

ENVIRONMENTAL BASIC ASSESSMENT PROCESS
FINAL BASIC ASSESSMENT REPORT

PROPOSED RUSTMO2 PV PLANT ON A
SITE NEAR BUFFELSPOORT

NORTH WEST PROVINCE

DEA Ref No: 12/12/20/2283

FINAL FOR DEA REVIEW
August 2011

Prepared for:

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environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

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File Reference Number:

Application Number:

Date Received:

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2010, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
3. Where applicable **tick** the boxes that are applicable in the report.
4. An incomplete report may be returned to the applicant for revision.
5. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
6. This report must be handed in at offices of the relevant competent authority as determined by each authority.
7. No faxed or e-mailed reports will be accepted.
8. The report must be compiled by an independent environmental assessment practitioner.
9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.

PROJECT DETAILS

DEA Reference No. : 12/12/20/2283

Title : Environmental Basic Assessment Process
Final Basic Assessment Report: Proposed RustMo2
PV Plant near Buffelspoort, North West Province

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Client : Momentous Energy

Report Status : Final Basic Assessment Report for DEA review

When used as a reference this report should be cited as: Savannah Environmental (2011) Final Basic Assessment Report: The proposed RustMo2 PV Plant near Buffelspoort, North West Province.

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SUMMARY AND OVERVIEW OF THE PROPOSED PROJECT

Momentous Energy, as a potential independent power producer, has identified a viable site for the proposed establishment of a photovoltaic (PV) solar plant in the North West Province of South Africa. The site is located very close to Marikana Platinum Mine, approximately 20 km south-east of Rustenburg and approximately 10 km north-west of Buffelspoort (Refer to Figure 1). The proposed project will be referred to as **RustMo2 PV Plant** and will have a maximum generating capacity of up to 10 MW which will be evacuated into the national electricity grid as part of a power purchase agreement with Eskom's Single Buyer Office, the South African National Treasury, and the Department of Energy. This proposed PV facility is proposed as the **second phase** of a broader development which also includes the project referred to as RustMo1, for which a separate Basic Assessment process has already been undertaken.

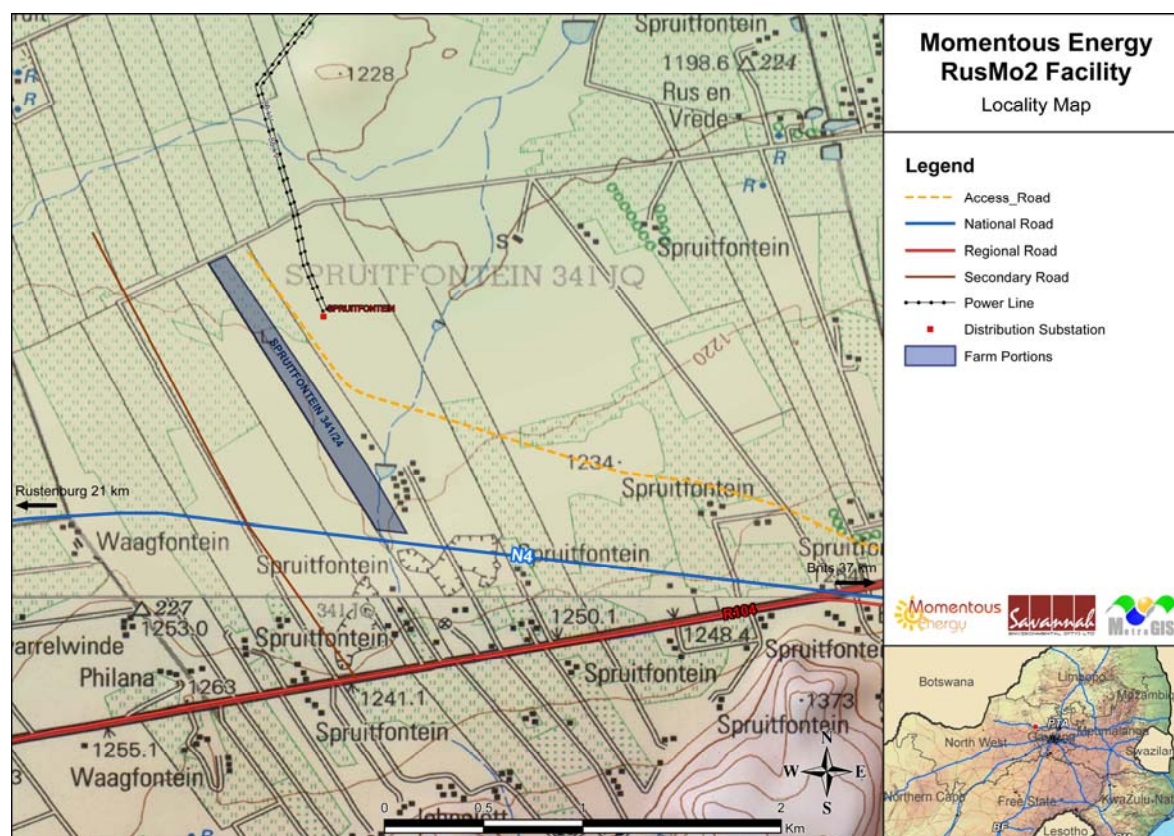


Figure 1: Locality Map

Cables to evacuate the electricity from the facility are proposed to run under the ground of the first phase development (RustMo1) and connect to Eskom's substation via an overhead chickadee line that runs over the road to the substation. Access to the site already exists via an unnamed tar road to the east of the site. However, a 5m wide tarred road from the site entrance to the operations centre is also proposed. In addition,

internal gravel access roads (3 to 5 metres wide) will be constructed around the site for maintenance purposes.

The study area is vacant and most of it has been cultivated in the past. Areas of surface water that could potentially be affected by the proposed development include a non-perennial tributary of the Brakspruit in the southern part of the site. Visual observations indicated that the status of the stream is relatively degraded as a result of some erosion within the study area, which resulted in extensive widening of the flow regime of the stream. No major dams are situated within the immediate vicinity of the study area.

In terms of the Environmental Impact Assessment (EIA) Regulations published in terms of Section 24(5) of the National Environmental Management Act (NEMA, Act No. 107 of 1998), authorisation is required from the National Department of Environmental Affairs (DEA) (in consultation with the North West Department of Economic Development Environment and Tourism), for the establishment of the proposed installation. In terms of sections 24 and 24D of NEMA, as read with the EIA Regulations of GNR543; GNR544; GNR545; and GNR546, a Basic Assessment process is required to be undertaken for the construction of the proposed facility. This project has been registered with National DEA under reference number **12/12/20/2283**. The following listed activities are applicable:

Notice Number	Activity	Description	Relevance of Regulation to Project
544, 18 June 2010	1(ii)	<i>The construction of facilities or infrastructure for the generation of electricity where: ii. The output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare.</i>	<i>Construction of a Photovoltaic Solar Energy Facility with a maximum generating capacity of 10MW in an area covering approximately 18 ha. Inverters, Step-Up transformers, reticulation cables, medium voltage connection and protection equipment and mounting structures are ancillary infrastructure for this facility.</i>
544, 18 June 2010	10(i)	<i>The construction of facilities or infrastructure for the transmission and distribution of electricity: i. Outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts;</i>	<i>Construction of a short power line with associated infrastructure for the transmission of electricity outside urban areas or industrial complexes with a capacity of 88 kilovolts.</i>
544, 18 June 2010	11(xi)	<i>The construction of: xi. Infrastructure or structures covering 50 square metres or more. Where such construction occurs within a watercourse or within 32</i>	<i>Potential impacts on watercourses.</i>

Notice Number	Activity	Description	Relevance of Regulation to Project
		<i>metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</i>	
544, 18 June 2010	23	<i>The transformation of undeveloped, vacant or derelict land to: i. Residential, retails, commercial, recreational, industrial, or institutional use, outside an urban area, and where the total area to be transformed is bigger than 1 hectare but less than 20 hectares.</i>	<i>Transformation of approximately 18 hectares of derelict land (previously cultivated but has been abandoned for over 10 years) to a solar energy facility.</i>

Savannah Environmental has been appointed as the independent environmental consultant, to undertake an Environmental Basic Assessment to identify and assess the potential environmental impacts associated with the proposed project. As part of these environmental studies, potential impacts have been assessed through detailed specialist studies, and interested and affected parties (I&APs) have been actively involved through a public involvement process.

1.1 The Environmental Assessment Practitioners

Savannah Environmental was contracted by Momentous Energy as the independent environmental consultant to undertake the Environmental Basic Assessment process for the proposed project. Neither Savannah Environmental nor any of its specialist sub-consultants on this project are subsidiaries of or are affiliated to Momentous Energy. Furthermore, Savannah Environmental does not have any interests in secondary developments that may arise out of the authorisation of the proposed project.

Savannah Environmental is a specialist environmental consulting company providing holistic environmental management services, including environmental impact assessments and planning to ensure compliance and evaluate the risk of development; and the development and implementation of environmental management tools. Savannah Environmental benefits from the pooled resources, diverse skills and experience in the environmental field held by its team.

The Savannah Environmental team have considerable experience in environmental impact assessments and environmental management, and have been actively involved in undertaking environmental studies, for a wide variety of projects throughout South Africa, including those associated with electricity generation.

The EAP's from Savannah Environmental who are responsible for this project are:

- » Jo-Anne Thomas - a registered Professional Natural Scientist and holds a Master of Science degree. She has 13 years of experience consulting in the environmental field. Her key focus is on strategic environmental assessment and advice; management and co-ordination of environmental projects, which includes integration of environmental studies and environmental processes into larger engineering-based projects and ensuring compliance to legislation and guidelines; compliance reporting; the identification of environmental management solutions and mitigation/risk minimising measures; and strategy and guideline development. She is currently responsible for the project management of EIAs for several renewable energy projects across the country.

- » Bongani Darryl Khupe – the principle author of this report is a registered Certificated Natural Scientist who holds a Bachelor of Science Honours degree and has more than 5 years' experience in the environmental field. His key focus is on environmental impact assessments, environmental permitting, public participation, environmental management plans and programmes, strategic environmental advice, rehabilitation advice and monitoring, environmental compliance advice & monitoring as well as providing technical input for projects in the environmental management field. He is currently the responsible EAP for several renewable energy projects and other EIAs across the country.

In order to adequately identify and assess potential environmental impacts associated with the proposed project, Savannah Environmental has appointed the following specialist sub-consultants to conduct specialist impact assessments:

- » Ecology – Bathusi Environmental Consulting
- » Soil and Agricultural Potential – Terrasoil Science
- » Heritage resources – Johnny van Schalkwyk
- » Palaeontology – Bruce Rubidge

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?

<input type="checkbox"/>	NO ✓
--------------------------	----------------

If YES, please complete the form entitled "Details of specialist and declaration of interest for appointment of a specialist for each specialist thus appointed:

Any specialist reports must be contained in Appendix D.

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail¹:

Momentous Energy is proposing the establishment of a photovoltaic plant for the purpose of electricity generation on a site located near Buffelspoort in the North West Province. The solar PV facility is proposed on the remaining extent of portion 24 of the farm Spruitfontein 341 which is situated next to Marikana Platinum Mine (refer to the locality map in Appendix A). The study area is considered to be highly desirable from a technical perspective for the establishment of a solar facility based on several key factors such as the solar resource, climatic conditions, extent of the site, orographic conditions, availability of land and proximity to an electricity evacuation point. Eskom's Spruitfontein substation is situated adjacent to the site (approximately 300 m to the east). The proposed facility is planned to be the **second phase** of RustMo1 PV Plant (adjacent proposed facility, DEA reference No. 12/12/20/2145). Electricity will be evacuated from the site by a cable that will run under the ground of RustMo1 in a space allocated thereof for such a purpose, and then will run overhead across the road and connect to Spruitfontein substation.

The solar energy facility is proposed to accommodate an array of photovoltaic (PV) panels with a generating capacity of up to **10 MW**. A broader study area of approximately 18 ha is being considered within which the facility is to be constructed, although the actual development footprint of the proposed facility would be smaller in extent. Therefore, the PV panels and the associated infrastructure can be appropriately placed within the boundaries of the broader site to avoid any identified environmental sensitivities.

The PV facility will be comprised of the following:

- » **Photovoltaic solar panels with a generating capacity of up to 10 MW:** Which are composed of photovoltaic cells that are made of silicone which acts as a semiconductor used to produce electricity through the photovoltaic effect. Individual photovoltaic cells are linked and placed behind a protective glass sheet to form a photovoltaic panel; several rows of which are established in order to generate the required amount of electricity.
- » **Inverters:** Which are required to convert the electricity from direct current to alternating current which can be evacuated into the National Eskom grid.

¹ Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description.

- » **Support structures:** Which are required to mount the photovoltaic panels so as to receive the maximum amount of solar radiation without the buffeting effects of the wind. The angle of the panels will be tilted at 25° to 30° from the horizontal plane, facing north and may be adjusted to optimise for summer or winter solar radiation characteristics and for daily movement of the sun east to west.
- » **Cabling:** between the project components, to be laid underground where practical. Cables to evacuate the electricity from the facility are proposed to run under the ground of the first phase development and connect to Eskom's substation via a new proposed overhead chickadee line to run over the road to the substation
- » **Onsite Substation:** Step Up Transformers, Circuit Breakers, Switching Station and protective devices will be built above the ground to form a mini sub-station to cover a footprint of approximately 25m x 35m.
- » **Internal access roads:** A 5m wide tarred road from the site entrance to the operations centre is also proposed. In addition, internal gravel access roads (3 to 5 metres wide) will be constructed around the site for maintenance purposes
- » **Standalone water taps:** Water is to be sourced from an onsite borehole and linked to taps around the site by a distribution pipeline of up to 0.1 m (100 mm) in diameter.
- » **Operations centre and security offices:** An operations centre to utilise the existing damaged building on site that has been deemed not to be of heritage significance. The building with a footprint of 16m x 11m will be upgraded. Three security offices constructed in wood and built on a concrete plinth 3m X 3m are also proposed.



Figure 2: View of photovoltaic panels from ground level (please note this is an example just to give a visual perspective of PV panels at this level and not necessarily identical to what Momentous Energy is proposing)

The construction phase of the proposed facility would entail the erection of solar panels, where the support structure will be buried into the ground. The usual method of fixing these panels is

through galvanised steel square tubing (approximately 50 mm), rammed into the ground to a depth of approximately 1600 to 2000mm. This upright pole will protrude approximately 1000 mm above the ground, to which the PV panel frames will be affixed. The frames will carry one or more PV panel/s. The highest point of the PV panels once mounted will be approximately 1.5 m to 1.8m from ground level facing the north (towards the Marikana Platinum Mine spoil dam). In addition, a perimeter fence of approximately 3 meters in height will be constructed and surveillance cameras that will be used to monitor the site will be mounted along the perimeter fence at strategic locations at a height of approximately 2.5 meters.

Site preparation activities will include clearance of vegetation at the footprint of certain components (i.e. invertors and transformer position) and the establishment of the internal access roads. The PV panels will be sited a certain distance away from each other (to avoid shading). The vegetation between the panels will not be cleared and will be mechanically maintained. Clearing activities, where required, will involve the stripping of topsoil which will need to be stockpiled and/or spread on site.



Figure 3: Photo showing an example of a PV facility and associated infrastructure.

Access to the site already exists via an unnamed tar road to the east of the site. However, a 5m wide tarred road will be required from the site entrance to the operations centre. In addition, internal gravel access roads (3 to 5 metres wide) will also be constructed on the site for maintenance purposes. It is proposed that concrete foundations will be used at the base of invertors and transformers. However, use of concrete will be minimised as far as possible.

The photovoltaic panels are designed to operate continuously, unattended and with low maintenance for approximately 25 years. A facility consisting of several PV arrays with a generating capacity of 10 MW could take approximately 6 to 8 months to construct and commission, and would require the expertise of skilled, semi-skilled and low skilled staff.

2. FEASIBLE AND REASONABLE ALTERNATIVES

“Alternatives,” in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to -

- (a) The property on which or location where it is proposed to undertake the activity;
- (b) The type of activity to be undertaken;
- (c) The design or layout of the activity;
- (d) The technology to be used in the activity;
- (e) The operational aspects of the activity; and
- (f) The option of not implementing the activity.

Describe alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes etc.) or both are appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Paragraphs 3 – 13 below should be completed for each alternative.

The following describes the potential alternatives identified as well as reasons why some were not assessed.

a) The property on which or location where it is proposed to undertake the activity:

No site alternatives were proposed for this project as the placement of a solar facility is strongly dependent on several factors including climatic conditions, relief and orography, grid connection, the extent of the site, as well as availability of the site. This site has been identified by Momentous Energy as being highly desirable from a technical perspective for the establishment of a photovoltaic plant as per the following technical, logistical and environmental reasons:

- » *Climatic conditions:* The economic viability of a photovoltaic plant is directly dependent on the annual direct solar irradiation values. A study of available radiation data shows that the proposed site is uniformly irradiated by the sun. In addition, compared to other areas in the country with similar irradiation, the site experiences moderate temperatures which are suitable for PV technology.
- » *Topography:* A level surface area is preferred for the installation of PV panels. This reduces the need for extensive earthworks associated with the levelling of a site, thereby minimising environmental impacts. The topography of the area proposed for the PV facility is relatively flat.

- » *Power transmission considerations:* The proposed facility is to be the second phase of RustMo1 (adjacent proposed facility, DEA reference No. 12/12/20/2145). The main supply line will run under the ground through RustMo1 site directly towards the substation for which space has been set aside in RustMo1. From here an overhead chickadee line will be erected to take the power across the road to the substation. The entire overhead line will be approximately 200m in length.
- » *Environmentally suitable:* The site was previously used for agricultural purposes and is generally degraded. The degraded nature of much of the site is indicated by the presence of numerous weeds and alien invasive species. Therefore, from an ecological perspective, the establishment of a solar facility especially of the transformed sections of the site is preferable.
- » *Land availability and accessibility:* Due to the poor quality of the land and the proximity to the Marikana Platinum mine, the land has not been used for agricultural or any other purposes for over 10 years and has therefore been made available by the landowner for the proposed development. The site is also directly adjacent to the proposed first phase of the project making it easy to link the two facilities with minimum environmental impacts. The site is also easily accessible by an unnamed tarred road to the east of the site. An access gate to the site is currently located along this road. The site is therefore appropriately located for easy transport of components and equipment as well as labour movement to and from the site.
- » *Demand:* The proposed site is close to mining activities that have a high demand for electricity and exert a lot of pressure on the electricity grid in this area. Momentous Energy have engaged with Marikana Platinum Mine, which is located adjacent to the site, who have confirmed that their power supply is erratic and that they are running at < 90% capacity due to the supply issues. Therefore, the evacuation of additional electricity into the Eskom National grid will serve to both strengthen the local grid itself and assist in the small scale alleviation of pressure on the electricity grid. PV panels provide reliable and uninterrupted power during daylight hours.

In addition, the project is proposed as the **second phase** of a broader development which also includes the project referred to as RustMo1 PV Plant, for which a separate Basic Assessment process has already been undertaken. As this project is proposed to utilise some of the same ancillary infrastructure as RustMo1 PV Plant, it is required to be located in close proximity to the RustMo1 site.

b) The type of activity to be undertaken

No activity alternatives were assessed because the site has been identified by Momentous Energy as being highly desirable for the establishment of a photovoltaic plant and not any other development or renewable technologies such as wind or concentrated solar power (CSP). Wind energy installations were not considered as a feasible and reasonable alternative as the proposed developmental area does not have the required wind resource.

In addition, CSP installations were not considered as a feasible and reasonable alternative as they require a large amount of water unlike PV where water is only required for cleaning purposes. Furthermore, CSP installations require very large amounts of land. For instance, the

minimum size of plant for a traditional CSP generation system for it to be economically feasible is 50MW to 75MW. Thus CSP is well suited to very large scale generation sites that both take time to build and have a higher risk profile than a similarly related PV site. Therefore, a PV facility is considered by Momentous Energy to be the only feasible activity for the proposed site.

c) The design or layout of the activity

Design and Layout alternatives were not assessed during the compilation of the DBAR. However, due to findings of the DBAR and environmental sensitivities identified, the initial layout was revised as per recommendations made by the specialist studies. The revised layout (see appendix C2) is therefore the recommended site layout alternative. The revised layout does not require further assessment as it is a response to mitigation measures proposed in the Basic Assessment report and effectively reduces the environmental impacts identified to acceptable levels.

No power line layout alternatives were assessed as the proposed route of the power line is only approximately 200 m in length and the underground portion of the powerline will run across the first phase of the broader development of which a separate Basic Assessment was conducted. In addition, the proposed power line has no identified environmental impacts and is also technically viable. No feasible and reasonable alternatives were therefore identified for assessment.

d) The technology to be used in the activity

Very few technological options exist in as far as PV technologies are concerned; those that are available are usually differentiated by weather and temperature conditions that prevail – so that optimality is obtained by the final choice. The impacts of any of the PV technology choices are the same. Therefore, the choice of technology does not affect the environmental impact of the proposed development. The construction, operation and decommissioning of the facility will also be the same irrespective of the technology chosen. Therefore, no alternatives were assessed in this regard.

e) The operational aspects of the activity

No operational alternatives were assessed as no feasible and reasonable operational alternatives were identified.

f) The option of not implementing the activity.

This option is assessed as the “no go alternative” in this Basic Assessment Report.

3. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

List alternative sites, if applicable.

	Latitude (S):		Longitude (E):
Alternative:			
Alternative S1 ² (preferred or only site alternative)	25°	44.207'	27°
Alternative S2 (if any)	°	'	°
Alternative S3 (if any)	°	'	°

In the case of linear activities:

Alternative:	Latitude (S):		Longitude (E):
Alternative S1 (preferred or only route alternative)			
<ul style="list-style-type: none"> • Starting point of the activity • Middle/Additional point of the activity • End point of the activity 			

Alternative S2 (if any)			
<ul style="list-style-type: none"> • Starting point of the activity • Middle/Additional point of the activity • End point of the activity 			

Alternative S3 (if any)			
<ul style="list-style-type: none"> • Starting point of the activity • Middle/Additional point of the activity • End point of the activity 			

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250m along the route for each alternative alignment.

² "Alternative S." refers to site alternatives.

4. PHYSICAL SIZE OF THE ACTIVITY

Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative:

Alternative A1³ (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

Size of the activity:

137 794m²
m ²
m ²

Or, for linear activities:

Alternative:

Alternative A1 (preferred)

Alternative A2 (if any)

Alternative A3 (if any)

m
m
m

Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Alternative:

Alternative A1

Alternative A2 (if any)

Alternative A3 (if any)

Size of the site/servitude:

m ²
m ²
m ²

5. SITE ACCESS

Does ready access to the site exist?

If NO, what is the distance over which a new access road will be built

YES ✓	

Describe the type of access road planned:

There is an unnamed tarred road to the east of the site on which an access gate to the RustMo1 site is proposed; access to RustMo2 will occur through a **corridor** in RustMo1 site (see appendix A for site map attached and Appendix C2 for the layout map). A 5m wide tarred road is proposed along this corridor to the operations centre in RustMo2.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

³ "Alternative A." refers to activity, process, technology or other alternatives.

6. SITE OR ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- 6.1 The scale of the plan which must be at least a scale of 1:500;
- 6.2 The property boundaries and numbers of all the properties within 50 metres of the site;
- 6.3 The current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- 6.4 The exact position of each element of the application as well as any other structures on the site;
- 6.5 The position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
- 6.6 All trees and shrubs taller than 1.8 metres;
- 6.7 Walls and fencing including details of the height and construction material;
- 6.8 Servitudes indicating the purpose of the servitude;
- 6.9 Sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
 - Rivers;
 - The 1:100 year flood line (where available or where it is required by DWA);
 - Ridges;
 - Cultural and historical features;
 - Areas with indigenous vegetation (even if it is degraded or invested with alien species);
- 6.10 For gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
- 6.11 The positions from where photographs of the site were taken.

A detailed site plan has been included and attached as **Appendix A**.

7. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this form. It must be supplemented with additional photographs of relevant features on the site, if applicable.

Colour photographs taken on site together with a description of each photograph are attached within **Appendix B**.

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

The facility illustration is attached within **Appendix C**. Appendix C1 is the original facility illustration as proposed during the draft Basic Assessment Report and Appendix C2 is the revised facility illustration that takes into account recommendations and comments made during the review period of the Draft Basic Assessment Report.

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	Approximately R340 million
What is the expected yearly income that will be generated by or as a result of the activity?	± R64 million <u>Assumptions:</u> 18 274 000KWh annual output at tariff of R3.50 per KWh
Will the activity contribute to service infrastructure?	YES ✓
Is the activity a public amenity?	NO ✓
How many new employment opportunities will be created in the development phase of the activity?	± 100
What is the expected value of the employment opportunities during the development phase?	± R4.5m
What percentage of this will accrue to previously disadvantaged individuals?	± 77%
How many permanent new employment opportunities will be created during the operational phase of the activity?	± 20
What is the expected current value of the employment opportunities during the first 10 years?	± R43m
What percentage of this will accrue to previously disadvantaged individuals?	± 85%

9(b) Need and desirability of the activity

Motivate and explain the need and desirability of the activity (including demand for the activity):

NEED:			
1.	Was the relevant provincial planning department involved in the application?	YES ✓	
2.	Does the proposed land use fall within the relevant provincial planning framework?	YES ✓	
3.	If the answer to questions 1 and / or 2 was NO, please provide further motivation / explanation:		

DESIRABILITY:			
1.	Does the proposed land use / development fit the surrounding area?	YES ✓	
2.	Does the proposed land use / development conform to the relevant structure plans, SDF, and planning visions for the area?	YES ✓	
3.	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	YES ✓	
4.	If the answer to any of the questions 1 - 3 was NO, please provide further motivation / explanation:		
5.	Will the proposed land use / development impact on the sense of place?		NO ✓
6.	Will the proposed land use / development set a precedent?		NO ✓
7.	Will any person's rights be affected by the proposed land use / development?		NO ✓
8.	Will the proposed land use / development compromise the "urban edge"?		NO ✓
9.	If the answer to any of the question 5 - 8 was YES, please provide further motivation / explanation.		

BENEFITS:			
1.	Will the land use / development have any benefits for society in general?	YES ✓	
2.	Explain: The evacuation of additional electricity into the Eskom National grid will serve to both strengthen the grid itself and assist in the small scale alleviation of pressure of electricity generation from coal fired power stations, and will contribute to the National Government target for renewable energy. Due to the small scale nature of the project, the significance of this positive impact is low. However, with the cumulative effect of numerous proposed renewable energy facilities in the area and across the country the long term impact may prove significant.		
3.	Will the land use / development have any benefits for the local communities where it will be located?	YES ✓	
4.	Explain:		

	<p>Local communities surrounding the development site may benefit from limited job opportunities, primarily low to semi- skilled positions, during the construction phase.</p> <p>In addition, the Independent Power Producers (IPP) Renewables Procurement Programme requires that every project must have a proportion of participation / ownership by local communities (i.e. South Africans of historically disadvantaged demographic groups). Momentous Energy is therefore in the process of setting up a Community Trust consisting of representatives from the two nearest villages to the site, viz Lapologang and Tsakane. It is currently proposed that the Trust will own about 20% of the project. The dividends from the project are to be used by the Community Trust to improve the socio-economic conditions of the two villages and surrounding areas.</p>
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10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline:	Administering authority:	Date:
National Environmental Management Act (Act No 107 of 1998)	National and Provincial Department of Environmental Affairs	1998
Environment Conservation Act (Act No. 73 of 1989)	» North West Department of Economic Development, Environment, Conservation and Tourism Conservation » Local Authorities	1989
National Water Act (Act No 36 of 1998)	Department of Water Affairs	1998
Conservation of Agricultural Resources Act (Act No 43 of 1983)	Department of Agriculture	1983
National Environmental Management: Waste Act (Act No 59 of 2008)	Department of Environmental Affairs	2008
National Heritage Resources Act (Act No 25 of 1999)	South African Heritage Resources Agency	1999
National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	National Department of Environmental Affairs	2004
National Forests Act (Act No. 84 of 1998)	National Department of Forestry	1998
Promotion of Access to Information Act (Act No 2 of 2000)	National Department of Environmental Affairs	2000

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

If yes, what estimated quantity will be produced per month?

YES ✓	
± 4m ³ of solid construction waste consisting mainly of vegetation, spoil material from clearing activities and metal and cabling off cuts.	

How will the construction solid waste be disposed of (describe)?

It is anticipated that construction waste will be comprised mainly of vegetation, spoil material from cleaning activities as well as metal and cabling offcuts. It is proposed that wood from vegetation waste will be donated to the local community for use as firewood while the metals and cabling waste will be recycled at Brits Recycling in Hartebeespoort. Non-recyclable waste will be trucked to Marikana Waste Transfer station or the Townlands Landfill site in Rustenburg.

Where will the construction solid waste be disposed of (describe)?

In order to comply with legal requirements should there be excess solid construction waste after recycling options have been exhausted, the waste will be trucked to Marikana Waste Transfer station or the Townlands Landfill site in Rustenburg.

Will the activity produce solid waste during its operational phase?

	NO ✓
m ³	

If yes, what estimated quantity will be produced per month?

How will the solid waste be disposed of (describe)?

--

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

--

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?

	NO ✓
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If yes, inform the competent authority and request a change to an application for scoping and EIA.

Is the activity that is being applied for a solid waste handling or treatment facility?

	NO ✓
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If yes, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

11(b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

	NO ✓
--	----------------

If yes, what estimated quantity will be produced per month?

m ³	
----------------	--

Will the activity produce any effluent that will be treated and/or disposed of on site?

	NO ✓
--	----------------

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?

	NO ✓
--	----------------

If yes, provide the particulars of the facility:

Facility name:

--

Contact person:

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Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

The PV panels will need to be cleaned on a regular basis, as dust accumulation reduces their efficiency. Approximately 5 KL of water proposed to be sourced from the existing onsite borehole will be used per month. This water will not accumulate any chemicals or hazardous materials and therefore is not regarded as waste water. The water from the panel cleaning process will be allowed to percolate as normal.

11(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

	NO ✓
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If yes, is it controlled by any legislation of any sphere of government?

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the emissions in terms of type and concentration:

PV installations convert solar energy into electricity, and consume no fuel during operation. PV installations produce an insignificant quantity of greenhouse gases over their lifecycle when compared to conventional coal-fired power stations. The operational phase of a solar facility produces little to zero carbon dioxide, sulphur dioxide, mercury, particulates, or any other type of air pollution.

11(d) Generation of noise

Will the activity generate noise?

	NO ✓
--	----------------

If yes, is it controlled by any legislation of any sphere of government?

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the noise in terms of type and level:

Limited noise will be generated during the construction phase. However, this will be insignificant in light of the types of noise already generated by the adjacent mining area. The operation phase will not generate any noise.

12. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(s)

Municipal	Water board	Groundwater ✓	River, stream, dam or lake	Other	The activity will not use water
Water required to clean the panels is proposed to be sourced from an existing onsite borehole.					

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

Does the activity require a water use permit from the Department of Water Affairs?

	YES
✓	

If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted.

Momentous energy is in the process of acquiring the relevant permits.

13. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

The activity will use very little of the energy it produces and is in itself an activity that is proposed to generate electricity from a cleaner alternative energy source (i.e. solar radiation).

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

The purpose of a PV installation is to utilise an alternative energy source (i.e. solar radiation) for the production of electricity. Therefore it is not required to consider any additional alternative energy sources.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section C and indicate the area, which is covered by each copy No. on the Site Plan.

Section Copy No. (e.g. A):

1. Paragraphs 1 - 6 below must be completed for each alternative.

2. Has a specialist been consulted to assist with the completion of this section?

	NO ✓
--	----------------

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed:

All specialist reports must be contained in **Appendix D**.

Property description/physical address:

The remaining extent of portion 24 of the farm Spruitfontein 341, which is situated near the Marikana Platinum Mine, North West Province
--

(Farm name, portion etc.) Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application.

--

In instances where there is more than one town or district involved, please attach a list of towns or districts to this application.

Current land-use zoning:

Agricultural

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use or a consent use application required?

YES ✓	
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Must a building plan be submitted to the local authority?

YES ✓	
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Locality map: An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.) The map must indicate the following:

- An indication of the project site position as well as the positions of the alternative sites, if any;
- Road access from all major roads in the area;
- Road names or numbers of all major roads as well as the roads that provide access to the site(s);
- All roads within a 1km radius of the site or alternative sites; and
- A north arrow;
- A legend; and
- Locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

The following plans have been included and attached as **Appendix A**

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat ✓	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S2 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S3 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

- 2.1 Ridgeline
- 2.2 Plateau
- 2.3 Side slope of hill/mountain
- 2.4 Closed valley
- 2.5 Open valley
- 2.6 Plain**
- 2.7 Undulating plain / low hills
- 2.8 Dune
- 2.9 Seafront

No significant slopes are present within the study area, but ridges and hills are present to the north and south of the study area. These areas will not be affected by the proposed development.

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following (tick the appropriate boxes)?

	Alternative S1:	Alternative S2 (if any):	Alternative S3 (if any):
Shallow water table (less than 1.5m deep).	NO ✓	YES NO	YES NO
Dolomite, sinkhole, or doline areas.	NO ✓	YES NO	YES NO
Seasonally wet soils (often close to water bodies).	YES ✓	YES NO	YES NO
Unstable rocky slopes or steep slopes with loose soil.	NO ✓	YES NO	YES NO
Dispersive soils (soils that dissolve in water).	NO ✓	YES NO	YES NO
Soils with high clay content (clay fraction more than 40%).	YES ✓	YES NO	YES NO
Any other unstable soil or geological feature.	NO ✓	YES NO	YES NO
An area sensitive to erosion.	YES ✓	YES NO	YES NO

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. (Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted).

The study area lies in the Bc and Ib land types (Land Type Survey Staff, 1972 – 2006). During the specialist soils survey, the following soil forms were identified on the site:

- » Soils of the Arcadia form were encountered in the transition zone between the water course and the arable land. These soils range in depth from a few centimetres to 1200 mm.
- » Soils of the Tukulu soil form were found to be shallow in many cases due to rockiness which impeded augering. Soils of 1200 mm and deeper were encountered, especially in the north and eastern sections of the area.
- » Shallow soils of the Glenrosa and Mispah soil form dominated the southern section of the site.

The site is dominated by shallow, rocky soils and rock outcrops and can therefore not be deemed of high agricultural potential. The soils of the Glenrosa and Mispah soil forms serve as evidence. The site, furthermore, comprises an area of approximately 18 ha and is surrounded by mining and related infrastructure. Intensive agriculture, such as citrus production, may be viable on an area of this size if the soils are deep and of high agricultural potential. This is not the case for the site. The area can be deemed of low agricultural potential (Refer to the soil and agricultural potential report in **Appendix D**).

4. GROUNDCOVER

Indicate the types of groundcover present on the site:

The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Natural veld - good condition ^E	Natural veld with scattered aliens ^E	Natural veld with heavy alien infestation ^E ✓	Veld dominated by alien species ^E	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure ✓	Bare soil

If any of the boxes marked with an "E" is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn't have the necessary expertise.

The study area is situated within the Savannah Biome, specifically within the Marikana Thornveld and Moot Plains Bushveld vegetation types. Agriculture and mining activities have resulted in the large scale transformation, degradation, and fragmentation of the natural environment in the broader area. Areas of remaining natural habitat are therefore regarded important on a local and regional scale. Some natural woodland habitat remains in the region, particularly to the south of the proposed area.

Despite extensive degradation and transformation, the diversity of this site is regarded as diverse, reflecting in the species richness of the regional vegetation types (i.e. the site investigation revealed the presence of approximately 91 plant species). Woody species comprise a relative large proportion of diversity and their dominance in certain areas, particularly in wetter

and untransformed parts of the study area, is noted. Grasses, forbs and trees comprise a high percentage of the species diversity. The degraded nature of much of the site is indicated by the presence of alien invasive species. It is estimated that approximately 31.9% of the species comprise plants of an undesirable nature. The effect of these species is enhanced by their dominance in certain parts. It is regarded highly unlikely that any Red Data flora species would occur on this site as available habitat does not correspond to the habitat required by any of these species. However, A single individual of the protected tree species (*Sclerocarya birrea* subsp. *birrea*, Marula) is present on the site. It is situated in the immediate vicinity of an old homestead and is assumed to have been planted by early inhabitants of the property.

Results of the site investigations revealed the presence of the following habitat types (with estimated floristic sensitivities):

- » Agricultural Fields (Low floristic sensitivity);
- » Drainage Line/ Eroded Woodland (Medium-high floristic sensitivity);
- » Grassland Seepage (Medium-high floristic sensitivity);
- » Homestead (Medium-low floristic sensitivity);
- » Natural Woodland/ Savanna (Medium-high floristic sensitivity); and
- » Reverted Woodland (Medium-low floristic sensitivity).

Refer to **Appendix D** for the Strategic Biodiversity Basic Assessment Report.

5. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that does currently occur within a 500 m radius of the site and give description of how this influences the application or may be impacted upon by the application:

5.1 Natural area

5.2 Low density residential

5.3 Medium density residential

5.4 High density residential

5.5 Informal residential ^A

5.6 Retail commercial and warehousing

5.7 Light industrial

5.8 Medium industrial ^{AN}

5.9 Heavy industrial ^{AN}

5.10 Power station

5.11 Office/consulting room

5.12 Military or police base/station/compound

5.13 Spoil heap or slimes dam ^A

5.14 Quarry, sand, or borrow pit

5.15 Dam or reservoir

5.16 Hospital/medical centre

5.17 School

5.18 Tertiary education facility

5.19 Church

5.20 Old age home

- 5.21 Sewage treatment plant ^A
- 5.22 Train station or shunting yard ^N
- 5.23 Railway line ^N
- 5.24 Major road (4 lanes or more) ^N**
- 5.25 Airport ^N
- 5.26 Harbour
- 5.27 Sport facilities
- 5.28 Golf course
- 5.29 Polo fields
- 5.30 Filling station ^H
- 5.31 Landfill or waste treatment site
- 5.32 Plantation
- 5.33 Agriculture**
- 5.34 River, stream or wetland**
- 5.35 Nature conservation area
- 5.36 Mountain, koppie or ridge
- 5.37 Museum
- 5.38 Historical building
- 5.39 Protected Area
- 5.40 Graveyard
- 5.41 Archaeological site
- 5.42 Other land uses (describe)

If any of the boxes marked with an "^N" are ticked, how will this impact / be impacted upon by the proposed activity?

A limited amount of noise will be generated during the construction phase of the facility due to movement of heavy machinery on site. However, the amount of noise generated will be insignificant considering the surrounding land uses (i.e. mines and major roads).

The Marikana Platinum Mine and associated infrastructure which are the nearest noise receptors already produce significant amount of noise which will mask whatever construction noises would be produced by the proposed facility.

If any of the boxes marked with an "^A" are ticked, how will this impact / be impacted upon by the proposed activity?

If YES, specify and explain:

If YES, specify:

A mine (to the east) and associated spoil heaps (to the north) border the proposed site. The development will not have an impact on these activities. However, depending on the prevailing wind direction any dust produced by the mine or emanating from the spoil heaps could have a negative impact on the efficiency of the PV panels. The developer will therefore need to clean the panels on a regular basis.

If any of the boxes marked with an "^H" are ticked, how will this impact / be impacted upon by the proposed activity?

If YES, specify and explain:

If YES, specify:

6. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including

	NO ✓
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Archaeological or palaeontological sites, on or close (within 20m) to the site?

	NO ✓
--	-------------

If YES, explain:

See below. A Heritage Impact Assessment was conducted, the results of which are elaborated on below

If uncertain, conduct a specialist investigation by a recognised specialist in the field to establish whether there is such a feature(s) present on or close to the site.

Briefly explain the findings of the specialist:

» No sites, features or objects of cultural heritage significance were identified in the study area.
 » An abandoned farming related structure, probably a house, occurs on the site. It can possibly be linked to structures that occur to the south east and that were identified in a previous study on the adjacent property. It is in a bad state of repair and all the fitting and the roofs have been removed. From the material used and the current state of the structures, they are judged not to be very old and are therefore viewed to have a low significance (Refer to Heritage Impact Assessment report attached in **Appendix D**).

Will any building or structure older than 60 years be affected in any way?

	NO ✓
--	-------------

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

	NO ✓
--	-------------

If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT

Notices advertising the proposed project were placed / distributed as follows on the 26th of May 2011 (refer to Appendix E):

- » A2 site notices were placed on the entrance to the proposed development site as well as on the boundary of the site in front of the entrance to the Marikana platinum Mine.
- » An A2 notice was placed on the entrance to the proposed development site as well as placed in front of the site opposite the Marikana Platinum Mine entrance.
- » A4 notices were placed at the entrance to the Marikana Platinum Mine and on the Buffelspoort information board.
- » Stakeholder letters were distributed to the database of registered parties. This included relevant officials from the National and Provincial Authorities, the local and district municipalities, key stakeholders and organs of state relevant to the proposed project. An initial stakeholder letter was sent to notify I&APs of the proposed project (23 June 2011), and the second (18 July 2011) served to invite I&APs to review the Draft Basic Assessment Report and to attend the public meeting to be held at **Rustenburg Public Library on 11 August 2011 at 17:30hrs**. A notice was placed in The Rustenburg Herald to advertise the Basic Assessment process on 27 May 2011 and another notice was also placed on 22 July 2011 to advertise the availability of the Draft Basic Assessment Report and the public meeting.

2. CONTENT OF ADVERTISEMENTS AND NOTICES

The contents of the notices and adverts were in accordance with the following requirements:

- (a) Indicate the details of the application which is subjected to public participation; and
- (b) State –
 - (i) That the application has been submitted to the competent authority in terms of these Regulations, as the case may be;
 - (ii) Whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental Authorisation;
 - (iii) The nature and location of the activity to which the application relates;
 - (iv) Where further information on the application or activity can be obtained; and
 - (iv) The manner in which and the person to whom representations in respect of the application may be made.

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

Where the proposed activity may have impacts that extend beyond the municipal area where it is located, a notice must be placed in at least one provincial newspaper or national newspaper, indicating that an application will be submitted to the competent authority in terms of these regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made, unless a notice has been placed in any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of the EIA regulations. Advertisements and notices must make provision for all alternatives.

The proposed PV project will not result in any impacts that extend beyond the municipal area where it is located. In addition to this, the small scale nature of the proposed project as well as the transformed and fragmented nature of the identified site, it was only deemed necessary to advertise in a local newspaper.

The advertisement, site notices, and stakeholder letters detailed the Basic Assessment process, the nature, and location of the proposed project, where further information on the proposed activity could be obtained and the manner in which representations on the application could be made. The advertisement also indicated the availability of the draft Basic Assessment Report and the details of the public meeting.

Proof of the advertisement placed is included within **Appendix E**.

4. DETERMINATION OF APPROPRIATE MEASURES

The practitioner must ensure that the public participation is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

A public meeting was held on 11 August 2011 at the Rustenburg Public Library from 17:30hrs. The aim of this meeting was to inform attendees of the findings of the Basic Assessment process. However, no attendees arrived for the meeting. In addition, a meeting with the Marikana Platinum Mine was also conducted on 11 August 2011 at the Marikana Platinum Mine from 13:00-14:00 to discuss the proposed development and obtain comments. A site visit with relevant key stakeholders was also arranged for the 11th of August 2011 at 11:00 hours which was attended by a representative of the Department of Agriculture, Forestry and Fisheries. A stakeholder meeting arranged with the Local Municipality was cancelled as the relevant representatives had other engagements. However, comments from the Local Municipality on the proposed project have since been received.

Further to this the use of a stakeholder database, an advertisement, and site notices is deemed adequate for the public involvement process.

5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before the application is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to this application. The comments and response report must be attached under Appendix E.

All issues, comments, and/or concerns that have been raised to date have been captured and recorded within the Comments and Response Report (refer to **Appendix E7**).

6. AUTHORITY PARTICIPATION

Please note that a complete list of all organs of state and or any other applicable authority with their contact details must be appended to the basic assessment report or scoping report, whichever is applicable.

Authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input.

List of authorities informed:

Authorities informed of the Basic Assessment process included:

- » North West Department of Agriculture, Conservation, Environment and Rural Development;
- » South African National Roads Agency;
- » North West Department of Minerals and Energy;
- » Department of Water Affairs;
- » South African Heritage Resources Agency (Provincial);
- » Rustenburg Local Municipality; and
- » Bojanala District Municipality.
- » National Department of Agriculture
- » Provincial Department of Agriculture Forestry and Fisheries

List of authorities from whom comments have been received:

Comments were received from the following authorities:

- » South African Heritage Resources Agency (Provincial) and;
- » Rustenburg Local Municipality;
- » Department of Agriculture, Forestry and Fisheries (Forestry Directorate)

Please refer to **Appendix E6** for a summary of correspondence with organs of state including relevant contact details.

7. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for linear activities, or where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable.

Potentially affected stakeholders have been identified and consulted regarding the proposed project, including, inter alia:

- » Neighbouring landowners;
- » Parastatals and conservation authorities;
- » Members of the public

A stakeholder database is attached in **Appendix E4** and with proof of consultation with stakeholders attached in **Appendix E5**.

YES ✓

Has any comment been received from stakeholders?

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

- » John Wesson of the Wildlife & Environment Society of SA - Northern Areas recommended the use of the grass *Cynodon dactylon* if any grass is to be planted below the panels.
- » Nevhufumba Lufuno of the Department of Agriculture, Forestry and Fisheries recommended that an application for permit for removal/damage/cutting or pruning of protected tree species as per National Forest Act, 84 of 1998 as amended needs to be submitted to the department Of Agriculture, Forestry and Fisheries prior to commencements of construction.
- » Nevhufumba Lufuno of the Department of Agriculture, Forestry and Fisheries also recommended that before debushing is done for removal all the natural vegetation an application for removal of natural trees will need to be submitted and a license for removal in terms of section 7 of the National Forest Act be issued to the applicant.
- » Tshepo Lenake of the Rusturnburg Local Municipality indicated that Integrated Environmental Management unit is satisfied with the application for the proposed development and supports the establishment of the proposed photovoltaic plant.
- » Collete Scheermeyer of the South African Heritage Resources Agency (SAHRA) commented that SAHRA has no objection to the proposed development and recommended that the developer should ensure that a Palaeontological Study is undertaken and comment provided by the relevant heritage authority prior to development activities.

See **Appendix E9** for comments received

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2010, and should consider applicable official guidelines. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

The following issues have been raised thus far:

- » Rehabilitation
- » Removal of protected trees
- » Removal of natural trees
- » Public Participation
- » Eskom grid connection

These issues have been included in the Comments and Response Report (**Appendix E7**) which includes the response from the EAP.

Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached to this report as Annexure E):

Responses to any comments received are provided in the attached Comments and Response Report (refer to **Appendix E7**).

2. IMPACTS THAT MAY RESULT FROM THE PLANNING, DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING, AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

List the potential direct, indirect and cumulative property/activity/design/technology/operational alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed.

2.1 IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN PHASE

Alternative (preferred alternative)

No impacts are anticipated that may result from the planning and design phase of the proposed development. The identified site has already been transformed by previous agricultural activities and therefore no excavation/exploratory work which may affect the environment is anticipated to be required.

2.2 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE

Potential impacts associated with the construction of the proposed project are discussed below.

The following methodology was used in assessing impacts related to the proposed development.

All impacts are assessed according to the following criteria:

- » The **nature**, a description of what causes the effect, what will be affected, and how it will be affected.
- » The **extent**, wherein it is indicated whether the impact will be local (limited to the immediate area or site of development), regional, national or international. A score of between 1 and 5 is assigned as appropriate (with a score of 1 being low and a score of 5 being high).
- » The **duration**, wherein it is indicated whether:
 - * The lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
 - * The lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
 - * Medium-term (5–15 years) – assigned a score of 3;
 - * Long term (> 15 years) - assigned a score of 4; or;
 - * Permanent - assigned a score of 5.
- » The **magnitude**, quantified on a scale from 0-10, where a score is assigned:
 - * 0 is small and will have no effect on the environment;
 - * 2 is minor and will not result in an impact on processes;
 - * 4 is low and will cause a slight impact on processes;
 - * 6 is moderate and will result in processes continuing but in a modified way;

- * 8 is high (processes are altered to the extent that they temporarily cease); and
- * 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- » The **probability** of occurrence, which describes the likelihood of the impact actually occurring. Probability is estimated on a scale, and a score assigned:
 - * Assigned a score of 1–5, where 1 is very improbable (probably will not happen);
 - * Assigned a score of 2 is improbable (some possibility, but low likelihood);
 - * Assigned a score of 3 is probable (distinct possibility);
 - * Assigned a score of 4 is highly probable (most likely); and
 - * Assigned a score of 5 is definite (impact will occur regardless of any prevention measures).
- » The **significance**, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high.
- » The **status**, which is described as positive, negative, or neutral.
- » The degree to which the impact can be reversed.
- » The degree to which the impact may cause irreplaceable loss of resources.
- » The degree to which the impact can be mitigated.

The **significance** is determined by combining the criteria in the following formula:

$S = (E + D + M)P$; where

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance** weightings for each potential impact are as follows:

- » < **30 points**: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- » **30-60 points**: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- » > **60 points**: High (i.e. where the impact must have an influence on the decision process to develop in the area).

Alternative S1 (preferred alternative)

The potential impacts associated with the construction of the proposed PV facility are discussed below. Detailed specialist studies are included within Appendix D which detail the potential environmental impacts on heritage resources, soil erosion and agricultural potential and ecological impacts on flora and fauna.

Impact tables summarising the significance of impacts on heritage resources

Potential impacts on heritage resources

An abandoned farming related structure, probably a house, occurs on the site. It can possibly be linked to structures that occur to the south east and that were identified in a previous study on the adjacent property. It is in a bad state of repair and all the fitting and the roofs have been removed. From the material used and the current state of the structures, they are judged not to be very old and are therefore viewed to have a low significance.

<i>Nature of impact: Destruction of heritage resources</i>		
	Without mitigation	With mitigation
<i>Extent</i>	Local (1)	Local (1)
<i>Duration</i>	Permanent (5)	Permanent (5)
<i>Magnitude</i>	Minor (2)	Low (1)
<i>Probability</i>	Highly improbable (1)	Highly improbable (1)
<i>Significance</i>	8 (Low)	8 (Low)
<i>Status (positive or negative)</i>	Negative	Negative
<i>Reversibility</i>	Not possible	
<i>Irreplaceable loss of resources?</i>	Yes	
<i>Can impacts be mitigated?</i>	Not required	
<i>Mitigation:</i>		
<ul style="list-style-type: none"> » As the identified structures are viewed to have low significance, no mitigation measures are required. » If a heritage object is found, work in that area must be stopped immediately, and appropriate specialists brought in to assess the site, notify the administering authority of the item/site, and undertake due/required processes 		
<i>Cumulative impacts:</i>		
No cumulative impacts are expected.		
<i>Residual impacts:</i>		
No residual impacts are expected.		

Impact tables summarising the significance of impacts on soil and agricultural potential

Potential impacts on agricultural potential

The impact on soils will be limited to the immediate area or site of development (local). However these soils are predominantly shallow and rocky and are therefore not deemed of high agricultural potential.

Nature of impact: Loss of agricultural potential and land capability through degradation through compaction, stripping and stockpiling during the construction

	Without mitigation	With mitigation
Extent	Low (1) – Local	Low (1)
Duration	Long term (4)	Long term (4)
Magnitude	Low (2)	Low (2)
Probability	Probable (3)	Probable (3)
Significance	21 (Low)	21 (Low)
Status (positive or negative)	Negative	Negative
Reversibility	Medium	Medium
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	No	

Mitigation:

During construction, stripped soil should be stockpiled. Soil erosion and hard setting of the stockpiled material may occur which can be mitigated by:

- » Ensuring that the slope of the stockpiled material is such that surface runoff is minimal;
- » Additions of stabilising agents such as organic material or vegetative cover.

Soil should be stockpiled for a brief a period as possible, alternatively it can be used in the construction of berms, swales etc. to ensure that soil erosion does not cause major degradation of the surrounding land.

Cumulative impacts:

The area surrounding the proposed site has been developed for mining purposes which has led to increased surface water runoff volumes and velocities. Further soil erosion may arise from the proposed development site owing to increased surface water runoff. Erosion and subsequent runoff leads to an increase in the sediment load of downstream water sources. Therefore the development of the proposed PV facility might create a cumulative impact in terms of soil erosion and sedimentation.

Residual impacts:

The loss of agricultural land is a long term loss which will extends post-construction.

Potential impacts of soil erosion

Soil erosion may become a significant hazard in the area as many of the soils show signs of swelling and shrinking.

Nature of impact: Soil erosion arising from increased surface water runoff, soil compaction during construction

	Without mitigation	With mitigation
Extent	High (4)	Low (1)
Duration	Long term (4)	Long term (4)
Magnitude	High (8)	Low (2)
Probability	Very Probable (5)	Improbable (2)
Significance	80 (Very High)	14 (Low)
Status (positive or negative)	Negative	-
Reversibility	Low	-
Irreplaceable loss of resources?	Yes	-
Can impacts be mitigated?	Yes	

Mitigation:

- » Building of swales and berms to decrease water runoff speed.
- » Building of attenuation ponds to ensure slow release of water into the water course.

Cumulative impacts:

If not mitigated soil erosion might extend to areas outside the area of development, especially along the drainage line. This will influence biodiversity adversely and lead to higher sediment and solute content of water leaving the area, thus lowering water quality and possibly influencing agricultural practices in the area and posing a threat to human health. This is especially the case for subsistence farmers and informal settlements downstream.

Residual impacts:

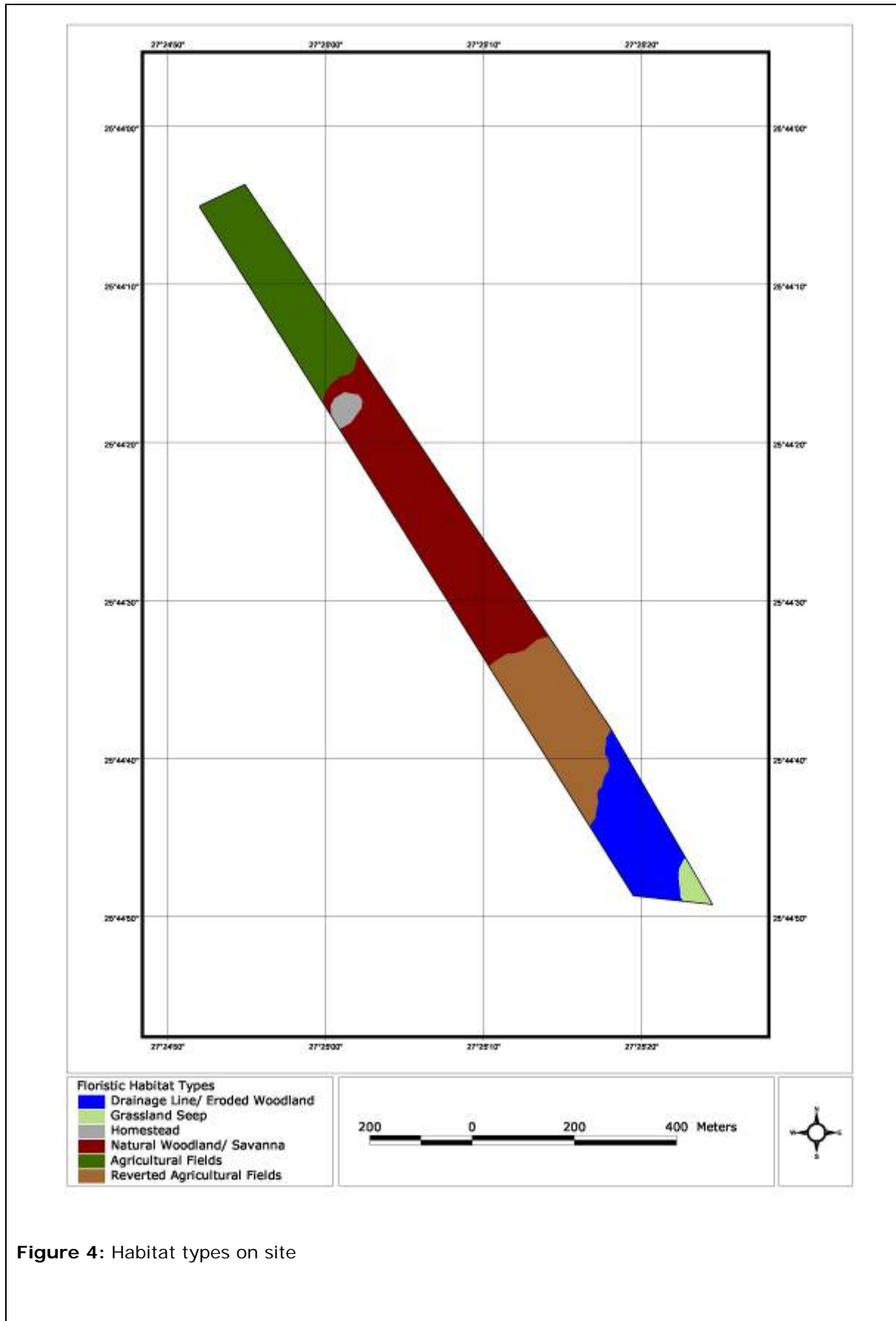
Soil erosion related impacts may influence surrounding areas post the construction phase

Impact tables summarising the significance of ecological impacts

Only habitat types that were regarded to be of Medium-High or High in terms of ecological sensitivities are evaluated in this section. Impacts in areas of Medium or lower categories are regarded acceptable and the implementation of generic mitigation measures (standard ecological impact management measures) is expected to result in minimising potential impacts within these areas. Habitat types that are evaluated include:

- » Drainage Lines/ Eroded Woodland (Medium-high Sensitivity);
- » Grassland Seepage (Medium-high Sensitivity); and
- » Natural Woodland/ Savannah (Medium-high Sensitivity).

Figure 4 below shows the position of these habitat types within the site while Figure 5 shows the ecological sensitivities of these habitats.



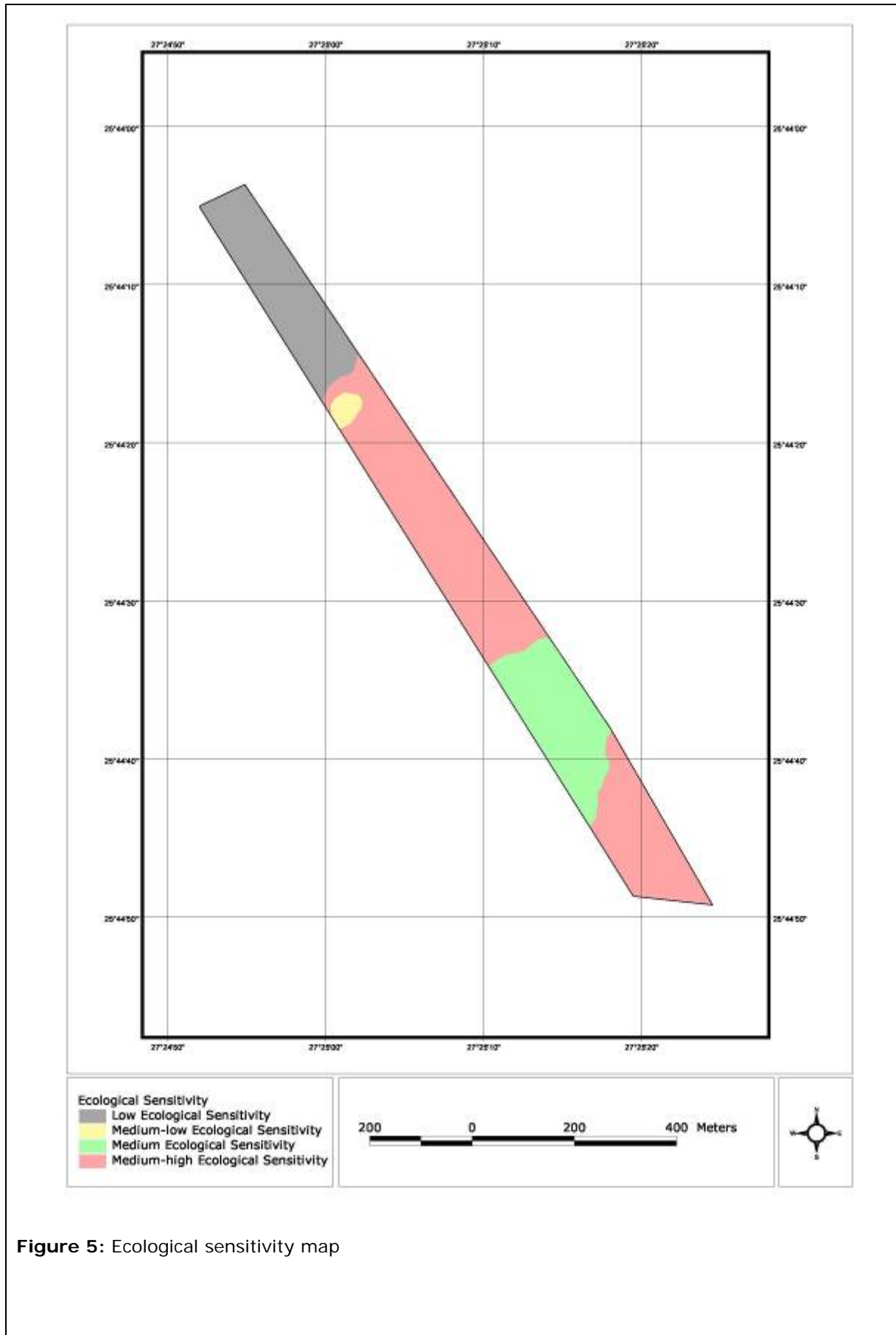


Figure 5: Ecological sensitivity map

Potential impacts on threatened and protected flora within the drainage line, grassland and natural woodland habitats

The destruction of Red Data species or areas suitable for said species represents a significant impact on the biodiversity of a region. SANBI records for the region indicate the presence of two Red Data species in this particular quarter degree grid. While conditions were not conducive for identifying Red Data species during the site investigation, it is regarded highly unlikely that any of Red Data flora species would occur on this site as available habitat does not correspond to the habitat required by any of these species. However, a single individual of the protected tree species (*Sclerocarya birrea* subsp. *birrea*, Marula) is present on the site. It is situated in the immediate vicinity of the old homestead and is assumed to have been planted by early inhabitants of the property.

Nature: Destruction of threatened & protected flora

	Without mitigation	With mitigation
Extent	2 (Site and Surrounding)	1 (Site only)
Duration	5 (Permanent)	1 (Very short term)
Magnitude	4 (Low)	2 (Minor)
Probability	2 (Improbable)	1 (Very improbable)
Significance	22 (Medium)	4 (Low)
Status (positive or negative)	Negative	Negative
Reversibility	Yes to a certain degree	N/A
Irreplaceable loss of resources?	Yes to a certain degree	N/A
Can impacts be mitigated?	Low	

Mitigation:

- » As far as possible, the individual protected tree should be avoided by project infrastructure.
- » Should it not be possible to avoid the protected tree, an application for a permits for the removal/ damage/ cutting or pruning of protected tree species as per National Forest Act, 1998 (No 84 of 1998) need to be submitted to the relevant authority (Department of Forestry being the relevant authority as this on the national protected tree list) prior to the commencement of construction activities.

Cumulative impacts:

No cumulative impacts.

Residual impacts:

No residual impacts are expected.

Potential impacts on sensitive/ pristine habitats within the drainage line, grassland and natural woodland habitats

Signs (tracks) of the Red Data *Mellivora capensis* (Honey Badger) were observed within the study area. No signs of utilising the habitat for breeding or habitation were observed. It is likely that either infrequent foraging is conducted or that the area is traversed on an infrequent basis.

Nature: Destruction of sensitive/ pristine habitats		
	Without mitigation	With mitigation
Extent	1 (site only) - 3 (Local area)	1 (Site only)
Duration	5 (Permanent)	4 (Long term) - 5 (Permanent)
Magnitude	6 (Moderate) - 8 (High)	2 (minor) - 4 (Low)
Probability	2 (Improbable) - 4 (Highly probable)	1 (Very improbable) - 2 (Probable)
Significance	24 (Low) - 64 (Medium-High)	10 (Low) - 18 (Medium - Low)
Status (positive or negative)	Negative	Negative
Reversibility	Yes to a certain degree	N/A
Irreplaceable loss of resources?	Yes to a certain degree	N/A
Can impacts be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> » Exclude areas of wetland related habitat from the proposed development. » Demarcate all areas where no impacts will be allowed, clearly marking these areas with high visibility signs, inform all contractors and construction workers to refrain from entering/ affecting these areas. » Construction of new/ temporary bridges across non-perennial streams and larger rivers is regarded a prohibited activity, use should be made of existing crossings, ensuring proper maintenance/ upgrade. 		
Cumulative impacts:		
No cumulative impacts are expected.		
Residual impacts:		
No residual impacts are expected		

Potential impacts on threatened faunal species within the drainage line, grassland and natural woodland habitats

Due to the confirmed presence of a Red Data mammal species (*Mellivora capensis* (Honey Badger), the likelihood exists that attributes of the study area that are utilised by this species will be affected. Aspects that could potentially be affected include migration patterns and suitable habitat for breeding and foraging purposes.

Nature: Loss of threatened faunal species		
	Without mitigation	With mitigation
Extent	2 (Site and surrounds) – 3 (local Area)	1 (Site only) – 2 (Site and surrounds)
Duration	5 (Permanent)	2 (Short duration) - 4 (Long term)
Magnitude	10 (Very High)	4 (Low) – 10 (Very high)

Probability	2 (Improbable)	1 (Very improbable) - 2 (Probable)
Significance	34 - 36 (Medium)	7 (Low) - 32 (Medium)
Status (positive or negative)	Negative	Negative
Reversibility	Yes to a certain degree	N/A
Irreplaceable loss of resources?	Yes to a certain degree	N/A
Can impacts be mitigated?	Yes	
Mitigation:		
» Demarcate all areas where no impacts will be allowed, clearly marking these areas with high visibility signs, inform all contractors and construction workers to refrain from entering/ affecting these areas.		
» No animal may be hunted, trapped or killed for any purpose whatsoever.		
Cumulative impacts:		
No cumulative impacts are expected.		
Residual impacts:		
No residual impacts are expected		

Potential impacts on common faunal species within the drainage line, grassland and natural woodland habitats

The likelihood of this impact occurring is relatively low because of the ability of animal species to migrate away from direct impacts. While the tolerance levels of common animal species is generally of such a nature that surrounding areas will suffice in habitat requirements of species forced to move from areas of impact, limited such habitat remains on a local and regional scale. It is regarded highly unlikely that the conservation status of common animal species will be affected because of direct and indirect impacts of the development on these species and their habitat. The significance of these impacts differs between vegetation type on site (i.e. drainage line habitats, grassland habitats and woodland habitats).

Nature: Direct impacts on common faunal species		
	Without mitigation	With mitigation
Extent	1 (Site only)	1 (Site only)
Duration	4 (Long term) - 5 (Permanent)	2 (Short Duration) - 3 (Medium term)
Magnitude	4 (Low) - 6 (Moderate)	2 (Minor)
Probability	2 (Improbable) - 4 (Highly probable)	1 (Very improbable) - 2 (Improbable)
Significance	18 (Low) - 48 (Medium)	6 (Low) - 10 (Low)
Status (positive or negative)	Negative	Negative
Reversibility	Low- High	N/A
Irreplaceable loss of resources?	To a moderate degree	N/A

Can impacts be mitigated?	Yes
Mitigation:	
<ul style="list-style-type: none"> » No animal may be hunted, trapped, or killed for any purpose whatsoever. » In the event that animals are present that may pose a risk to human safety, a suitable animal handler must be requested to remove the animal in an environmentally responsible manner. This specifically refers to snakes and scorpions. 	
Cumulative impacts:	
No cumulative impacts are expected.	
Residual impacts:	
No residual impacts are expected.	

Potential impacts on floristic species within the drainage line, grassland and woodland natural habitats

The transformation of natural habitat during the construction process will inevitably result in the establishment of pioneer or sub-climax habitat types that are not considered representative of the region. While impacts are generally regarded to be of low severity, impacted areas are frequently invaded by species not normally associated with the region (exotic and invasive species). The significance of these impacts differs between vegetation type on site (i.e. drainage line habitats, grassland habitats and natural woodland habitats). The significance of impacts will however be highest on the wetland related habitats.

Nature: Floristic species changes as a result of the establishment of alien invasive species		
	Without mitigation	With mitigation
Extent	1 (Site only) – 2 (Site and surrounds)	1 (Site only)
Duration	4 (Long term)	4 (Long term)
Magnitude	4 (Low) - 6 (Moderate)	2 (minor)
Probability	3 (Probable) – 4 (Highly probable)	2 (Improbable)
Significance	27 (Low - Medium) – 48 (Medium – High)	14 (Low)
Status (positive or negative)	Negative	Negative
Reversibility	Moderate	N/A
Irreplaceable loss of resources?	Low - Moderate	N/A
Can impacts be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> » All declared alien species must be identified and managed in accordance with the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983). The implementation of a monitoring programme in this regard is recommended. » Use only local indigenous species in the rehabilitation/ revegetation process. » The removal or picking of any protected or unprotected plants shall not be permitted and 		

no horticultural specimens (even within the demarcated working area) shall be removed, damaged, or tampered with unless agreed to by the ECO.

Cumulative impacts:

Due to the disturbed nature of the broader area (i.e. the mine and surrounding agriculture) alien invasive species have had the opportunity to establish and spread. The further disturbance of the proposed development site may exacerbate this impact.

Residual impacts:

No residual impacts are expected.

Potential impacts on faunal interactions with structures, personnel, etc.

The presence of personnel within the development area during construction and maintenance periods will inevitably result in some, but normally limited, contact with animals. While most of the larger animal species are likely to move away from human contact, dangerous encounters with snakes and scorpions always remain likely. Similarly, the presence of humans within areas of natural habitat could potentially result in killing of animals by means of snaring, poaching, poisoning, trapping, etc.

Nature: Faunal interactions with structures, and personnel

	Without mitigation	With mitigation
Extent	1 (Site only)	1 (Site only)
Duration	4 (Long term)	4 (Long term)
Magnitude	4 (Low)	2 (Minor)
Probability	3 (Probable)	2 (Improbable)
Significance	27 (Low - Medium)	14 (Low)
Status (positive or negative)	Negative	
Reversibility	Moderate	-
Irreplaceable loss of resources?	Moderate	-
Can impacts be mitigated?	Yes	

Mitigation:

- » No animal may be hunted, trapped, or killed for any purpose whatsoever.
- » In the event that animals are present that may pose a risk to human safety, a suitable animal handler must be requested to remove the animal in an environmentally responsible manner. This specifically refers to snakes and scorpions

Cumulative impacts:

No cumulative impacts are expected.

Residual impacts:

No residual impacts are expected.

Potential impacts on conservation obligations

Loss of parts of the natural vegetation is expected to result in an insignificant, indirect impact on the conservation status of the regional vegetation types; which is regarded Endangered and Vulnerable. The significance of these impacts differs between vegetation type on site (i.e.

drainage line habitats, grassland habitats and woodland habitats.

Nature: Impacts on conservation obligations		
	Without mitigation	With mitigation
Extent	1 (Site only)	1 (Site only)
Duration	5 (Permanent)	2 (Short duration) – 4 (Long term)
Magnitude	4 (Low)	2 (Minor))
Probability	2 (Improbable) - 3 (Probable)	1 (Very improbable) - 2 (Improbable)
Significance	20 (Low) - 30 (Medium)	7 (Low) - 10 (Low)
Status (positive or negative)	Negative	Negative
Reversibility	Low	N/A
Irreplaceable loss of resources?	Moderate	N/A
Can impacts be mitigated?	Low	
Mitigation:		
<ul style="list-style-type: none"> » Demarcate all areas where no impacts will be allowed, clearly marking these areas with high visibility signs, inform all contractors and construction workers to refrain from entering/ affecting these areas. » Use of branches of trees and shrubs for fire making purposes is strictly prohibited. » Fire fighting equipment shall be made available on all vehicles and at various suitable points within the development site. 		
Cumulative impacts:		
No cumulative impacts are expected.		
Residual impacts:		
No residual impacts are expected		

Impact tables summarising the significance of social impacts

From a social perspective, there may be some positive impacts resulting from limited job opportunities and skills development for low – semi skilled jobs.

Nature: Impacts on Job creation		
	Without Enhancement	With Enhancement
Extent	1 (Local)	1 (Site only)
Duration	1 (Very short)	2 (Short duration)
Magnitude	2 (Minor)	4 (low)
Probability	3 (Probable)	3 (Probable)
Significance	Low (12)	21 (Low)
Status (positive or negative)	Positive	Positive
Reversibility	N/A	N/A
Irreplaceable loss of resources?	N/A	N/A

Can impacts be mitigated?	Yes	
Enhancement measures:		
The use of local labour for low – semi skilled jobs should be maximised as far as possible		

No Go Alternative

The 'Do-Nothing' alternative is the option of not constructing the proposed RustMo2 PV Solar Energy Facility. Should this alternative be selected then the socio-economic and environmental benefits of this renewable energy facility will not be realised. These benefits are explored in further detail in the South Africa REFIT Regulatory Guideline published by NERSA (March 2009), and include:

- » **Increased energy security:** The current electricity crisis in South Africa highlights the significant role that renewable energy can play in terms of power supplementation. In addition, given that renewables can often be deployed in a decentralised manner close to consumers, they offer the opportunity for improving grid strength and supply quality, while reducing expensive transmission and distribution losses.
- » **Resource saving:** Conventional coal fired plants are major consumers of water during their requisite cooling processes. It is estimated that the achievement of the targets in the Renewable Energy White Paper will result in water savings of approximately 16.5 million kilolitres, when compared with wet cooled conventional power stations; this translates into revenue savings of R26.6 million. As an already water-stressed nation, it is critical that South Africa engages in a variety of water conservation measures, particularly due to the detrimental effects of climate change on water availability.
- » **Exploitation of our significant renewable energy resource:** At present, valuable national resources including biomass by-products, solar radiation and wind power remain largely unexploited. The use of these energy flows will strengthen energy security through the development of a diverse energy portfolio.
- » **Pollution reduction:** The releases of by-products through the burning of fossil fuels for electricity generation have a particularly hazardous impact on human health and contribute to ecosystem degradation.
- » **Climate friendly development:** The uptake of renewable energy offers the opportunity to address energy needs in an environmentally responsible manner and thereby allows South Africa to contribute towards mitigating climate change through the reduction of greenhouse gas (GHG) emissions. South Africa is estimated to be responsible for ~1 % of global GHG emissions and is currently ranked 9th worldwide in terms of per capita CO₂ emissions.
- » **Support for international agreements:** The effective deployment of renewable energy provides a tangible means for South Africa to demonstrate its commitment to its international agreements under the Kyoto Protocol, and for cementing its status as a leading player within the international community.
- » **Employment creation:** The sale, development, installation, maintenance and management of renewable energy facilities have significant potential for job creation in South Africa.
- » **Acceptability to society:** Renewable energy offers a number of tangible benefits to society including reduced pollution concerns, improved human and ecosystem health and climate friendly development.

- » **Protecting the natural foundations of life for future generations:** Actions to reduce our disproportionate carbon footprint can play an important part in ensuring our role in preventing dangerous anthropogenic climate change; thereby securing the natural foundations of life for generations to come.

In addition, the injection of an additional 10MW of energy within the Buffelspoort area would be beneficial to the mines that abound in the area. Mines use between 10 MW and 20 MW of power. During the power outages of 2008 mines specifically were badly affected. The integration of an additional 10 MW should alleviate the pressure on the local grid to some extent and would contribute in a small way to meeting the government's target for renewable energy. Furthermore, implementation of the no go alternative would mean that the additional job opportunities would be lost.

2.3 IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE

Alternative (preferred alternative)

Potential impacts associated with the operation of the proposed PV facility are discussed below. Detailed specialist studies are included within Appendix D. Expected impacts include potential impacts on soil erosion.

Potential impacts on Soil Erosion

Soil erosion may become a significant hazard during operation due to increase runoff owing to compaction and use of concrete foundations.

Nature: Soil erosion arising from increased surface water runoff		
	Without mitigation	With mitigation
Extent	High (4)	Low (1)
Duration	Long term (4)	Long term (4)
Magnitude	High (8)	Low (2)
Probability	Very Probable (5)	Improbable (2)
Significance	80 (Very High)	14 (Low)
Status (positive or negative)	Negative	-
Reversibility	Low	-
Irreplaceable loss of resources?	Yes	-
Can impacts be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> » Building of swales and berms to decrease water runoff speed. » Building of attenuation ponds to ensure slow release of water into the water course 		
Cumulative impacts:		
Soil erosion might extend to areas outside the area of development, especially along the water course. This will lead to higher sediment and solute content of water leaving the area, thus lowering water quality and possibly influencing agricultural practices in the area and posing a		

threat to human health. This is especially true for subsistence farmers and informal settlements downstream.

Residual impacts:

Soil erosion related impacts may influence surrounding areas.

Potential impacts on promotion of renewable energy

The evacuation of additional electricity into the Eskom National Grid should alleviate the pressure on the local grid to a small extent and would contribute in a small way to meeting the government's target for renewable energy.

Nature: Promotion of renewable energy	
Extent	Regional (2)
Duration	Long term (4)
Magnitude	Minor (2)
Probability	Highly probable (4)
Significance	Low (24)
Status (positive or negative)	Positive
Reversibility	N/A
Irreplaceable loss of resources?	N/A
Can impacts be enhanced during construction phase?	Yes
Enhancement:	
N/A	

No Go Alternative

The 'Do-Nothing' alternative is the option of not constructing the proposed RustMo2 PV Solar Energy Facility. Should this alternative be selected then the socio-economic and environmental benefits of this renewable energy facility will not be realised. These benefits are explored in further detail in the South Africa REFIT Regulatory Guideline published by NERSA (March 2009), and include:

- » **Increased energy security,**
- » **Resource saving,**
- » **Exploitation of our significant renewable energy resource,**
- » **Pollution reduction,**
- » **Climate friendly development,**
- » **Support for international agreements,**
- » **Employment creation,**
- » **Acceptability to society and**
- » **Protecting the natural foundations of life for future generations**

In addition, the injection of an additional 10MW of energy would be beneficial to the mines that abound in the area. Mines use between 10 MW and 20 MW of power. During the power outages of 2008 mines specifically were badly affected. The integration of an additional 10 MW should alleviate the pressure on the local grid to some extent and would contribute in a small way to meeting the government's target for renewable energy. Furthermore, implementation of the no

go alternative would mean that the additional job opportunities would be lost. The use of the proposed site for the facility will allow for the possible control of alien species in that site, however, if the no go alternative is implemented this opportunity will be lost.

2.4 IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING AND CLOSURE PHASE

Alternative (preferred alternative)

The impacts during the decommissioning and closure phases will be similar to impacts of the construction phase as discussed above.

No Go Alternative

The 'Do-Nothing' alternative is the option of not decommissioning the proposed RustMo2 PV Solar Energy Facility at the end of its life span. At the end of its life span the efficiency of the facility would be reduced such that less electricity is produced. However, the additional electricity that could continue to be evacuated into the Eskom grid in the Buffelspoort area would be beneficial to the mines that abound in the area. In addition, implementation of the no go alternative would mean that job opportunities are not lost.

3. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Alternative A (preferred alternative)

This section provides a summary of the assessment conclusions for the proposed development site. In doing so, it draws on the information gathered as part of the Basic Assessment process and the knowledge gained by the environmental consultants during the course of the process and presents an informed opinion of the environmental impacts associated with the proposed project.

- » The overall **heritage** impact is likely to be of **low significance** as no sites, features or objects of cultural heritage significance were identified in the study area.
- » The overall impact on **soil and agricultural potential** during construction and operation is likely to be of **low significance** given the implementation of the recommended mitigation measures. The site is dominated by shallow, rocky soils and rock outcrops and can therefore not be deemed of high agricultural potential. Intensive agriculture, such as citrus production, would be viable on an area of this size (i.e. 18 ha) only if the soils are deep and of high agricultural potential. This is not the case for the proposed site as the area is deemed to be of **low agricultural potential**.

- » The overall impact on **ecology** is likely to be of **low to medium significance** given the implementation of mitigation measures. Only habitat types that were regarded to be of Medium-High or High in terms of ecological sensitivities were evaluated in the study. The Habitat types that are evaluated including their sensitivities before mitigation included Drainage Lines/ Eroded Woodland (Medium-High Sensitivity), Grassland Seepage (Medium-high Sensitivity), and Natural Woodland/ Savannah (Medium-High Sensitivity). Based on the assessment it is recommended that wetland related habitats of this site be excluded from the proposed development.
- » The overall **social and socio-economic** impact in terms of positive and negative impacts is likely to be of a **low significance** during both the construction and operational phases with the implementation of enhancement/mitigation measures. The potential negative impacts associated with the construction phase are typical of construction related projects and are expected to respond to the mitigation measures proposed. The possible job creation and skills development are regarded as a **significant positive** injection into the area. The project would result in significant positive economic spin-offs for the local area and region primarily because of the labour intensive operational practices that would be associated with it.

The establishment of the facility will have positive benefits as the integration of an additional 10 MW may alleviate the pressure on the local grid to a small extent and would contribute (albeit small) to the national target for renewable energy.

Therefore, based on the findings of the studies undertaken, in terms of environmental constraints identified through the initial Environmental Basic Assessment process, no environmental fatal flaws were identified with the establishment of the proposed RustMo2 PV Plant and associated infrastructure (including the short power line). Therefore, it is recommended that the project should be authorised. However, a number of issues requiring mitigation have been highlighted. Environmental specifications for the management of these issues / impacts are detailed within the Draft Environmental Management Programme (EMP) included within Appendix F.

No-go alternative (compulsory)

The 'Do-Nothing' alternative is the option of not constructing the proposed RustMo2 PV Solar Energy Facility. Should this alternative be selected then the socio-economic and environmental benefits of this renewable energy facility will not be realised. These benefits include:

- » **Increased energy security,**
- » **Resource saving,**
- » **Exploitation of our significant renewable energy resource,**
- » **Pollution reduction,**
- » **Climate friendly development,**
- » **Support for international agreements,**
- » **Employment creation,**
- » **Acceptability to society and**
- » **Protecting the natural foundations of life for future generations**

In addition, the injection of an additional 10MW of energy would be beneficial to the mines that abound in the area. Mines use between 10 MW and 20 MW of power. During the power outages of 2008 mines specifically were badly affected. The integration of an additional 10 MW should alleviate the pressure on the local grid to some extent and would contribute in a small way to meeting the government's target for renewable energy.

SECTION E. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?

YES ✓	
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If "NO," indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment):

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If "YES," please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

There are no fatal flaws associated with the establishment of the proposed RustMo2 PV Plant. However, several sensitive areas were identified including potential Red Data Fauna they might support. Wetland related habitats were identified to the south of the site and it is recommended that they should be excluded from the proposed development. In addition, a single individual of the protected tree species (*Sclerocarya birrea* subsp. *birrea*, Marula) was noted in the immediate vicinity of the old homestead (co-ordinates of tree S 25.738341, E 27.417131) and is assumed to have been planted by early inhabitants of the property. If it is not possible to avoid this tree, an application for a permits for the removal/ damage/ cutting or pruning of protected tree species as per National Forest Act, 1998 (No 84 of 1998) need to be submitted to the relevant authority prior to the commencement of construction activities. Lastly, Signs (tracts) of the Red Data *Mellivora capensis* (Honey Badger) were observed within the study area. However, no signs of utilising the habitat for breeding or habitation were observed. It is likely that either infrequent foraging is conducted or that the area is traversed on an infrequent basis.

In consideration of the recommendations above and as detailed in the various specialist reports and comments received, an updated layout facility layout was produced and is attached in **Appendix C2**. This layout should be implemented. The impacts associated with the proposed development on this site are expected to be of low to medium significance and are considered acceptable from an environmental perspective, and potential impacts to the environment can be mitigated to acceptable levels.

The construction of the proposed RustMo2 PV Plant should be implemented according to the EMP to adequately mitigate and manage potential impacts associated with construction activities. The construction activities and relevant rehabilitation of disturbed areas should be monitored against the approved EMP, the Environmental Authorisation and all other relevant environmental legislation.

Relevant conditions to be adhered to include:

Design and Construction Phase:

The following mitigation and management measures should be implemented during the construction phase in order to minimise potential environmental impacts:

- » Ensuring that the slope of the stockpiled material is such that surface runoff is minimal.
- » Additions of stabilising agents such as organic material or vegetative cover for erosion control.
- » Building of swales and berms to decrease water runoff speed.
- » Building of attenuation ponds to ensure slow release of water into the water course.
- » Exclude areas of wetland related habitat from the proposed development.
- » Appoint Environmental Control Officer (ECO).
- » Establish the Terms of Reference for the ECO prior to the onset of the construction phase.
- » Demarcate all areas where no impacts will be allowed, clearly marking these areas with high visibility signs, inform all contractors and construction workers to refrain from entering/ affecting these areas.
- » Prevent impacts on any surface water as a result of hazardous materials, contamination, unnecessary crossing by vehicles or personnel, extraction, drinking or other human uses, construction and maintenance activities.
- » An application for a permits for the removal/ damage/ cutting or pruning of protected tree species as per National Forest Act, 1998 (No 84 of 1998) need to be submitted to the relevant authority prior to the commencement of construction activities should protected trees need to be removed.
- » Implement a weed monitoring and control programme.
- » All declared aliens must be identified and managed in accordance with the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) (see Appendix 3), the implementation of a monitoring programme in this regard is recommended.
- » The removal or picking of any protected or unprotected plants shall not be permitted and no horticultural specimens (even within the demarcated working area) shall be removed, damaged, or tampered with unless agreed to by the ECO.
- » No painting or marking of rocks or vegetation to identify locality or other information shall be allowed as it will disfigure the natural setting. Marking shall be done by steel stakes with tags, if required.
- » Make use of existing access roads, ensuring proper upgrade/ construction/ maintenance in order to limit erosion, proliferation of weeds.
- » Use of branches of trees and shrubs for fire making purposes is strictly prohibited.
- » Prevent open fires; provide demarcated fire-safe zones, facilities, and fire control measures.
- » Fire fighting equipment shall be made available on all vehicles and at various suitable points within the development site.
- » No animal may be hunted, trapped, or killed for any purpose whatsoever.
- » In the event that animals are present that may pose a risk to human safety, a suitable animal handler must be requested to remove the animal in an environmentally responsible manner. This specifically refers to snakes and scorpions.
- » Limit construction, maintenance, and inspection activities to dry periods in order to curb occurrence/ augmentation of erosion in areas of existing erosion, destabilizing of substrate in areas of high slopes, riparian zones, etc.
- » Develop emergency maintenance operational plan to deal with any event of contamination, pollution, or spillages, particularly in riparian areas.

- » Use only local indigenous species in the rehabilitation/ revegetation process.
- » Compile a detailed waste management plan
- » Compile a storm water management plan.

Operation Phase:

The following mitigation and management measures should be implemented during the operation phase in order to minimise potential environmental impacts:

- » Maintenance of erosion control measures (i.e. berms)
- » Development and implementation of a storm water management plan

Is an EMPR attached?

YES ✓	
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The EMPR must be attached as **Appendix F**.