

**SITE SENSITIVITY VERIFICATION REPORT FOR  
INVEST IN PROPERTY 84 (PTY) LTD FOR THE  
MINING OF ALLUVIAL DIAMONDS AND GOLD ON  
THE WHOLE FARM OF VAN ASWEGENS HOEK 493  
AND WHOLE FARM OF GREYLINGSLYN 355,  
MAGISTERIAL DISTRICT OF BOSHOF FREE STATE  
PROVINCE**

**NOVEMBER 2021**



***REFERENCE NUMBER: FS 30/5/1/2/2/10067 MR***

**PREPARED FOR:**

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## **EXECUTIVE SUMMARY**

Invest in Property 84 (Pty) Ltd applied for environmental authorisation to mine alluvial diamonds and gold from a 3 955.7022 ha area that extends over eight properties in the Lejweleputswa magisterial district of the Free State Province (details of the properties in the DEIR). Even though the project application extends over a vast area, the Applicant proposes to divide the mining right footprint (hereinafter referred to as the “major area”) into smaller mining areas of  $\pm 2$  ha each (hereinafter referred to as the “minor areas”) that will be positioned in between areas of agricultural importance. It is proposed that a maximum of three (3) minor areas will be mined at any given time. In other words, the total footprint to be disturbed by mining activities at any given time calculates to  $\pm 6$  ha of the 3 955.7022 ha mining right area, upon which a mined-out minor area has to be rehabilitated prior to the opening of a subsequent minor area. The current project proposal will entail the disturbance of  $\pm 0.15\%$  of the mining right area (major area) at any given time, as concurrent rehabilitation (strip-mining) is proposed.

Upon commencement, the proposed project will trigger listed activities in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) and the Environmental Impact Assessment Regulations 2014 (as amended) and therefore requires an environmental impact assessment (EIA) that assess project specific environmental impacts and alternatives, consider public input, and propose mitigation measures, to ultimately culminate in an environmental management programme that informs the competent authority (Department of Mineral Resources and Energy) when considering the environmental authorisation.

Should the MR be issued and the mining of alluvial diamonds and gold be allowed, the proposed project will comprise of activities that can be divided into three key phases (discussed in more detail in the report) namely the:

(1) Site establishment/construction phase which will involve the demarcation of each minor area’s boundaries and required buffer no-go zones pertaining to existing infrastructure and areas of significant importance identified during the environmental impact assessment. Site establishment will further necessitate the clearing of vegetation, stripping and stockpiling of topsoil, and establishing site infrastructure.

(2) Operational phase that is presently expected to entail the simultaneous mining of three (3) minor mining areas within the footprint of the major mining right area. Upon the prospecting and exploration of allowable (agreed to by the landowner) farm portions, the

opencast and strip-mining method will be used to recover diamond bearing gravel that will be processed, upon which the concentrated product is transported to an off-site recovery plant.

(3) Decommissioning phase which will include activities that can be divided into medium- and long term categories. In the medium term, rehabilitation will entail the continuous reinstatement of mined-out minor areas through the use of overburden and spoil material to backfill excavation pits, reinstatement of decommissioned processing areas, rehabilitation of settling ponds as well restoring eroded areas and the management of weeds and invasive plant species. In the long term, rehabilitation will comprise the reinstatement of all remaining disturbed areas (mining related) prior to the submission of a closure application to the Department of Mineral Resources and Energy (DMRE).

Should the Applicant be issued with a mining right (MR) and the project commence, the principal mining activities is expected to include the following at each operational site (minor area):

- Site establishment;
- Stripping and stockpiling of topsoil of the mining area;
- Excavation and loading;
- Processing of gravel;
- Transport of concentrate to recovery plant;
- Backfilling of excavation;
- Rehabilitation of processing area;
- Sloping and landscaping upon closure of the site; and
- Replacing the topsoil and vegetating the disturbed areas.

Presently the preliminary layout of each operational site (minor area) is expected to include the following:

- Opencast excavation;
- Overburden stockpiles;
- Excavation and earthmoving equipment;
- Screens, conveyors and pans of the processing plant;
- Containers for administration, storage and workshop purposes;
- Mobile ablution facilities;
- Generators;
- Diesel depot (<80 m<sup>3</sup>);
- Water winning and storage equipment;

- Settling pond; and
- Internal roads.

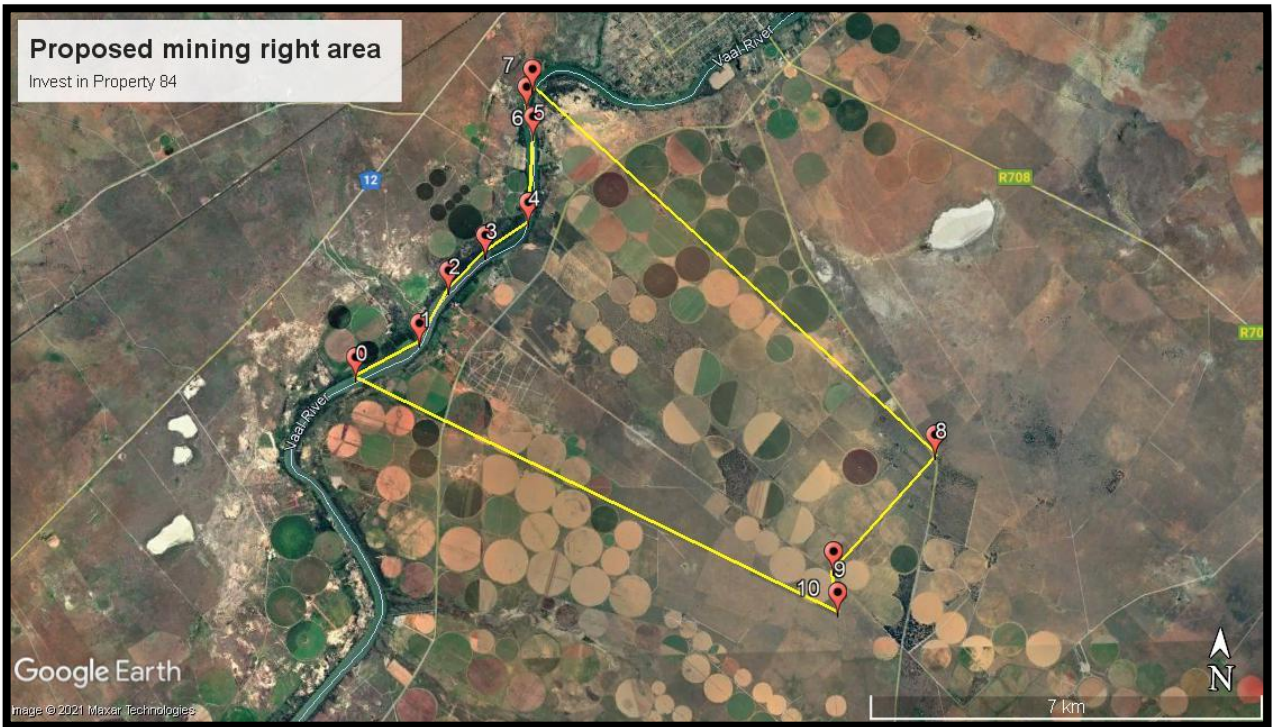


Figure 1: Figure 1: Satellite view showing the location of the MR area (yellow polygon) in relation to the surrounding landscape. (Image obtained from Google Earth)

This report addresses the findings of the Screening Tool Report (Appendix P), generated from the National Web Based Environmental Screening Tool, and provides a motivation for the various specialist studies identified to be conducted. As per the Screening Tool Report, the proposed site is located within a very high sensitivity area from an agricultural perspective, a medium sensitivity area from an animal species perspective, a very high sensitivity area from an aquatic biodiversity perspective, a medium sensitivity area from a civil aviation perspective, a medium sensitivity area from a plant species perspective, a low sensitivity area from a defense perspective, a high sensitivity form a paleontology perspective, a very high sensitivity area from a terrestrial biodiversity perspective and a low sensitivity area from an archaeological and cultural heritage perspective..

## Summary of specialist reports.

(This summary must be completed if any specialist reports informed the impact assessment and final site layout process and must be in the following tabular form):-

*Table 1: Summary of specialist reports*

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT  (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
<p>The screening report for an environmental authorisation, as required in terms of the 2014 NEMA EIA Regulations over eight properties in the Lejweleputswa magisterial district of the Free State province which identified the following list of specialist assessment for inclusion in the assessment report:</p> <ul style="list-style-type: none"> <li>■ Agricultural Impact Assessment;</li> <li>■ Landscape / Visual Impact Assessment;</li> <li>■ Archaeological and Cultural Heritage Impact Assessment;</li> <li>■ Paleontology Impact Assessment;</li> <li>■ Terrestrial Biodiversity Impact Assessment;</li> <li>■ Aquatic Biodiversity Impact Assessment;</li> <li>■ Hydrology Assessment;</li> <li>■ Noise Impact Assessment;</li> <li>■ Radioactivity Impact Assessment;</li> <li>■ Traffic Impact Assessment;</li> <li>■ Geotechnical Assessment;</li> <li>■ Climate Impact Assessment;</li> <li>■ Health Impact Assessment;</li> <li>■ Socio-economic Assessment;</li> <li>■ Ambient Air Quality Impact Assessment;</li> <li>■ Seismicity Assessment;</li> <li>■ Plant Species Assessment;</li> <li>■ Animal Species Assessment.</li> </ul> <p>Invest in Property 84 (Pty) Ltd (hereafter referred to as the applicant) appointed Greenmined Environmental (Pty) Ltd as the environmental impact assessment practitioner (EAP) to undertake the EIA associated with the mining right application. In light of this Greenmined would like to respond as follows to the list of required specialist studies:</p>			

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<p> <span style="color: green;">■</span> Agricultural Impact Assessment (AIA):                        The Applicant entered into a surface use agreement with the property owners when the prospecting right (FS30/5/1/1/2/449PR) held over the same area was issued. In terms of the said agreement, the Applicant must (amongst others) take the farming activities into account and prospecting operations is not allowed to affect the rights of the landowner to conduct its farming and business activities on the property. The Applicant also agreed to use the access roads as agreed with the landowner from time to time. The agreement furthermore restricts the prospecting of any part of the property used for cultivation, by the irrigation pivots and/or orchards unless the landowner granted written permission to the right holder. Should the mining right be issued, the Applicant committed to renew the said surface use agreement with every property owner, honoring the commitment to mine only in areas as agreed with the landowner that does not extend over pivots or orchards or impede farming/business activities. In light of this arrangement, the project proposal allows for the combined land use (agriculture and mining) of the earmarked properties as mining will take place in between the agricultural active areas (pivots, orchards etc.) even though this considerably reduces the available mining area. Should the MR application be approved it will allow property owners the opportunity of supplementing and diversifying their property's income through compensation paid to them by the Applicant. The potential impact that the proposed mining activity may have on the agricultural potential of the affected properties will be assessed as part of the EIA, however, Greenmined is of the opinion that a specialist AIA is not needed as mining will be conducted in cooperation with the current agricultural use.         </p> <p> <span style="color: green;">■</span> Archaeological and Cultural Heritage Impact Assessment (HIA) &amp; Paleontology Impact Assessment (PIA):                        Heritage Contracts and Archaeological Consulting (HCAC) was contracted to conduct a desktop heritage impact assessment (HIA) inclusive of a palaeontological opinion of the study area. According to the Heritage Desktop Assessment conducted by Jaco van der Walt (HCAC) (Refer to Appendix I1) The scope of work comprises a heritage desktop report for a large area comprising approximately 3 955.70 ha. Due to the geographical size of the current prospecting right and the fact that the relatively small impact areas of the proposed mining right have not been confirmed as yet, it was deemed not feasible to conduct fieldwork at this point. Some heritage surveys (Rossouw 2006; Dreyer 2008; Tomose 2016; Van Vollenhoven 2018) were conducted in the greater area and this desktop study is informed by available data for the area. Based on these studies, resources such as archaeological resources, historical finds, cultural landscapes, burials and cemeteries can be expected in the study area. According to the Palaeontological Impact Assessment (Appendix I2) based on experience and the lack of any previously recorded fossils from the area, it is extremely unlikely that any fossils would be preserved in the loose sands of the Quaternary.         </p> <p>           However, should artefacts archaeological items be observed during the mining activities, then all activity should cease immediately, the area marked off activity and a specialists consulted prior to any further activity. This also includes if any graves are observed on site during activity progress then all activity should have ceased and the area demarcated as a no-go zone.         </p>			

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<p> <span style="color: green;">■</span> Terrestrial Biodiversity Impact Assessment (TBIA) &amp; Animal Species Assessment (ASA):         </p> <p>           The proposed mining footprint extends into an area that has previously been disturb. The earmarked area falls within a ESA area and therefore requires an Ecological Impact Assessment which was undertaken by DPR Ecologist and Environmental Services dated November 2021 (attached as appendix H). It is proposed, by Greenmined, that should the Applicant implement the mitigation measures proposed in the EMPr the impact of the proposed activity on the riparian vegetation, groundcover and/or fauna is deemed to be of low significance.         </p> <p>           The fauna at the site will not be impacted by the proposed mining activity as they will be able to move away or through the site, without being harmed. Workers should be educated and managed to ensure that no fauna at the site is harmed. At this stage no resident protected or red data faunal species were identified within the earmarked footprint, and the project is expected to have a negligible impact in this regard as mining activities will be done by non-invasive activities.         </p> <p> <span style="color: green;">■</span> Aquatic Biodiversity Impact Assessment (ABIA) &amp; Hydrology Assessment (HA):         </p> <p>           The Vaal River forms the north-western boundary of the proposed mining area. Further to this, the earmarked footprint harbors some drainage lines with associated floodplains and potential wetlands of importance         </p> <p>           According to the Ecological and Wetland Assessment conducted by DPR Ecologist and Environmental Services dated November 2021 (attached as appendix H), mining in close proximity to the Vaal River or within the floodplain and riparian zone will still result in significant impacts. This is also applicable to the lateral drainage lines and small depressions or pans occurring in the study area. Mining operations in close proximity to any of these systems are anticipated to have a moderate risk and will likely still have significant impacts though unlikely to be permanent and will mostly influence sediment load and runoff values. Furthermore, through adequate mitigation these impacts can be minimised and provided adequate rehabilitation is undertaken no additional and other permanent modification to the functioning of these systems.         </p> <p>           The following should be avoided at all times:         </p> <ul style="list-style-type: none"> <li><span style="color: green;">■</span> The Vaal River, including the main channel and banks as well as the riparian zone or floodplain.</li> <li><span style="color: green;">■</span> All of the lateral drainage lines which flow into the Vaal River.</li> <li><span style="color: green;">■</span> The pan systems occurring on the site, including small and degraded pans.</li> </ul>			

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<p>The watercourses and wetlands should constantly be monitored for erosion, especially where mining has occurred in close proximity. Where erosion is evident this must be remedied.</p> <p>■ Noise Impact Assessment (NIA):</p> <p>The air and noise ambiance of the study area was historically representative of an agricultural environment in which farming equipment operates with occasional dust emissions from denuded areas. The agricultural use of the study area intensified over years, and current land uses include crop production supported by centre-pivot irrigation, orchards, dryland farming, game and livestock farming, diamond mining, and tourism, all of which contribute to the atmospheric quality and noise ambiance of the study area. A surfaced public road, turning from the R708, cross the proposed mining area, and will be used as main access road. This road follows the Vaal River in a south-western direction</p> <p>Emission into the atmosphere is controlled by the National Environmental Management: Air Quality Act, 2004. The proposed mining activity does not trigger an application in terms of the said act, and emissions to be generated is expected to mainly entail dust due to the displacement of soil, processing of ROM, and transport of material on gravel roads. Noise will be generated as a result of the processing activities, as well as loading, stockpiling and transporting of material. Therefore, the applicant must implement a dust management plan and conduct fall-out dust monitoring (if deemed necessary) on site to accurately determine the site specific dust levels. In addition, best practice measures shall be implemented in order to minimize potential noise impacts.</p> <p>■ Visual Impact Assessment</p> <p>The viewshed analysis showed that the area will be highly visible however the visual impact of the proposed mining operation will be of low significance. The small scale of the proposed operation, as well as the fact that the mining activities will resemble the existing prospecting activities will minimize the visual impact. Should the Applicant successfully rehabilitate the mining area (upon closure), no residual visual impact is expected upon closure of the mine.</p> <p>■ Radioactivity Impact Assessment</p> <p>A radioactivity impact assessment is not deemed necessary for the proposed mining operation that will not store any chemicals on site, perform activities of radioactive nature or generate hazardous waste of radioactive nature.</p> <p>■ Traffic Impact Assessment (TIA):</p>			



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<p>Presently it is proposed that access to the properties will be from the existing R708 and associated public roads branching from it. Within the mining boundary (major area), the Applicant will strive to make use of the existing farm roads as far as possible, however some new roads (internal), or upgrading of existing roads will be required. Haul roads will be extended between the excavations and processing area within each minor area, and will be rehabilitated as part of the reinstatement of the footprint area (minor area). Road and traffic related detail and mitigation measures will be discussed in the DEIAR to minimize the impact, but at this stage a TIA is not deemed necessary.</p> <p>■ Geotechnical Assessment:</p> <p>No reason for a geotechnical assessment could be identified as no permanent infrastructure will be established at the proposed mining area.</p> <p>■ Plant Species Assessment:</p> <p>According to the Ecological and Wetland Assessment conducted by DPR Ecologist and Environmental Services dated November 2021 (attached as appendix H) it is evident that the majority of the site has been transformed by agricultural and mining operations. This would therefore increase the conservation value of those portions of remaining natural vegetation, i.e. the less habitat remains, the rarer it will be, the higher the conservation value will become. However, when looking at available resources it is evident that the vegetation types on the site, Kimberley Thornveld and Highveld Alluvial Vegetation is not currently regarded as rare or endangered and still covers large areas of the region.</p> <p>The Free State Province Biodiversity Management Plan (2015) regards the site as being of Ecological Support Area (ESA) 1 and 2 as well as Degraded and Other categories and do not contain Critical Biodiversity Area (CBA) which would be of high conservation value. Despite this, natural areas do still contain some elements of conservation value such as a range of protected succulent and geophytic species and large and old specimens of the protected Vachellia erioloba (Camel Thorn).</p> <p>Given the fairly low conservation value of remaining natural areas on the site, this will decrease the impact that mining operations will have on the loss of habitat and species diversity. However, from previous mining operations it is also clear that mining operations cause significant impacts and result in the transformation of natural areas. By the nature of alluvial diamond mining, i.e. removal of the vegetation and modification of the soils profile, it results in the irreversible transformation of the ecosystem. However, given the fairly uniform soil conditions and habitats on the site and provided that comprehensive rehabilitation is undertaken, it may be possible to re-instate a somewhat similar vegetation composition after mining has ceased. This will also entail the re-instatement of the natural topography as far as possible as well as the correct management of topsoil. Mining also results in high levels of disturbance and consequently, the establishment of exotic weeds and invasive species and the eradication and monitoring of these should also form an important part of the management</p>			

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	<p>of mining and rehabilitation operations.</p> <p>Since it is clear that the impact of mining operations on natural areas will be high and will lead to irreversible transformation, mining should be confined to selected and limited areas and should not be implemented indiscriminately over the entire area. Furthermore, numerous protected plant species has been identified in remaining natural areas. These include the protected succulent and geophytic species, Boophone distichia, Orbea lutea subsp. lutea, Aloe grandidentata, Raphionacme hirsuta and Ammocharis coranica. It is recommended that walkthrough survey be conducted prior to mining and where mining will affect these species, the necessary permits should be obtained and a significant proportion of these transplanted to adjacent areas where they will remain unaffected. In addition, there is a high abundance of the protected Vachellia erioloba (Camel Thorn) in most of the remaining natural areas and these should be retained and excluded from mining as far as possible. Where any of these will require removal, the necessary permits should be obtained and replaced during the rehabilitation phase by means of saplings.</p> <p>Climate Impact Assessment (CIA):</p> <p>No reason for a climate impact assessment could be identified as the proposed project will not entail the mining of the entire footprint area, but only ±6 ha at any given time with progressive rehabilitation to be implemented. The small scale of the proposed activity does not warrant a CIA.</p> <p>Health Impact Assessment:</p> <p>The proposed operations will be managed in accordance with the Mine Health and Safety Act, 1996 (as amended) during the site establishment-, operational-, and decommissioning phases and no health impact assessment is deemed necessary during the EIA phase.</p> <p>Socio-economic Assessment (SEA):</p> <p>The proposed labour component of the operation is approximately 30 employees per minor area including management. This calculates to approximately 90 employees to be employed should three minor areas operate simultaneously. In terms of the Social and Labour Plan to be approved as part of the proposed mining right application, the Applicant has an obligation to contribute to Human Resource Development and Local Economic Development (LED). It is proposed that the 90 employees will support approximately 288 dependents, taking into account that each household contains an average of 3.2 persons. Due to the fact that most of the employees reside within the Tokologo Local Municipality, it is fair to presume that the</p>		

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<p>majority of monthly earned salaries will be spent in the local area. Indirectly, through the payment for services and suppliers the mine will also support employment of the procurement partners. In addition thereto, the operation will contribute to the local economy of the area through the implementation of a Local Economic Development project identified by and agreed with the Tokologo Local Municipality. As mentioned earlier, the Applicant entered into a surface use agreement with the property owners when the prospecting right (FS30/5/1/1/2/449PR) was issued. In terms of the said agreement, the Applicant must (amongst others) take the farming activities into account and prospecting operations is not allowed to affect the rights of the landowner to conduct its farming and business activities on the property. The Applicant also agreed to use the access roads as agreed with the landowner from time to time. The agreement furthermore restricts the prospecting/mining of any part of the property used for cultivation, by the irrigation pivots and/or orchards unless the landowner has granted written permission to the right holder. In light of this, and the positive impact that the proposed project will have on the socio-economic status of the surrounding area a SEA is not deemed necessary.</p>			

