

Landscape and Visual Impact Assessment specialist verification report.

Basic Assessment Process for the change in layout and footprint of the Mogalakwena 120MW Photovoltaic (PV) Solar Energy Facility (SEF) for the Mogalakwena Mine.

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Acronyms

AAP	Anglo American Platinum
<u>BA</u>	<u>Basic Assessment</u>
CBA	Critical Biodiversity Area
EIA	Environmental Impact Assessment
IFC	International Finance Corporation
IPP	Independent Power Producer
<u>LEDET</u>	<u>Limpopo Department of Economic Development, Environment and Tourism</u>
LVIA	Landscape and Visual Impact Assessment
<u>PGE</u>	<u>Pele Green Energy</u>
PPA	Power Purchase Agreement
PS	Performance Standard
SEF	Solar Energy Facility
VAC	Visual Absorption Capacity

Abbreviations

EA	Environmental Authorisation
O&M	Operations and Maintenance
m	Meter
PS	Performance Standard
PV	Photovoltaic

1. Project Background

Mogalakwena Mine Solar Power (Pty) Ltd was granted an Environmental Authorisation (EA) to construct a photovoltaic (PV) solar energy facility and associated transmission lines to supply power to the mine. The EA was granted on 9 December 2021 (ref. no. 12/1/9/2/-W89). This application proposes the authorisation of an extension of the project's footprint. Zutari (Pty) Ltd was appointed as the independent Environmental Assessment Practitioner to undertake a Basic Assessment (BA) for the proposed project.

Mogalakwena Mine Solar Power appointed Pele Green Energy (PGE) and EDF Renewables, a consortium known as PGE-EDFR as the Independent Power Producer (IPP) to develop the proposed project. PGE provided a design for the project, but the approved footprint proved insufficient. The only available area for expansion on the central site is a Critical Biodiversity Area (CBA) east of the authorised layout. It is proposed that 16 ha of the CBA be developed as part of the project. However, Condition 4 of the existing EA excludes the CBA from the development footprint. Development within a CBA triggers a so-called listed activity. Therefore, an EA is required from the Limpopo Department of Economic Development, Environment and Tourism (LEDET) before this expansion can proceed.

This application proposes the authorisation of an expansion of the approved footprint, including a solar farm, with inverters to generate up to 19 MW. This will form part of the overall generation capacity of up to 120 MW as authorised by the existing EA; internal access roads for servicing and maintenance of the site; stormwater management infrastructure; and temporary equipment laydown areas / construction camps for use during construction.

The Environmental Authorisation (EA) for the Mogalakwena PV plant was issued in December 2021 and is currently subject to an appeal by one of the interested parties. Pele-EDF has been appointed by Anglo American Platinum (AAP) Limited as the Independent Power Producer (IPP) to build and operate the plant.

The PV Facility will supply energy on an exclusive basis to the AAP's Mogalakwena Mine in Limpopo, South Africa in terms of a Power Purchase Agreement (PPA) with an operating term of 25 years, as may be extended or amended in accordance with the terms of the PPA.

There are some proposed changes to the layout of the plant. The most significant change is the increase in the footprint of the PV plant area into a Critical Biodiversity Area (CBA) east of the currently authorised footprint. The area of the CBA that will be required is 15.9 ha. Without this additional area, Pele-EDF cannot achieve the necessary electricity generation capacity. For various reasons, primarily security and operability, it is not feasible to use the main (central) site where the PV plant has been authorised together with additional sites south on north of this site. The revision of the layout and comparison of old vs. new layouts is indicated below and in Figure 1 and Figure 2.

The following technical changes are proposed:

- The southern site (south of the Groot Sandsloot stream) and the northern site falls away. Pele-EDF will develop only on the central of the three sites that were initially considered (refer to Figure 1); and
- The transmission lines to the mine fall away. Refer to Figure 1 for original transmission line corridor, to be replaced by a short tie-in (interconnection shown in green lines, refer to Figure 2) from the substation to the Eskom lines along the western side of the site. The length of these lines is 140m. A single pylon will be required for these lines. (The purple line, indicated in Figure 2 is an existing transmission line; the previously proposed transmission lines would have fallen in the same corridor).

- There is no change in height or specifications of the pylons.

Other components of the project that have already been authorised remain unchanged. This includes electricity generation of up to 120MW, connection and control buildings, a guard cabin; weather stations; perimeter fencing; and a substation and/or switchyard to convert power for transmission to Mogalakwena Mine.

2. Purpose and scope of the report

The purpose of this report is to verify the potential changes to the landscape and visual impacts as a result of the proposed changes indicated in Section [04](#) above. The scope of works is set out as the following:

- Review of the existing documentation (Weideman, E .2021. *Landscape and Visual Impact Assessment for Mogalakwena Mine Solar Power Project*);
- To consider the implications of the International Finance Corporation (IFC) Performance Standards (PS) for Environmental and Social Sustainability, as applicable;
- Update the PV panel viewshed analysis based on the latest proposed layout; and
- Confirm and verify the findings and potential changes to the initial landscape and visual impacts as indicated in Section 4 below.

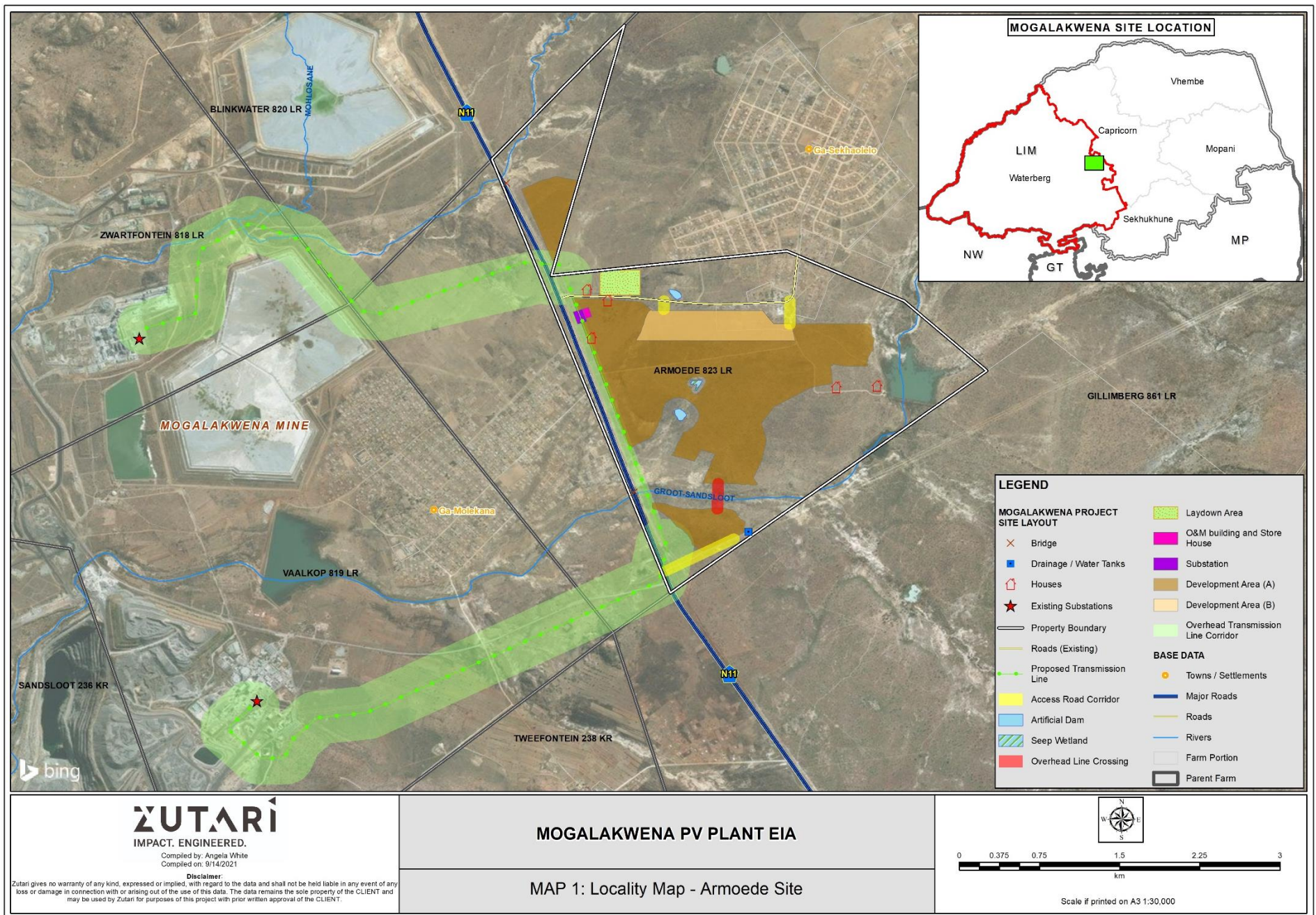


Figure 1: Initially authorised layout

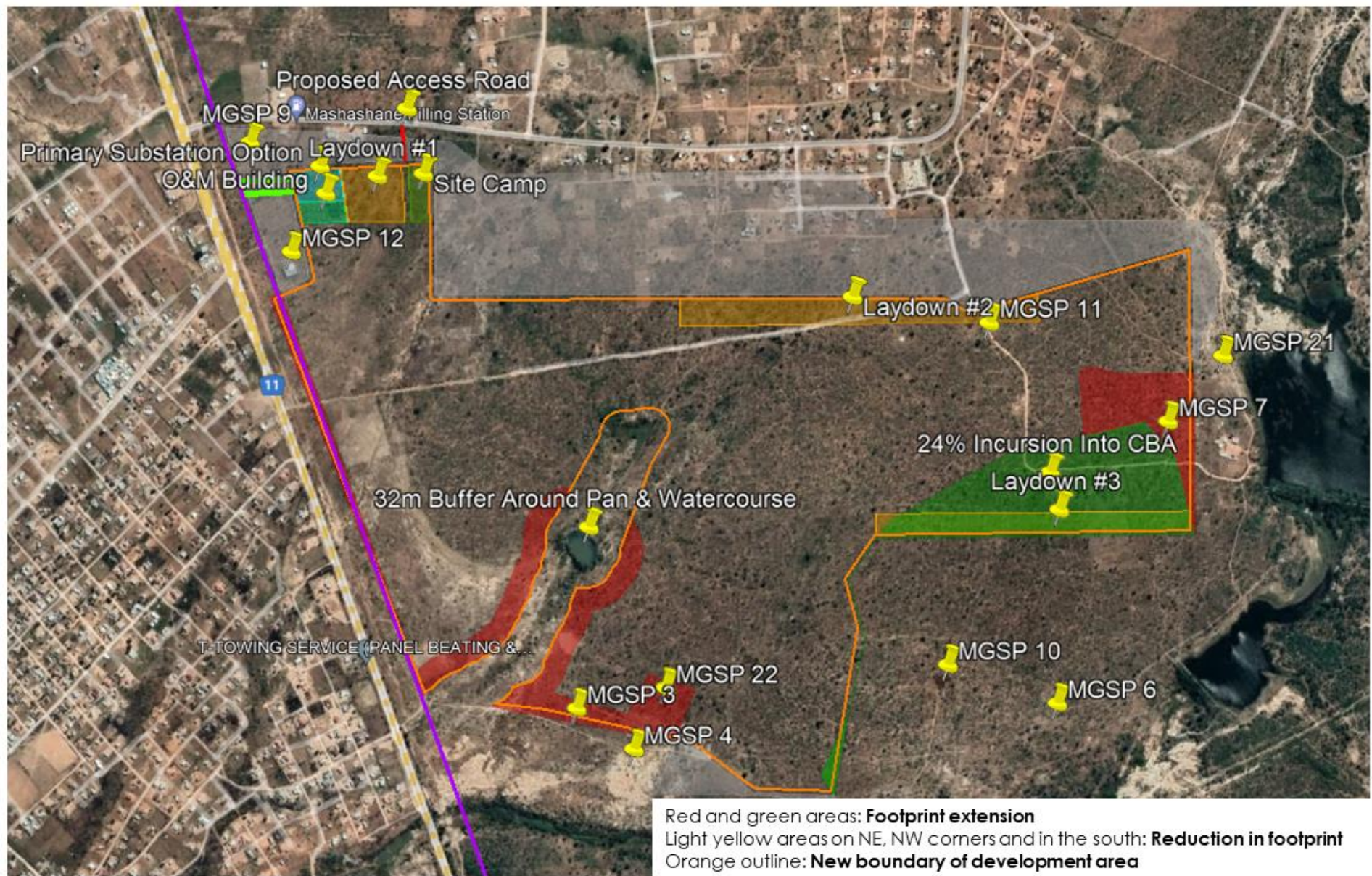


Figure 2: Revised layout

3. IFC Performance Standards

IFC Performance Standards for Environmental and Social Sustainability (hereafter referred to only as IFC Performance Standards) offer a framework for understanding and managing environmental and social risks for high profile, complex or potentially high impact projects. IFC Performance Standards do not explicitly require visual impact assessments, but consideration of visual impacts is embodied by the requirement to consider pollution prevention (lights at night) and impacts on ecosystem services.

Under IFC Performance Standard (PS) 3 (Resource efficiency and pollution prevention), 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).

Under IFC PS 6, ecosystem services are organized into four categories, with the third category related to cultural services which are defined as “the non-material benefits people obtain from ecosystems”; and “may include natural areas that are sacred sites and areas of importance for recreation and aesthetic enjoyment” (IFC, 2012).

Considering the landscape context and the nature of the project, it is anticipated that PS 6 will not play a role in terms of the LVIA. PS 3 states that: “During the project life-cycle, the client will consider ambient conditions and apply technically and financially feasible resource efficiency and pollution prevention principles and techniques that are best suited to avoid, or where avoidance is not possible, minimize adverse impacts on human health and the environment”. The anticipated impact from lights at night will be low, however various mitigation measures were included in the specialist LVIA.

4. Landscape and visual impact assessment methodology

During the EIA the proposed development was evaluated against the following criteria:

- Landscape impacts i.e.
 - The change in landscape character and sense of place;
 - Visual intrusion and Visual Absorption Capacity (VAC);
- Visual impacts i.e.
 - Visibility and visual exposure; and
 - Impacts due to night time lighting

4.1 Change in landscape character and sense of place

Impact description

Change in the landscape character and sense of place of the study area through the introduction of industrial-type infrastructure.

Table 1: Verification of the possible change in impact to the landscape character and sense of place

Impact significance based on initial footprint/layout	<u>Construction phase</u> Without mitigation: Minor With mitigation: Negligible <u>Operational phase</u> Without mitigation: Minor With mitigation: Minor <u>Decommissioning phase</u> Without mitigation: Negligible With mitigation: Negligible
Impact significance based on new footprint/layout	<u>Construction phase</u> Remains the same as above <u>Operational phase</u> Without mitigation: Negligible With mitigation: Negligible <u>Decommissioning phase</u> Remains the same as above
Discussion: The study area has already been extensively modified by existing industrial type infrastructure (such as similar type transmission lines running along the N11 corridor on the western boundary of the SEF site). As a result of this, the significance of the impact will be low throughout the various development phases. Even though the PV plant footprint (considering the proposed changes) will be larger, the overall impact significance will most likely be lower during the operational phase as a direct result of the smaller footprint of the transmission line (infrastructure component with the highest visibility). The reduction of the transmission line footprint will therefore singularly contribute to the effect on the change in landscape character and sense of place.	

4.2 Visual intrusion and VAC

Impact description

The level of compatibility and the ability of the landscape to visually absorb the proposed infrastructure, including contrasts in form, line, colour, and texture resulting from vegetation clearing.

Table 2: Verification of the possible change in impact to the visual intrusion and VAC

Impact significance based on initial footprint/layout	<u>Construction phase</u> Without mitigation: Negligible With mitigation: Negligible
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	<u>Operational phase</u> Without mitigation: Minor With mitigation: Negligible <u>Decommissioning phase</u> Without mitigation: Negligible With mitigation: Negligible
Impact significance based on new footprint/layout	<u>Construction phase</u> Remains the same as above <u>Operational phase</u> Remains the same as above <u>Decommissioning phase</u> Remains the same as above
Discussion: The project is situated within an existing mining context, which is highly modified by various anthropogenic and related infrastructure. There are already complex rectilinear, geometric lines, forms and artificial textures and colours visible within the study area. Regardless of the change in layout, the impact significance remains the same throughout the different project phases as the PV panel technology (type/height) and site location (context) remains unchanged. The omission of the transmission lines slightly reduces the intensity of the visual intrusion, but not enough to change the overall significance of the originally anticipated impact.	

4.3 Visibility and visual exposure

Impact description

The visibility and presence of the cleared PV Facility and associated infrastructure. (Glint and glare and industrialisation of views)

Table 3: Verification of the possible change in impact to the visibility and visual exposure

Impact significance based on initial footprint/layout	<u>Construction phase</u> Without mitigation: Minor With mitigation: Negligible <u>Operational phase</u> Without mitigation: Minor With mitigation: Negligible <u>Decommissioning phase</u> Without mitigation: Negligible With mitigation: Negligible
Impact significance based on new footprint/layout	<u>Construction phase</u>

	<p>Remains the same as above</p> <p><u>Operational phase</u></p> <p>Remains the same as above</p> <p><u>Decommissioning phase</u></p> <p>Remains the same as above</p>
<p>Discussion: Visual receptors and their associated sensitivity (as identified in the initial study) will remain the same. From the revised viewshed analysis PV panel visibility will be slightly higher from the south. However, the total area from where the PV panels will be visible remains unchanged. PV panel visibility from the N11 and the settlements of Ga Molekana and Machikiri remains unchanged. The visual impact from the previously proposed additional transmission line will fall away. This will mainly affect areas north west of the site where receptor sensitivity is very low. Refer to Figure 3 - Figure 5 for a comparison between original viewsheds and the revised viewshed. The impact as a result of visibility and visual exposure will be slightly reduced, but not enough to change the significance of the impact.</p>	

4.4 Night time lighting

Impact description

The visibility of lighting associated with the proposed project.

Table 4: Verification of the possible change in impact to night time lighting

Impact significance based on initial footprint/layout	<p><u>Construction phase</u></p> <p>Without mitigation: Negligible With mitigation: Negligible</p> <p><u>Operational phase</u></p> <p>Without mitigation: Minor With mitigation: Negligible</p> <p><u>Decommissioning phase</u></p> <p>Without mitigation: Negligible With mitigation: Negligible</p>
Impact significance based on new footprint/layout	<p><u>Construction phase</u></p> <p>Remains the same as above</p> <p><u>Operational phase</u></p> <p>Remains the same as above</p> <p><u>Decommissioning phase</u></p> <p>Remains the same as above</p>

Discussion: The impacts due to the visibility of night time lighting remains unchanged as perimeter (security) lighting will remain. The Operations and Maintenance (O&M) Building (light source) remains in the same position as in the previous layout.

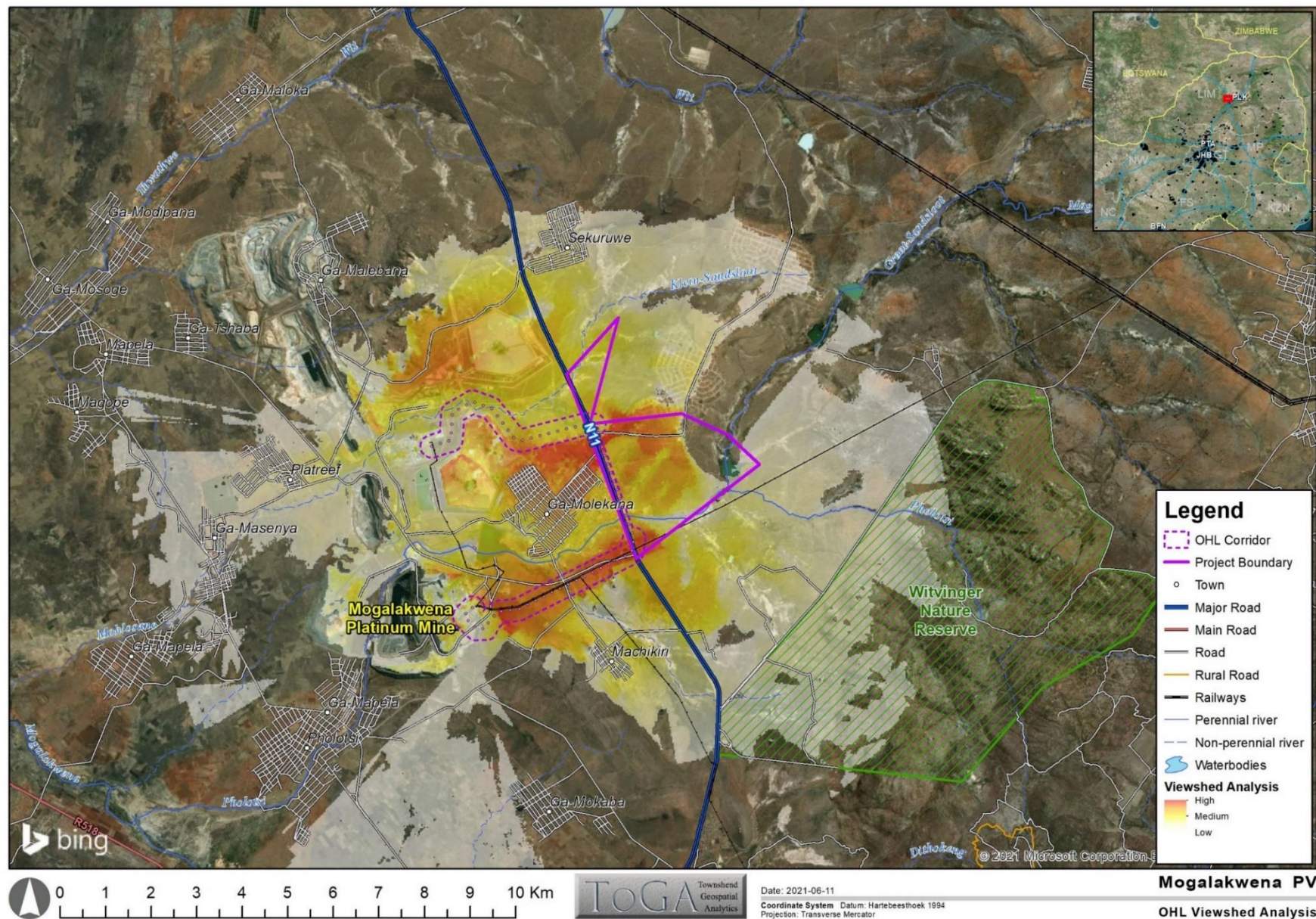


Figure 4: Original viewshed analysis: Transmission lines

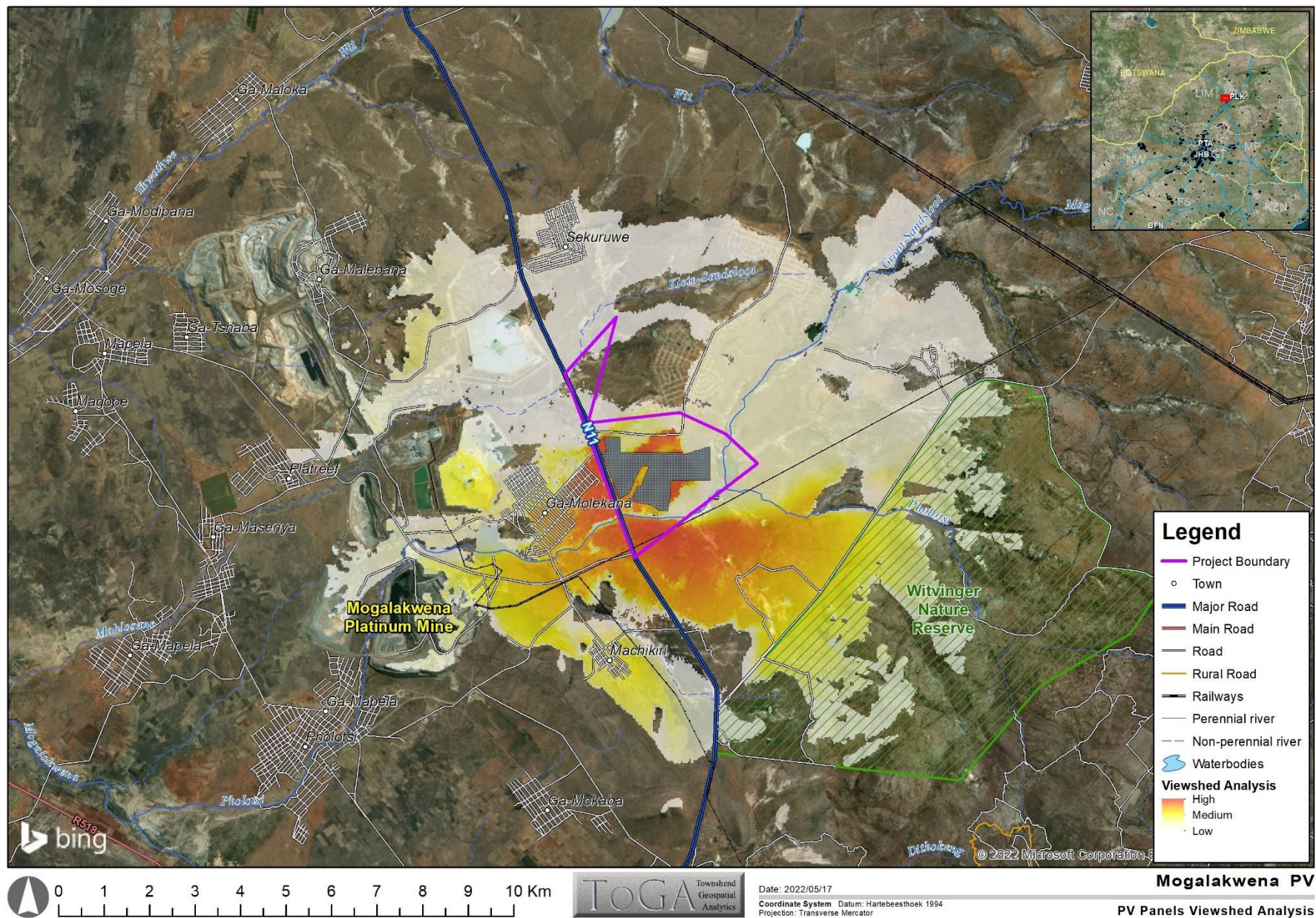


Figure 5: Updated viewshed analysis Panels

5. Conclusion

The newly proposed layout (decreased footprint of the transmission lines) will result in a reduction of the impact significance for the change in landscape character and sense of place during the operational phase of the project. The intensity of the visual intrusion will also be slightly lower. However, the somewhat reduced visual intrusion will not change the overall impact significance. Even though the transmission lines to the mine will fall away, the existing transmission line pylons within the corridor on the site's western boundary will remain. There are no changes to the location of the O&M Building and PV panel type and height. Therefore, the significance of anticipated visual impacts such as visibility, visual exposure and night time lighting remains unchanged.