

Visual Scoping Report for the Wonderstone Driekuil Mine Expansion

Project Number:

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I, Andy Pirie declare that:

- I act as an independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have the expertise in conducting the specialist study relevant to this application, including knowledge of the various acts, regulations and any guidelines that have relevance to the proposed project;
- I will comply with the acts, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the study;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority; and
- All particulars furnished by me in this report are true and correct.



Andy Pirie

ACRONYMS AND ABBREVIATIONS

DEM	Digital Elevation Model
EIA	Environmental Impact Assessment
ELC	European Landscape Convention
EMP	Environmental Management Programme
GIS	Geographical Information Systems
ha	Hectares
IFC	International Finance Corporation'
km	Kilometres
LoM	Life of Mine
m	Metres
m ²	Square metres
m ³	Cubic metres
mamsl	metres above mean sea level
MPRDA	Mineral and Petroleum Resources Development Act 28 of 2002
MRA	Mining Right Area
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
VAC	Visual Absorption Capacity
VIA	Visual Impact Assessment

GLOSSARY OF TERMS

Zone of Potential Influence

The area defined as the radius about an object beyond which the visual impact of its most visible features will be insignificant.

Landscape Character

The individual elements that make up the landscape, including prominent or eye-catching features such as hills, valleys, woods, trees, water bodies, buildings and roads.

Sense of Place

Sense of place is the unique value that is allocated to a specific place or area through the cognitive experience of the user or viewer. According to Lynch (1992), sense of place “is the extent to which a person can recognise or recall a place as being distinct from other places – as having a vivid, unique, or at least particular, character of its own”.

Aesthetic Value

Aesthetic value is the emotional response derived from the experience of the environment with its particular natural and cultural attributes. The response can be either to visual or non-visual elements and can embrace sound, smell and any other factor having a strong impact on human thoughts, feelings and attitudes. The aesthetic value encompasses more than the seen view, visual quality or scenery, and includes atmosphere, landscape character and sense of place.

Visibility

The area/points from which project components will be visible. The visibility is determined through a viewshed analysis.

Viewshed

The two dimensional spatial pattern created by an analysis that defines areas, which contain all possible observation sites from which an object would be visible.

Visual Intrusion

The nature of intrusion of an object on the visual quality of the environment resulting in its compatibility (absorbed into the landscape elements) or discord (contrasts with the landscape elements) with the landscape and surrounding land uses.

Visual Exposure

The visual exposure is the relative visibility of a development or feature in a landscape (Oberholzer, 2005). The visual exposure decreases as the distance between the development/feature and visual receptor increases.

Visual Absorption Capacity

The Visual Absorption Capacity (VAC) is the potential of the landscape to conceal the proposed development as a result of topography, vegetation or synthetic features (Oberholzer, 2005).

Visual receptor

A viewer or viewpoint from where the proposed development is visible.

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1 INTRODUCTION AND BACKGROUND

Hydrospatial (Pty) Ltd has been appointed by EnviroGistics (Pty) Ltd (hereafter “EnviroGistics”) to undertake a Visual Impact Assessment (VIA) study for the proposed Wonderstone Driekuil Mine Expansion (hereafter referred to as the “project”). This report has been prepared to inform the scoping phase of the Environmental Impact Assessment (EIA) process that is being undertaken by EnviroGistics.

1.1 Project Location and Study Area Definition

The proposed project is located approximately 8.5 kilometres (km) north of the town of Ottosdal in the North West province (Figure 1-1).

Due to the undulating topography of the region, the study area was defined as a 5 km radius around the proposed infrastructure area. Beyond a 5 km radius, it is highly unlikely that the proposed infrastructure will exert any visual exposure.

1.2 Project Description

1.2.1 Current Status

Up until recently, Wonderstone Limited (hereafter referred to as “Wonderstone” or the “mine”) has been operating under the legal entitlement, Mining License: ML1-97, converted to Mining Right: NW 30/1/2/2/398 MR (Registered Right dated 23 December 2014). The issued mining right authorises the extraction of Pyrophyllite for a period of 30 years over Portion 44 of the farm Gestoptefontein 349 IO, measuring an area of 135.916 hectares (ha):

Mining takes place by means of open cast mining, comprising of hydraulic hammering and excavator loading with no drilling and blasting required.

In addition, Wonderstone also holds an approved New Order Mining Right (NOMR) NW30/5/1/2/2/397MR (signed 20 March 2019) over various portions of the farms Gestoptefontein IO and Driekuil 280 IP:

- Portion 5, 7, 9, 10, 11, 24 (portion of portion 5), remainder of portion 15 (a portion of portion 1), portion 20 and portion 40 (a portion of portion 41 now known as portion 44) of the farm Gestoptefontein 349 IO; and
- Portions 2, 4, remainder of portion 1, portion 7 (a portion of portion A) and the remainder of farm Driekuil 280 IP.

The mining rights combined cover an area of approximately 140 ha of which just under 30 ha has been disturbed by mining activities to date. A large portion of the northern section of the Wonderstone mining area on Gestoptefontein has been rehabilitated.

Wonderstone would like to combine its existing mining rights into one, consolidated right, in an attempt to ease the administrative duties and compliance requirements associated with multiple mining authorisations per site.

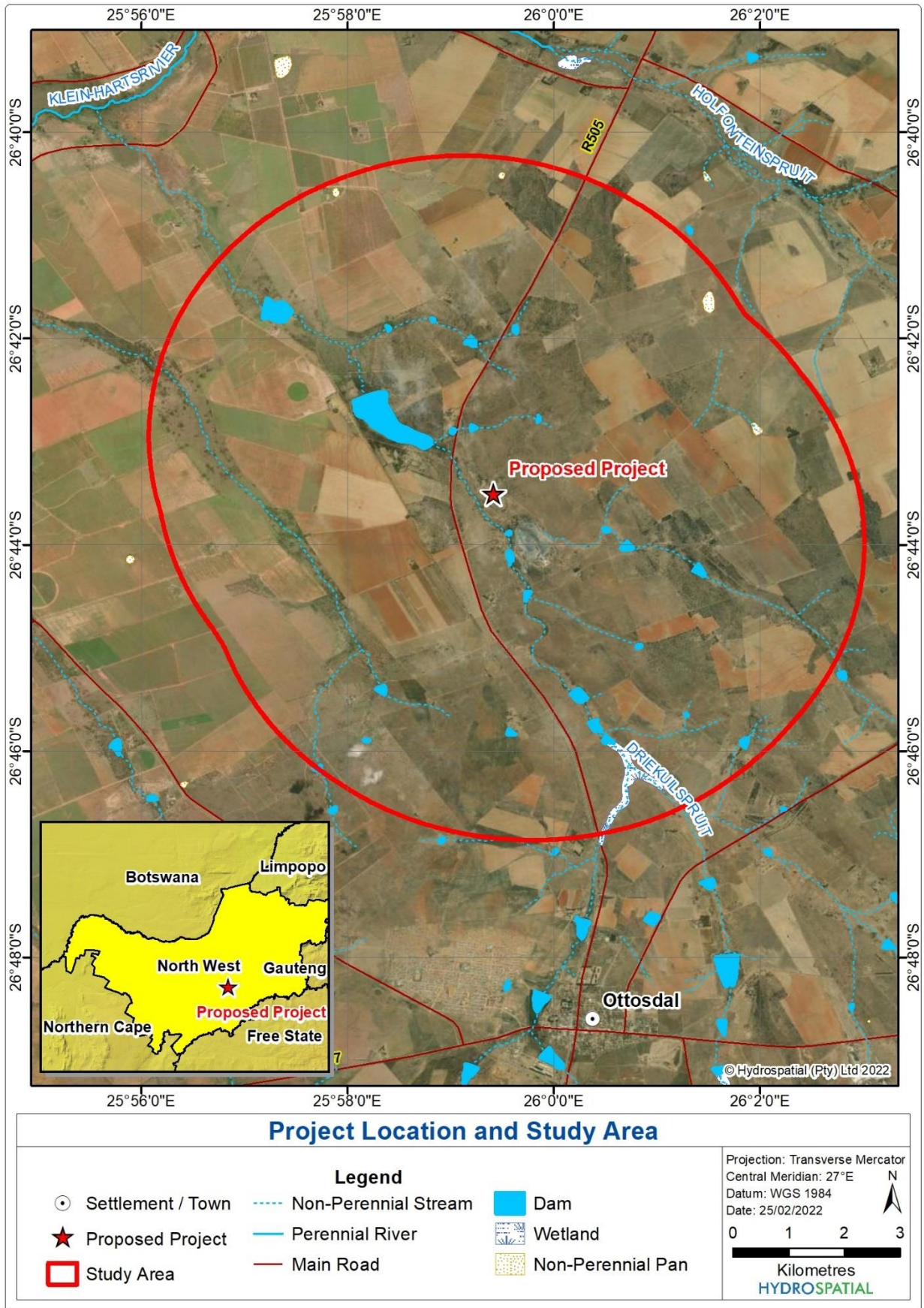


Figure 1-1: Location of the project

At the same time, the operation would like to abandon some of the areas currently included and authorised as part of the approved NOMR area. After an extensive study, Wonderstone forecasts only using a select portion of the already approved NOMR area in its future mining endeavours. Abandonment of the remainder of the approved NOMR areas will ensure future mining in these areas and prevent the sterilisation of said areas for future mining.

During a pre-application meeting with the Department of Mineral Resources and Energy (DMRE) on 15 November 2021, the Department indicated that Wonderstone will be expected to submit a Section 102 Amendment Application. The application will include the areas of one approved mining right into the existing area of the other approved right.

Wonderstone decided to apply for the extension of the Converted Mining Right (CMR) (397MR) area by adding Portions of the approved NOMR (397) areas to the CMR area. At the same time, the additional proposed areas of the NOMR, portions of the approved portions will be abandoned to allow for future mining.

1.2.2 Proposed Project Activities

The mine will continue mining from the existing Wonderstone Opencast Pit, but propose to include five (5) additional mining blocks or areas as indicated on Figure 1-2. The mineral to be mined is Pyrophyllite, an aluminium silicate of the phyllosilicate family, with the chemical formula $\text{Al}_2\text{Si}_4\text{O}_{10}(\text{OH})_2$.

The pyrophyllite is opencast mined with a Hydraulic hammer mounted on an Excavator that loosens the stone. The loose stone is then loaded onto dump trucks that transport usable stone to the plant for further processing and un-usable stone to the low-grade stockpile. In areas where there is topsoil present, the topsoil, if any, will first be stripped to open the pyrophyllite, this topsoil will on completion of mining process be used during the rehabilitation process. Historically, there is little to no topsoil on the Wonderstone deposits. The Pyrophyllite will be mined using an excavator equipped with a hydraulic hammer that will break the stone loose, an excavator with a shovel will load the usable stone on dump trucks that will transport the stone to the processing plant. Unusable stone will be transported to the low-grade stockpile (currently the Waste Rock Dump) for possible use in future. Mining will be done using the bench method, with benches not higher than 5 meters (m).

Existing haul roads will be used but will have to be extended to the new mining area.

No electricity is required in the proposed new areas.

Dust control on haul roads will be done with the mine's own water bowser and water will be extracted from Driekuispruit dam, that is included in the mine's existing Water Use License. There are, however, existing boreholes that can be developed should the need arise.

Current mining operations are planned up until 2027, however, the proposed new project will allow for mining up until 2045 (additional 18 years).

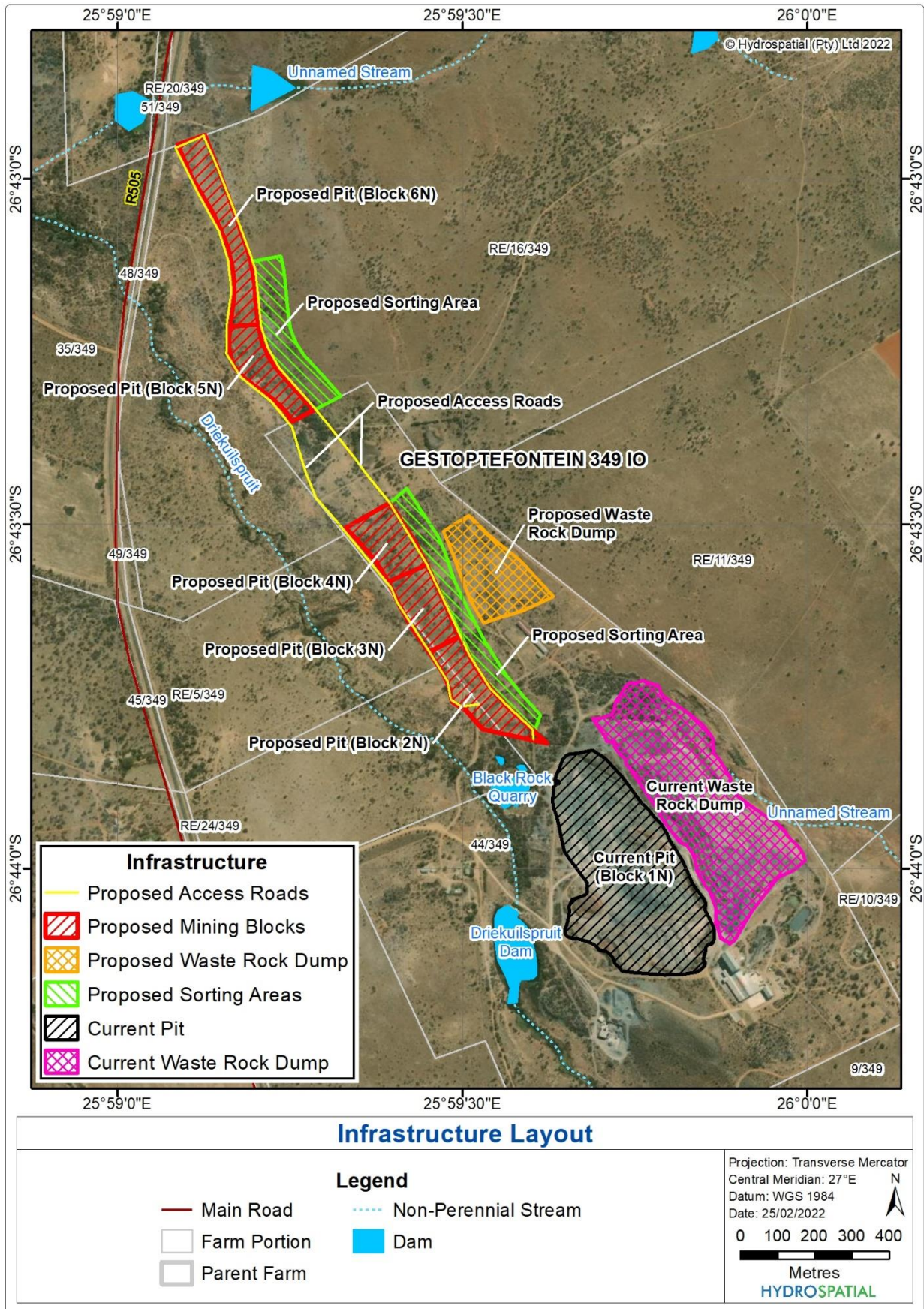


Figure 1-2: Infrastructure layout

The proposed project will involve:

- Mining:
 - Mining of the existing area (Block 1N – about 15 ha in extent); and
 - Five mining blocks (2.5 ha, 2.1 ha, 2.1 ha, 2 ha, 2.9 ha in extent), which will be mined at different time intervals via opencast mining methods).
- Proposed new Waste Rock Dump (WRD).
- Sorting areas.
- Two gravel access roads of approximately 6 m in width (eastern and western roads).

1.3 Legislative Requirements and Guidelines

The following international and national legislative requirements and guidelines are relevant to the VIA study:

1.3.1 International

The European Landscape Convention (ELC) created by the Council of Europe, was the first international convention to focus exclusively on landscapes. The purpose of this convention is to promote effective management and planning of landscapes. It was signed by the United Kingdom government in 2006 and became binding from 2007. Public documents that explore the impacts of large scale developments, as defined in the ELC, on any landscape should take into account the effects of these developments. A landscape means “an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors” i.e. the natural, visual and subjectively perceived landscape, (Contesse, 2011; European Landscape Convention, 2007).

There is no regional or local scale legislation pertaining to mining activities and Visual Impact Assessments (VIAs) exclusively but VIAs are relevant to the International Finance Corporation's (IFC) Performance Standards and this will be treated as a best practice guideline.

IFC Performance Standard 3: Resource Efficiency and Pollution Prevention is applicable to the VIA. Performance Standard 3 recognises that increased economic activity and urbanisation often generate increased levels of pollution to air, water and land, and consume finite resources in a manner that may threaten people and the environment at the local, regional and global levels. For the purposes of this Performance Standard, the term ‘pollution’ is used to refer to both hazardous and non-hazardous chemical pollutants in the solid, liquid, or gaseous phases, and includes other components such as pests, pathogens, thermal discharge to water, GHG emissions, nuisance odours, noise, vibration, radiation, electromagnetic energy and the creation of potential visual impacts including light (IFC, 2012).

The Environmental, Health and Safety Guidelines for Mining therefore need to be considered (World Bank, 2007):

“Mining operations, and in particular surface mining activities, may result in negative visual impacts to resources associated with other landscape uses such as recreation or tourism.

Potential contributors to visual impacts include high walls, erosion, discoloured water, haul roads, waste dumps, slurry ponds, abandoned mining equipment and structures, garbage and refuse dumps, open pits, and deforestation. Mining operations should prevent and minimise negative visual impacts through consultation with local communities about potential post-closure land-use, incorporating visual impact assessment into the mine reclamation process. Reclaimed lands should, to the extent feasible, conform to the visual aspects of the surrounding landscape. The reclamation design and procedures should take into consideration the proximity to public viewpoints and the visual impact within the context of the viewing distance. Mitigation measures may include strategic placement of screening materials including trees and use of appropriate plant species in the reclamation phase as well as modification of the placement of ancillary and access roads.”

1.3.2 National

At a national level, the following legislative documents potentially apply to the VIA:

- Regulations in Chapter 5 (Integrated Environmental Management) of the NEMA and the Act in its entirety. The Act states that “the State must respect, protect, promote and fulfil the social, economic and environmental right of everyone...” Landscape is both moulded by, and moulds, social and environmental features;
- Section 23(1)(d) of the MPRDA, where it is mentioned that a mining right will be granted if “the mining will not result in unacceptable pollution, ecological degradation or damage to the environment”. Visual pollution is a form of environmental pollution and therefore needs to be considered under this section. Holders of rights granted in terms of the MPRDA must at all times give effect to the general objectives of integrated environmental management laid down in Chapter 5 of the NEMA. The Regulations promulgated in terms of the NEMA, with which holders of rights must comply, provide for the assessment and evaluation of potential impacts, and the setting of management plans to mitigate such impacts.
- The National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) and related provincial regulations – in some instances there are policies or legislative documents that give rise to the protection of listed sites. The NHRA states that it aims to promote “good management of the national estate, and to enable and encourage communities to nurture and conserve their legacy so that it may be bequeathed for future generations”. A holistic landscape whose character is a result of the action and interaction and/or human factors has strong cultural associations as societies and the landscape in which they live are affected by one another in many ways; and
- Section 17 of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (NEM: PAA) sets out the purposes of the declaration of areas as protected areas which includes the protection of natural landscapes. Landscapes are defined by the natural, visual and subjectively perceived landscape; these aspects of a landscape are intertwined to form a holistic landscape context.

Further to the above, the document: “Guideline for involving visual and aesthetic specialists in EIA processes” (Oberholzer, 2005) was used as a guideline.

1.4 Site Investigation

A site investigation was undertaken on 2 and 3 February 2022. The purpose of the site investigation was to assess the visual and aesthetic characteristics of the study area.

2 SCOPE OF WORK

The scope of work included the following:

- Provide a baseline (pre-construction) description of the visual and aesthetic characteristics of the study area;
- Provide the initial anticipated visual impacts and mitigation measures for the proposed project; and
- Provide the terms of reference for the EIA phase of the project.

3 BASELINE VISUAL AND AESTHETIC ENVIRONMENT

3.1 Topography

The topography of an area in which a project is located, plays an important role in the visibility of a project. For instance, in mountainous areas, a project may be concealed within a valley and not be visible to visual receptors. However, if a project is developed on top of a mountain, or in an open flat area, it may be visible to many visual receptors. Figure 3-1 demonstrates the role that the topography plays in the visibility of a project.

The topography of the study area can be characterised as undulating plains (Figure 3-2). Elevation varies from 1 540 metres above mean sea level (mamsl) in the south-east of the study area, to 1 415 mamsl along the Driekuilspruit in the north-west. The general slopes of the study area can be described as flat (less than 3 %), with moderate slopes of between 10 % – 30 % occurring along the banks of the Driekuilspruit.

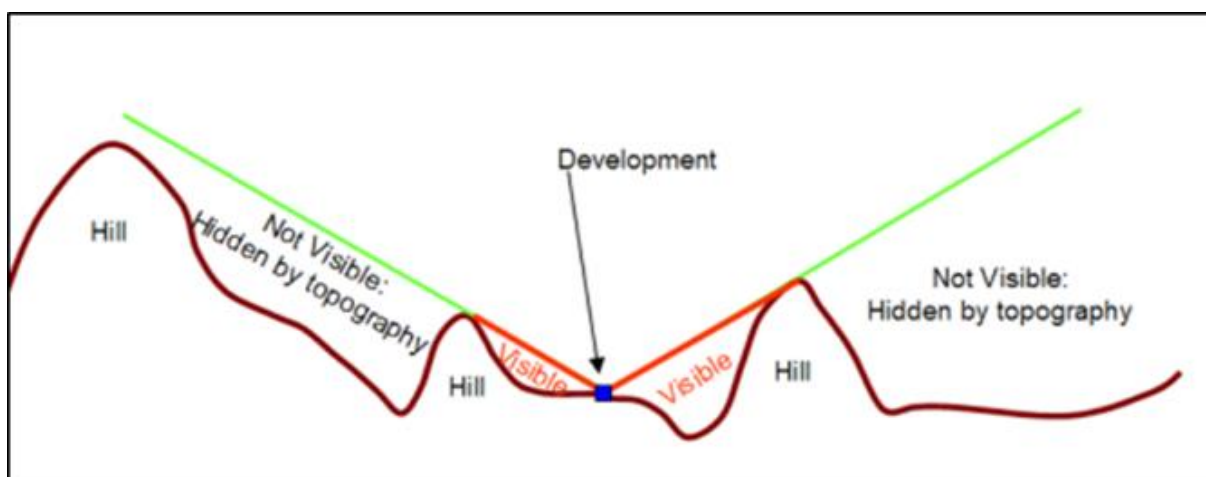


Figure 3-1: The role of topography in the visibility of a project

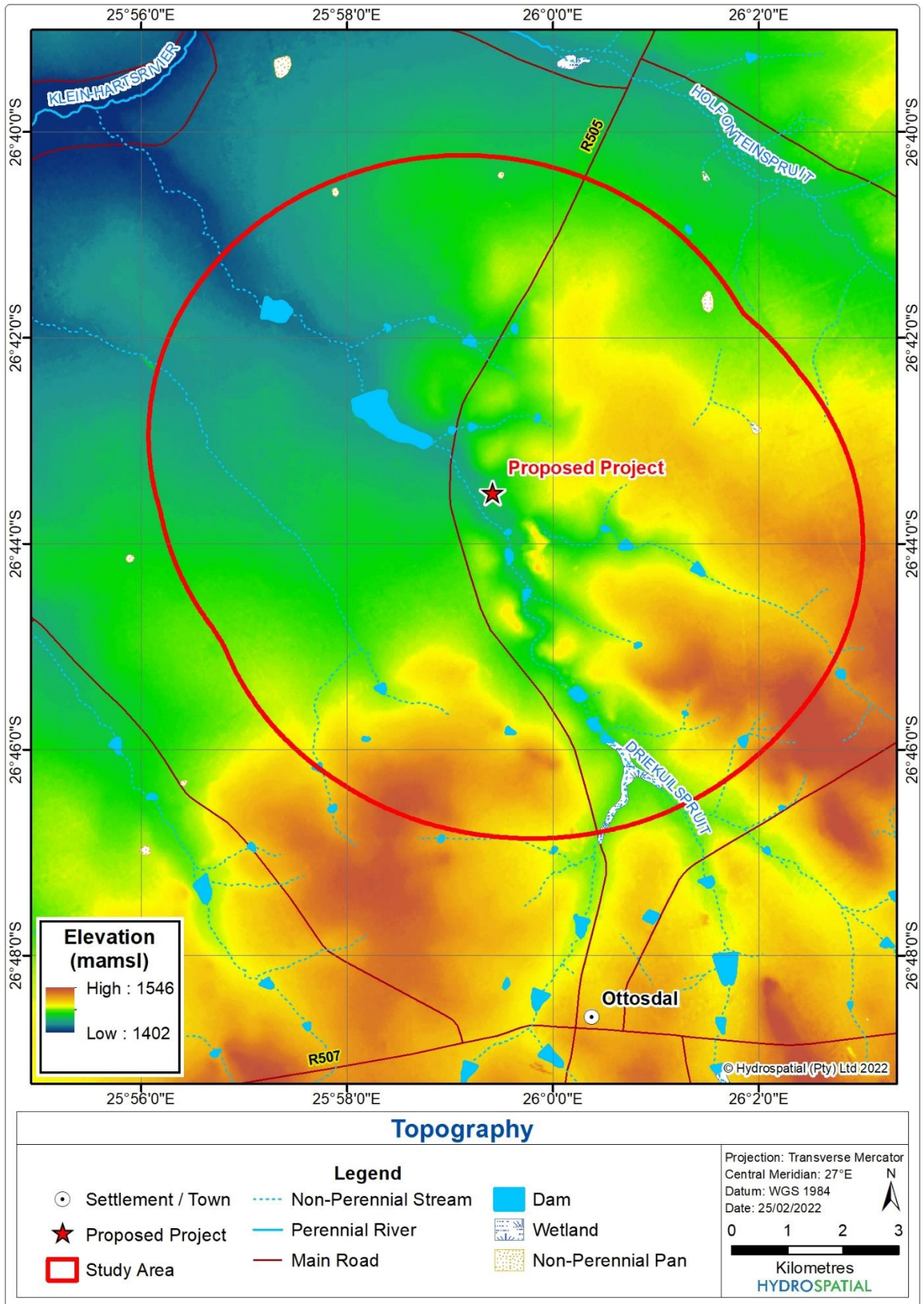


Figure 3-2: Topography of the study area

3.2 Land Cover/Use

Similar to topography, the land cover/use of an area plays an important role in the visibility of a project. Tall dense vegetation can conceal a project from visual receptors, while projects located in open areas consisting of grassland vegetation, are likely to be more visible to receptors.

The project area falls within the Klerksdorp Thornveld vegetation type, which is characterised by open to dense *Acacia karoo* bush clumps in dry grassland (Mucina and Rutherford, 2006). Figure 3-3 indicates the typical vegetation within the study area.



Figure 3-3: Typical vegetation within the study area

The current disturbed area at the mine consists mostly of bare areas associated with the existing opencast and WRD areas. The proposed infrastructure areas are dominated by grassland with patches of shrubland and forested areas. Cultivated land consisting mostly of maize and sunflower is the dominant land use in the surrounding area (Figure 3-4).

3.3 Landscape Characterisation

The landscape of the study area can be broadly divided into three main categories:

- Cultivated areas – consisting mostly of maize and sunflower crops. This is the dominant land use within the study area;
- Natural areas – consisting of natural grassland and bushveld vegetation; and
- Mining areas – Wonderstone mining area consisting of bare areas and mine infrastructure.

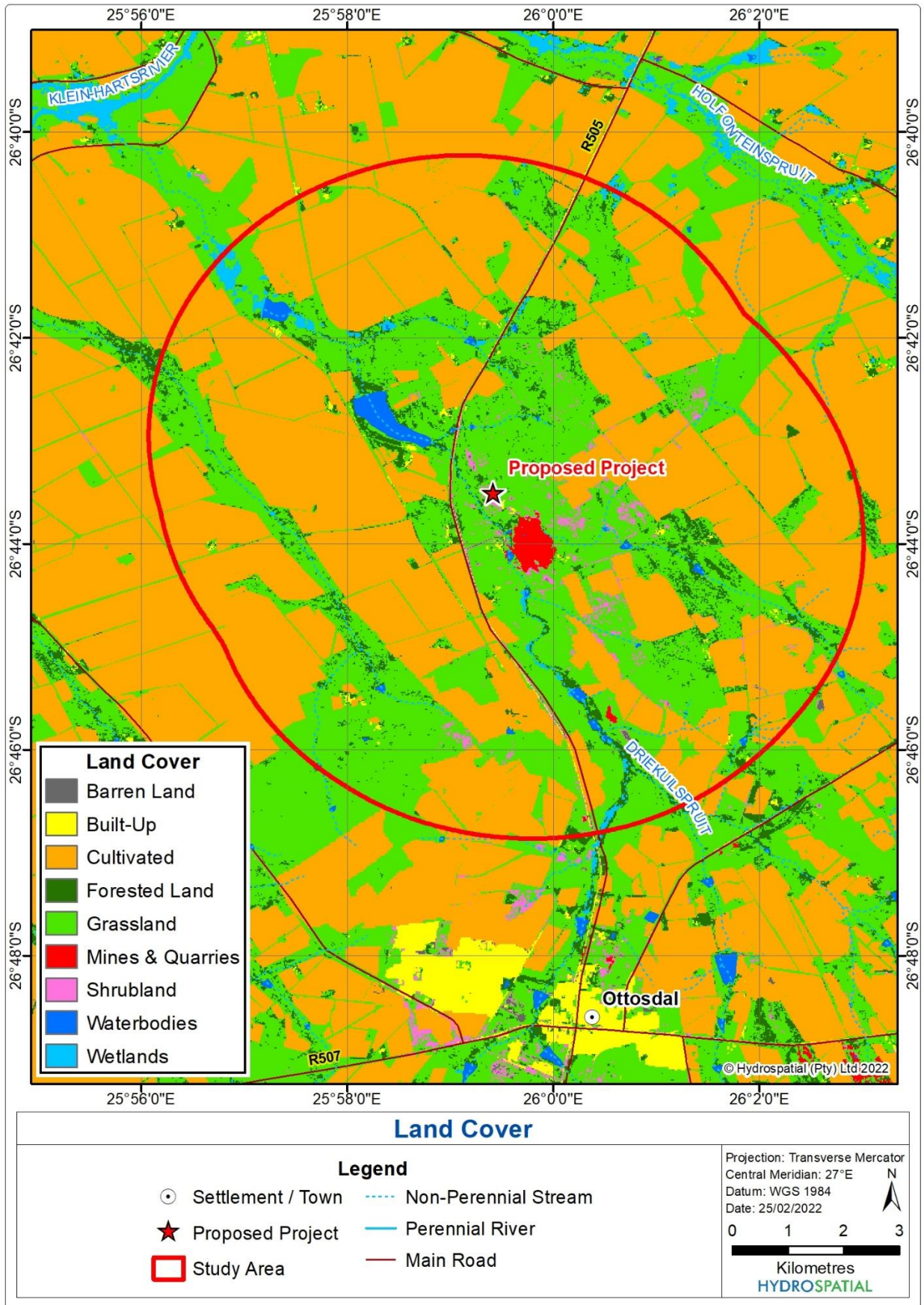


Figure 3-4: Land cover

3.4 Cultural and Heritage Landscape

Khoisan (Late Stone Age) rock engravings occur on farms in the surrounding area. This rock art includes petroglyphs showing game such as elephants, rhinos, ostriches, lions, buffalo, baboons, snakes and giraffes, which once occurred locally in great abundance thousands of years ago.

Trenches, cemeteries and British forts dating to Second Boer War, are located on the farms Gestoptefontein and Driekuil. Driekuil contains structures, which once were the headquarters of Major General Walter Kitchener, a major British Commander in the western Transvaal. Also, there is the "Garden of Remembrance", which contains the graves of soldiers killed during the Second Boer War.

3.5 Protected Areas

There are no protected areas within the study area.

3.6 Sense of Place

Sense of place is the unique value that is allocated to a specific place or area through the cognitive experience of the user or viewer. According to Lynch (1992), sense of place is "the extent to which a person can recognise or recall a place as being distinct from other places – as having a vivid, unique, or at least particular, character of its own".

The study area has largely been transformed from natural bushveld and grassland to maize and sunflower crops. The natural bushveld sense of place has largely been converted into an agricultural landscape.

3.7 Current Infrastructure Visibility and Visual Receptors

The visibility of the current infrastructure at Wonderstone was modelled in ArcGIS using the viewshed analysis tool. The existing WRD is the tallest infrastructure at a height of 1 490.5 mamsl. The degree of visibility of the current infrastructure is indicated in Figure 3-5. The heights of the proposed infrastructure are not yet known, however, the visibility of the proposed infrastructure will be assessed once known during the EIA phase of the project.

Visual receptors identified within the study area include mostly farmhouses and are indicated on Figure 3-5.

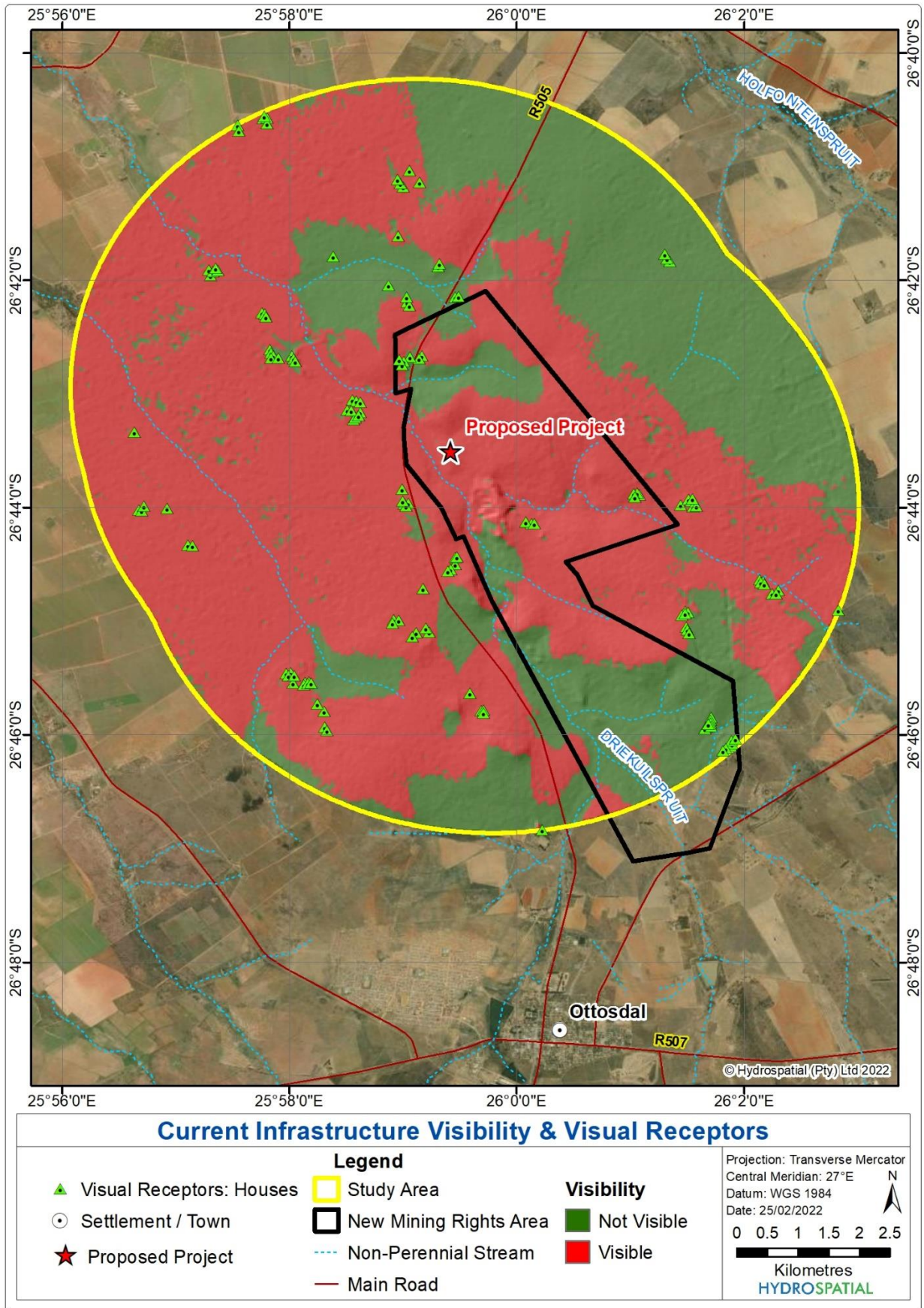


Figure 3-5: Current infrastructure visibility and visual receptors

4 ANTICIPATED IMPACTS AND MITIGATION MEASURES

The anticipated visual impacts and proposed mitigation measures for the project are provided in Table 4-1.

Table 4-1: Anticipated surface water impacts and proposed mitigation measures

Activity	Impact Description	BEFORE MITIGATION	Mitigation measures / Recommendations	AFTER MITIGATION
		SIGNIFICANCE		SIGNIFICANCE
Construction Phase				
Removal of vegetation.	Creation of a bare areas exposing mine infrastructure and the generation of dust.	Medium	Vegetation clearance should be kept to an absolute minimum. Exposed areas should be vegetated as soon as possible. Dust suppression measures should be implemented to limit the generation of dust.	Low
The presence and use of heavy machinery, trucks and vehicles for construction purposes.	The movement of vehicles and heavy machinery during the construction phase will create a visual presence and will generate dust.	Medium	Only vehicles and heavy machinery necessary for construction activities should be used. Dust suppression measures should be implemented to limit the generation of dust.	Low
Operational Phase				
The presence of the proposed WRD and other proposed infrastructure in the landscape.	Impact on visual receptors in the surrounding landscape and alteration of the sense of place	Medium	The natural landscape of the area has to some degree already been altered by mining and more so by agricultural activities. The proposed infrastructure will add to the already altered landscape. The proposed WRD and other infrastructure heights should be limited as far as possible. Infrastructure should be painted earthy colours to blend into the surrounding landscape.	Low

Activity	Impact Description	BEFORE MITIGATION	Mitigation measures / Recommendations	AFTER MITIGATION
		SIGNIFICANCE		SIGNIFICANCE
The presence and use of heavy machinery, trucks and vehicles for operational purposes.	The movement of vehicles and heavy machinery during the operational phase will create a visual presence and will generate dust.	Medium	Only vehicles and heavy machinery necessary for operational activities should be used. Dust suppression measures should be implemented to limit the generation of dust.	Low
The presence of additional lighting from the proposed infrastructure area.	Additional lighting at night impacting on visual receptors.	Medium	Down lighting and lighting shields should be used as far as possible.	Low
Closure & Rehabilitation Phase				
Rehabilitation of the proposed project area.	The rehabilitation of the proposed project is likely to result in less of a visual impact if the pits are backfilled and the WRD is removed.	Medium	Backfilling of the pits with WRD material and re-vegetating disturbed areas.	Low

5 TERMS OF REFERENCE FOR THE EIA PHASE

The following will be undertaken during the EIA phase of the project for the VIA study:

- Viewshed modelling of proposed infrastructure heights will be undertaken to determine the visibility of the project on the surrounding landscape; and
- The visual impacts will be assessed in detail and mitigation measures will be proposed.

6 CONCLUSION

In conclusion, the scoping report has provided a description of the baseline visual and aesthetic characteristics for the proposed project. It has further provided the anticipated visual impacts and mitigation measures, which will be assessed in more detail during the EIA phase of the project. Lastly, the terms of reference for VIA for the EIA phase of the project has been provided.

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