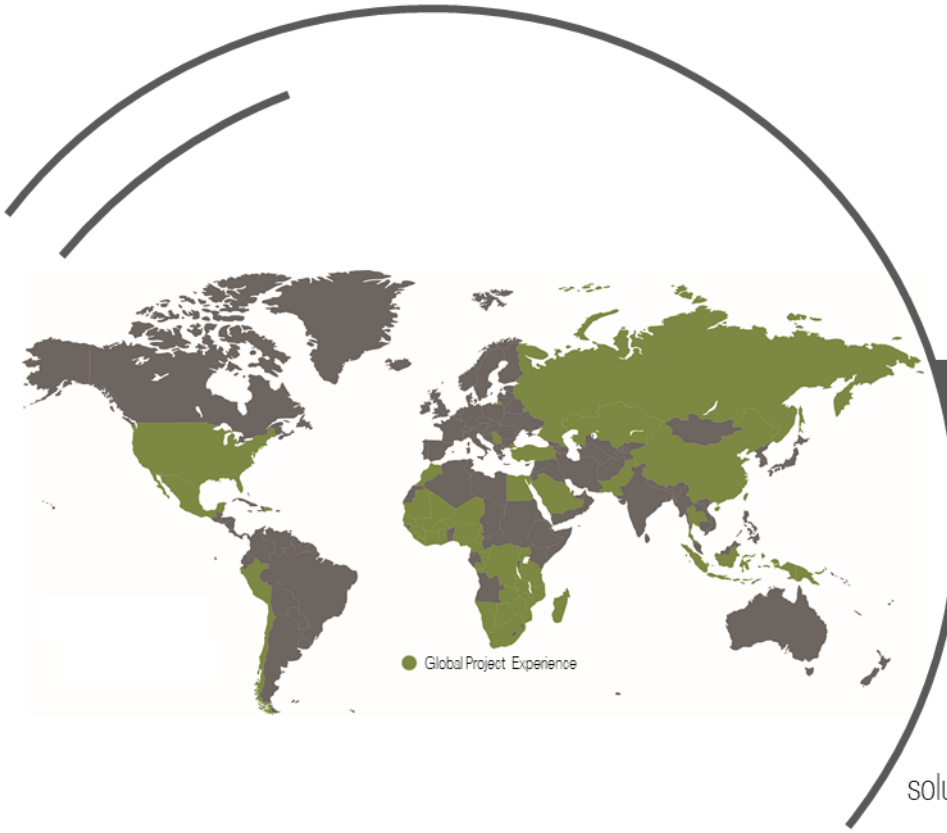

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Environmental Authorisation Process for the Lisbon Prospecting Right Application

Heritage Basic Assessment Report Addendum

Prepared for:
PalRho Exploration (Pty) Ltd

Project Number:
PAL6882

May 2021

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Report Type:	Heritage Basic Assessment Report Addendum
Project Name:	Environmental Authorisation Process for the Lisbon Prospecting Right Application
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Name	Responsibility	Signature	Date
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Johan Nel Manager: Heritage Services ASAPA Member: 095	Technical Review		
Claire Wannenburgh	Project Manager Review		

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1. Introduction

PalRho Exploration Pty (Ltd) (PalRho), a subsidiary of Ivanhoe Mines Ltd. (Ivanhoe) intends to obtain a Prospecting Right in terms of Section 16 of the Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA). PalRho intends to undertake prospecting activities on three adjacent properties within the Limpopo Province; this application considers the prospecting activities on the farm Lisbon 288 KR (the Project).

The proposed Project triggers activities included in the Listed Activities in terms of the Environmental Impact Assessment (EIA) Regulations, 2014 (GN R982 of 4 December 2014, as amended) (EIA Regulations, 2014, as amended) promulgated under the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). The Project therefore requires the completion of a Basic Assessment (BA) process required for Environmental Authorisation (EA).

To this end, PalRho appointed Digby Wells Environmental (Digby Wells) to undertake the BA process. This includes a specialist Heritage Resources Management (HRM) process in compliance with the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA).

Digby Wells compiled a Heritage Basic Assessment Report (HBAR) in support of the BA process, though site access was restricted. This prevented Digby Wells from undertaking a heritage pre-disturbance survey of the proposed Project area. The HBAR was consequently completed as a desktop assessment only.

Digby Wells, however, completed a pre-disturbance survey of the proposed Project area after submission of the Draft Basic Assessment Report (DBAR). This document therefore serves as an addendum to the specialist Heritage Basic Assessment Report (HBAR). It presents the results of the pre-disturbance survey and includes an updated impact assessment for identified heritage resources.

Like the original HBAR, this document was also submitted to the appropriate Heritage Resources Authorities (HRAs); in this case the South African Heritage Resources Agency (SAHRA) and Limpopo Provincial Heritage Resources Authority (LIHRA).

2. Project Description

PalRho intends to use invasive and non-invasive prospecting methods to prospect for several minerals on the farm Lisbon 288 KR. The Project area is located approximately 10 km southwest of Mokopane in the Mogalakwena Local Municipality (MLM) of the Waterberg District Municipality (WDM) within the Limpopo Province. The Project area comprises 2 543 ha and includes the Portions 1, 4 and 6 to 19.

The minerals to be prospected for include chromium, cobalt, copper, fluorspar, gold, iridium, iron, nickel, phosphate ore, platinum and platinum group elements, palladium, rhodium, ruthenium, osmium, tin ore, vanadium, and Rare Earth Metals (including scandium).

Invasive activities will include the borehole drilling of multiple cores (approximately ten) to ascertain the stratigraphic sequence and reef horizons of the minerals and ore bodies. Each borehole will require the clearing of land covering approximately 20 m by 25 m, or 500 m^2.

PalRho will not construct any permanent infrastructure to undertake the prospecting activities. However, temporary tracks or access routes will be established between existing roads and the drilling sites and vegetation will be cleared for the drill rig. PalRho will confirm the exact location of the individual boreholes through a Stakeholder Engagement Process (SEP) and in consultation with the landowners. The borehole locations will consider potential environmental and heritage sensitivities and will be repositioned where necessary to avoid or minimise impacts to these landscapes.

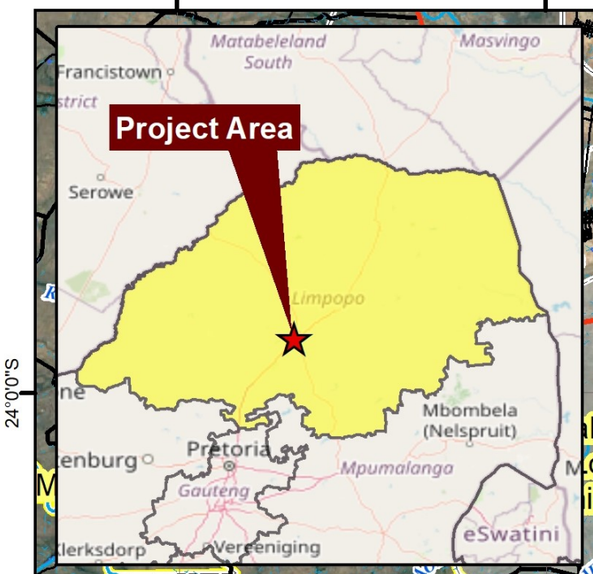
Plan 1 presents the proposed Project design and infrastructure layout. Table 2-1 presents an overview of the activities to be undertaken during the Project lifecycle.

Table 2-1: Project Phases and Associated Activities

Project Phase	Activities
Construction Phase	Establishment of temporary access routes or tracks between existing roads and drill locations
	Establishment of site and three sumps or trenches (per drilling site) to separate and store oil, sludge and water
	Clearing of vegetation for the drill rig
	Stockpiling of topsoil
Operational Phase	Drilling of approximately ten prospecting boreholes
	Handling of general and hazardous waste
	Use of heavy vehicles
	Maintenance of newly-established roads
Decommissioning Phase	Capping and marking of boreholes
	Removal of temporary infrastructure, decommissioning of camps and drilling equipment
	Backfilling of prospecting areas
	Natural revegetation or reseeding of indigenous vegetation

PalRho Prospecting Right Application

Regional Setting



Legend

- Secondary Town
- Other Town
- Settlement
- Railway Line
- National Route
- Main Road
- Secondary Road
- Street
- Non-Perennial River/Stream
- Perennial River/Stream
- Dam/Lake
- Reservoir/Water tank
- Marsh/Swamp
- Non-perennial pan
- Local Municipalities
- District Municipalities
- Municipal Wards
- Moorddrift 289
- Blinkwater 244
- Lisbon 288

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Projection: Transverse Mercator
Datum: WGS 1984
Central Meridian: 29°E
Date: 16/02/2021
Ref #: PAL6882_10_PC

N

0 2.5 5 10 15
Kilometres

3. Assumptions, Limitations and Exclusions

Table 3-1 provides an overview of constraints and limitations that influenced the findings of this report.

Table 3-1: Constraints and Limitations

Description	Consequence
Access to some farm portions was not possible. Consequently, not all proposed borehole locations were assessed in the field.	Potential chance finds of unrecorded heritage resources including buried archaeological resources. PalRho must alert the appropriate HRAs of any chance finds and may need to enlist the services of a suitably qualified archaeologist to advise them on the way forward.
Dense vegetation cover limited surface visibility at the time of the pre-disturbance survey. Whilst every attempt was made to survey the extent of each accessible site-specific study area, the list of identified heritage resources is not exhaustive.	
Archaeological and palaeontological resources commonly occur below the ground. These types of resources cannot be adequately recorded or documented by specialists without destructive and intrusive methodologies that require NHRA section 35 permits.	

4. Methodology

This section presents summarised methodologies employed in the pre-disturbance survey.

4.1. Primary Data Collection

Shannon Hardwick, a qualified archaeologist, undertook a non-intrusive (i.e., no physical sampling done, such as collecting artefacts or fossils) pre-disturbance survey of the site-specific study areas on 5 and 6 May 2021 that focused on proposed drilling locations.

The pre-disturbance survey was completed predominantly on foot, although it included vehicular surveys between the focus areas. Where found, animal burrows and dry watercourses were inspected for any exposed archaeological material.

The survey undertook to:

- Visually record the current state of the cultural landscape; and
- Record a representative sample of the visible, tangible heritage resources present within the development footprint area, site-specific study area and greater study area.

Identified heritage resources were recorded as waypoints using a handheld GPS device. The heritage resources were also recorded through written and photographic records. Plan 2 includes the results of the pre-disturbance survey.

5. Results from the Pre-disturbance Survey

This section describes the pre-disturbance survey findings.

5.1. Existing Environment

Evidence of anthropogenic and animal activities are present in the general Project area. Anthropogenic changes i.e., various human-induced transformations of the environment include activities such as agriculture, settlement and structures, roads, irrigation, and others. An example of such anthropogenic change noted during the survey was extensive vegetation clearing for crop cultivation.

Table 5-1 summarises the current natural environment of the Project area and Figure 5-1 presents a visual overview of the current state of the environment at the time of the pre-disturbance survey.

Table 5-1: Summary of the Vegetation Setting of the Project

Biome	Bioregion	Vegetation Type
Savanna	Central Bushveld	Waterberg Mountain Bushveld (SVcb 17) This vegetation type is characterised by rugged mountains with vegetation grading from bushveld on the higher slopes (which in turn grades to Gm 29) through broad-leaved deciduous bushveld on rocky mid- and foot-slopes to savanna on the lower-lying valleys and deeper sands on plateaus. This unit is associated with the lithologies of the Kransberg Subgroup and the Swaershoek Formation of the Nylstroom Subgroup, all within the Mokolian Waterberg Group. This unit is considered least threatened an approximately 3% has been transformed, mainly due to cultivation. Within the area associated with this vegetation type, population density is low. The carrying capacity for domestic stock is low, especially during the dry season. Within this type, erosion is generally very low to low.

Biome	Bioregion	Vegetation Type
		Makhado Sweet Bushveld (SVcb 20) Vegetation in this type is characterised by short and shrubby bushveld occurring on slightly to moderately undulating plains with some hills. This vegetation occurs on the gneisses and migmatites of the Hout River Gneiss, the potassium-deficient gneisses of the Goudplaats Gneiss and the sandstones and mudstones of the Matlabas Subgroup of the Mokolian Waterberg Group. This vegetation type is considered vulnerable and approximately 27% has been transformed. Cultivation is the main factor in this transformation, but urban and built-up areas have also contributed to this transformation. The southwestern half of the area associated with this unit is characterised by densely populated rural communities. Erosion in this unit ranges from low to high.
Grassland	Mesic Highveld Grassland	Waterberg-Magaliesberg Summit Sourveld (Gm 29) This vegetation unit is characterised by higher slopes, summit positions (including crests), steep rocky scarps and cliff faces covered with grassland dominated by wiry tussock grasses. Patches of open savannoid vegetation and open shrubland are common and typical of this type. Succulents occur in the abundant rocky sheets on exposed mountain tops abundant within the unit. These sheets also support sparse grassland and herbland. This vegetation is underlain by the coarse, clastic sedimentary sandstone, quartzite, conglomerate or shale of the Kransberg Subgroup within the Waterberg Group. This vegetation type is considered least threatened as a large part is statutorily or privately conserved, and a small area has been transformed. Erosion is low to very low.

Adapted from Mucina & Rutherford (2010)

Figure 5-1: Current State of Conservation of the Environment during the Pre-disturbance Survey

5.1.1. Newly Identified Heritage Resources

No new heritage resources were identified during the pre-disturbance survey. Plan 2 presents the tracklog of the area surveyed.

PalRho Prospecting Right Application

Pre-disturbance Survey

Legend

- Secondary Town
- Settlement
- Pre-disturbance Survey Point
- Railway Line
- National Route
- Main Road
- Secondary Road
- Street
- Non-Perennial River/Stream
- Perennial River/Stream
- Dam/Lake
- Reservoir/Water tank
- Marsh/Swamp
- Moorddrift 289
- Blinkwater 244
- Lisbon 288

DIGBY WELLS ENVIRONMENTAL

Projection: Transverse Mercator
Datum: WGS 1984
Central Meridian: 29°E
Date: 11/05/2021
Ref #: PAL6882_H_01_PC

N

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Kilometres

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24°4'0"S 24°8'0"S 24°12'0"S 24°16'0"S

MOGALAKWENA
518
BGG001
Blinkwater 244 Prospecting Area
Lisbon 288 Prospecting Area
Moorddrift 289 Prospecting Area
ROOISLOOT
Mahwelereng
N11
NGWADITSE
DORPSRIVIER
Mokopane
101
STERKRIVIER
MMADIKIRI
Doorndraai Dam
MOLERIVIER
Drummondlea
R101
Google Earth

6. Impact Assessment

This section presents a description of the CS of identified heritage resources informed through primary and secondary data collection. The CS of the heritage resources informs the minimum required mitigation encapsulated in the NHRA and the SAHRA Minimum Standards.

6.1. Cultural Significance of the Identified Landscape

Heritage resources are intrinsic to the history and beliefs of communities. They characterise community identity and cultures and are finite, non-renewable and irreplaceable. Considering the innate value of heritage resources, it is acknowledged that these have lasting worth as evidence of the origins of life, humanity and society. Notwithstanding the inherent value ascribed to heritage, it is incumbent on the assessor to determine the significance of these resources to allow for the implementation of appropriate management. This is achieved through assessing the value of heritage resources relative to the prescribed criteria encapsulated in policies and legal frameworks.

This section typically presents a statement of CS as is relevant to newly-identified heritage resources and the greater cultural landscape of the site-specific study area. However, in this case, no previously unknown heritage resources were identified in the proposed Project area and the CS of the cultural landscape within the site-specific area has not been assessed.

6.2. Construction Phase

Table 6-1 presents the activities expected to occur during the Construction Phase and the expected impacts to the cultural heritage landscape that may arise from these activities.

Table 6-1: Interactions and Impacts of Construction Phase Activities

Interaction	Impact
Establishment of temporary access routes or tracks between existing roads and drill locations	Digby Wells does not foresee any impact to the cultural heritage landscape, given the nature of the proposed activities and their flexibility in terms of their location.
Establishment of site and contractors camp and three sumps or trenches to separate and store oil, sludge and water	
Clearing of vegetation for the drill rig	
Stockpiling of topsoil	

No heritage resources were identified in proximity to or within the proposed Project layout. Digby Wells does not envisage any impact to the heritage resources of significance from the above-mentioned activities and has therefore not assessed these impacts further in this report.

6.3. Operational Phase

Table 6-2 presents the activities expected to occur during the Operational Phase and the expected impacts to the cultural heritage landscape that may arise from these activities.

Table 6-2: Interactions and Impacts of Operational Phase Activities

Interaction	Impact
Drilling of approximately ten prospecting boreholes	Digby Wells does not foresee any impact to the cultural heritage landscape, given the nature of the proposed activities and the consideration of the heritage landscape in the placement of the drilling sites and associated infrastructure.
Utilisation of portable toilet facilities	
Handling of general and hazardous waste	
Use of heavy vehicles	
Maintenance of newly-established roads	

No heritage resources were identified in proximity to or within the proposed Project layout. Digby Wells does not envisage any impact to the heritage resources of significance from the above-mentioned activities and has therefore not assessed these impacts further in this report.

6.4. Decommissioning Phase

Table 6-3 presents the activities expected to occur during the Decommissioning Phase and the expected impacts to the cultural heritage landscape that may arise from these activities.

Table 6-3: Interactions and Impacts of Decommissioning Phase Activities

Interaction	Impact
Concurrent rehabilitation: mined-out areas will be backfilled with stockpiled topsoil and waste material from the screening plant.	Digby Wells envisages no impact to the cultural heritage landscape, given the nature of the proposed activities and the temporary nature of the proposed infrastructure.
Backfilled material will be levelled and contoured to avoid ponding of water.	
Revegetation: either naturally or through use of an indigenous seed mix where vegetation is not suitably established.	

No heritage resources were identified in proximity to or within the proposed Project layout. Digby Wells does not envisage any impact to the heritage resources of significance from the above-mentioned activities and has therefore not assessed these impacts further in this report.

7. Results of Consultation and Stakeholder Engagement

Site surveys can often present an opportunity for informal consultation with specific stakeholders (usually farm owners, managers and employees). This consultation can result in the identification of burial grounds and graves – importantly, sometimes with no visible surface markers – or in the identification of sacred sites or other places of importance, which may not otherwise be identified.

During the pre-disturbance survey, the Digby Wells heritage specialist was accompanied by informants that included the landowner of this property and others. These informants indicated there were burial grounds present on the property, although on a different portion. These burial grounds are located close to the foothills of the hills in the Project area. Given their location relative to the proposed Project area, the location and condition of these additional burial grounds were not verified in the field.

8. Recommendations

Considering the nature and scope of the Project, and the outcomes of the pre-disturbance survey, Digby Wells does not recommend any additional mitigation measures or management strategies. The recommendations included in the HBAR remain applicable.

9. Reasoned Opinion Whether Project Should Proceed

Based on the understanding of the Project while considering the results of this assessment, Digby Wells does not object to the Project provided the recommendations detailed in Section 8 above are adopted.

10. Conclusion

This document comprises an update to the current HBAR to provide the results of the pre-disturbance survey and additional recommendations for PalRho to implement prior to the commencement of the construction phase of the proposed Project.

Based on the results of the pre-disturbance survey and the understanding of the Project while considering the results of this assessment, Digby Wells does not object to the Project provided the recommendations detailed above are adopted.