

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS
DRAFT BASIC ASSESSMENT REPORT

PROPOSED PPC SLURRY SOLAR ENERGY
FACILITY, NORTH WEST PROVINCE

(DEA REF No: 14/12/16/3/3/1/997)

DRAFT BASIC ASSESSMENT REPORT
FOR PUBLIC COMMENT

November 2013

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BASIC ASSESSMENT REPORT



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. This report format is current as of **1 September 2012**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. 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.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. 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.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. 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.

BASIC ASSESSMENT REPORT

12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.
14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included on the electronic copy of the report submitted to the competent authority.

PROJECT DETAILS

DEA Reference No.	:	14/12/16/3/3/1/997
Title	:	Environmental Assessment Process Draft Basic Assessment Report for the Proposed PPC Slurry Solar Energy Facility, North West Province
Authors	:	Lusani Rathanya Karen Jodas
Client	:	PPC Limited
Report Status	:	Draft Basic Assessment Report for public review
Review Period	:	08 November 2013 – 08 December 2013

When used as a reference this report should be cited as: Savannah Environmental (2013) Draft Basic Assessment Report: Proposed PPC Slurry Solar Energy Facility, North West Province

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TABLE OF CONTENTS

PROJECT DETAILS	i
TABLE OF CONTENTS	ii
APPENDICES	iv
SUMMARY AND OVERVIEW OF THE PROPOSED PROJECT	1
1.1 Summary of the Proposed Development.....	1
1.2 Requirement for an Environmental Impact Assessment Process	4
1.3. Details of an Environmental Assessment Practitioner and Expertise to conduct the Basic Assessment Process	4
SECTION A: ACTIVITY INFORMATION	6
1. PROJECT DESCRIPTION.....	6
a) Describe the project associated with the listed activities applied for.....	6
a) Conduct Surveys	7
b) Establishment of Access Roads to the Site	7
c) Undertake Site Preparation	7
d) Transport of Components and Equipment to Site	7
e) Establishment of Laydown Areas on Site	7
f) Erect PV Panels	7
g) Establishment of Ancillary Infrastructure (Substation, Power line and workshop/office)	8
h) Undertake Site Rehabilitation	8
Activities to be undertaken during the Operational Phase of the PV Facility	8
Activities to be undertaken during the Decommissioning Phase of the PV Facility	9
a) Site Preparation	9
b) Disassemble Components	9
b) Provide a detailed description of the listed activities associated with the project as applied for.....	9
2. FEASIBLE AND REASONABLE ALTERNATIVES	11
a) Site alternatives	14
b) Lay-out alternatives	18
c) Technology alternatives	19
d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)...	19
e) No-go alternative.....	20
3. PHYSICAL SIZE OF THE ACTIVITY	20
a) Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):.....	20
b) Indicate the size of the alternative sites or servitudes (within which the above footprints will occur).....	21
4. SITE ACCESS	21
5. LOCALITY MAP.....	21
6. LAYOUT/ROUTE PLAN	22
7. SENSITIVITY MAP	23
8. SITE PHOTOGRAPHS	23
9. FACILITY ILLUSTRATION	23
10. ACTIVITY MOTIVATION	24
11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES	30
12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT.....	40

a)	<i>Solid waste management</i>	40
b)	<i>Liquid effluent</i>	41
c)	<i>Emissions into the atmosphere</i>	42
d)	<i>Waste permit</i>	42
e)	<i>Generation of noise</i>	42
13.	WATER USE	42
14.	ENERGY EFFICIENCY	43
SECTION B: SITE/AREA/PROPERTY DESCRIPTION		44
1.	GRADIENT OF THE SITE	45
2.	LOCATION IN LANDSCAPE	45
3.	GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE	46
4.	GROUND COVER	46
5.	SURFACE WATER (SPV1, SPV2, SPV3, SPV4 (relevant to all 4 alternatives))	48
6.	LAND USE CHARACTER OF SURROUNDING AREA	48
7.	CULTURAL/HISTORICAL FEATURES	50
8.	SOCIO-ECONOMIC CHARACTER	51
a)	<i>Local Municipality</i>	51
b)	<i>Socio-economic value of the activity</i>	52
9.	BIODIVERSITY	52
a)	<i>Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category</i>	53
c)	<i>Complete the table to indicate:</i>	56
d)	<i>Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)</i>	56
SECTION C: PUBLIC PARTICIPATION		58
1.	ADVERTISEMENT AND NOTICE	58
2.	DETERMINATION OF APPROPRIATE MEASURES	58
3.	ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES	59
4.	COMMENTS AND RESPONSE REPORT	59
5.	AUTHORITY PARTICIPATION	60
6.	CONSULTATION WITH OTHER STAKEHOLDERS	62
SECTION D: IMPACT ASSESSMENT		63
1.	IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES	63
2.	ENVIRONMENTAL IMPACT STATEMENT	76
SECTION E. RECOMMENDATION OF PRACTITIONER		80
SECTION F: APPENDICES		82

APPENDICES

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility Illustration(s)

Appendix D: Biodiversity Map

Appendix E: Record of Public Involvement Process

- » *Appendix E1: Adverts and Notices*
- » *Appendix E2: Stakeholder Letter*
- » *Appendix E3: Comments*
- » *Appendix E4: Proof from Authorities*
- » *Appendix E5: Registered I&APs*
- » *Appendix E6: Minutes of Meetings*

Appendix F: Impact Assessment

Appendix G: Draft Environmental Management Programme

Appendix H: Details of EAP & expertise

Appendix I Additional Information

- » *Appendix I1: List of Co-Ordinates for Power Line*
- » *Appendix I2: Ecology Report undertaken for the site previously*
- » *Appendix I3: Heritage Report undertaken for the site previously*

DRAFT BASIC ASSESSMENT REPORT FOR REVIEW

This Draft Basic Assessment Report has been prepared by Savannah Environmental in order to assess the potential environmental impacts associated with proposed PPC Slurry Solar Energy project. This process is being undertaken in support of an application for environmental authorisation from the National Department of Environmental Affairs (DEA). The 30-day period for review is **08 November 2013 – 08 December 2013**. The report is available for public review at the following locations:

- » **Mahikeng Library**
- » **Mahikeng PPC Limited Office at PPC Slurry**
- » **www.savannahsa.com**

To obtain further information, register on the project database, or submit written comment please contact:

Please submit your written comments to:
Gabriele Wood of Savannah Environmental Post: PO Box 148, Sunninghill, Johannesburg, 2157 Telephone: 011 656 3237 Fax: 086 684 0547 Email: gabriele@savannahsa.com
The due date for comments on the draft Basic Assessment Report is 08 December 2013

SUMMARY AND OVERVIEW OF THE PROPOSED PROJECT

Due to the exploitation of and large-scale reliance on non-renewable resources and the potential subsequent impacts on climate, there is increasing pressure globally to increase the share of renewable energy generation. South Africa currently depends on fossil fuels for the supply of approximately 90% of its primary energy needs. With economic development over the next several decades resulting in an ever increasing demand for energy, there is some uncertainty as to the availability of economically extractable coal reserves for future use. Furthermore, several of South Africa's power stations are nearing the end of their economic life, require refurbishment, or have been recently returned to service (re-commissioned) at great expense (i.e. the Camden, Komati, and Grootvlei Power Stations).

The current electricity imbalances in South Africa highlight the significant role that renewable energy can play in terms of power supplementation. Given that renewables can generally 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. In addition, because of the nature and scale of renewable installations, such facilities are also well-suited for use by large power consumers to supplement their own supply, thereby reducing the pressure on the National grid.

PPC Limited is proposing the establishment of a solar energy facility within the PPC mining area for the purpose of reducing total carbon emissions, diversifying electricity supply to the PPC factory, and reducing cost risk to PPC.

In 2010, a National Development Plan was drafted to address socio economic issues affecting development in South Africa. These issues were identified and placed under 18 different Strategic Integrated Projects (SIPs) to address the spatial imbalances of the past by addressing the needs of the poorer provinces and enabling socio-economic development. Amongst these is the green energy in support of South African Economy i.e. SIP 8. The SIP aims at supporting sustainable green energy initiatives on national scale through a diverse range of clean energy options as envisaged in the Integrated Resource Plan (IRP, 2010). The development of renewable energy projects is supported at a National government level.

1.1 Summary of the Proposed Development

PPC Limited is proposing to establish a 10 MW photovoltaic solar energy facility together with associated infrastructure on a site located in the Mahikeng Local Municipality approximately 20 km east of Mahikeng, North West Province. It is proposed that the facility be established within the PPC-owned properties in order to supplement their own electricity supply. The following farms within the PPC mining area are being investigated for the siting of the PV facility:

- » Portion 8 of the Farm Rietvallei 102,
- » Portion 3 of the Farm Slurry 96,
- » Portion 2, 3 and 4 of the Farm Benadeplaats 93, and
- » Portion 4 of the Farm Bultfontein 92.

The proposed PV facility will have a generating capacity of up to 10 MW and will be known as the **PPC Slurry Solar Energy Facility**. The proposed project will be developed in two phases. The first phase will have a generating capacity of 1 MW, with the second phase up to 9 MW. Based on a pre-feasibility analysis undertaken by PPC Limited, four technically feasible areas have been identified as alternative sites for consideration and evaluation through a Basic Assessment Process. By undertaking a technical feasibility study which considered favourable climatic conditions (solar renewable energy facilities are directly reliant on average solar radiation values for a particular area), accessibility to and capacity of the PPC electrical system grid, availability and accessibility of the study site, as well as local site topography, the four alternative sites are considered by the project proponent to be technically feasible for the establishment of the solar energy facility.

The proposed 10 MW PV Solar plant will consist of the following infrastructure:

- » Arrays of photovoltaic (PV) panels
- » Mounting structures to support the PV panels.
- » Cabling between project components, to be laid underground where practical.
- » A new on-site substation to facilitate the evacuation of the power from the facility.
- » A new overhead power line to evacuate the power to an existing 66kV substation on the PPC site.
- » Internal access roads and fencing.
- » Workshop area for maintenance, storage, and offices.

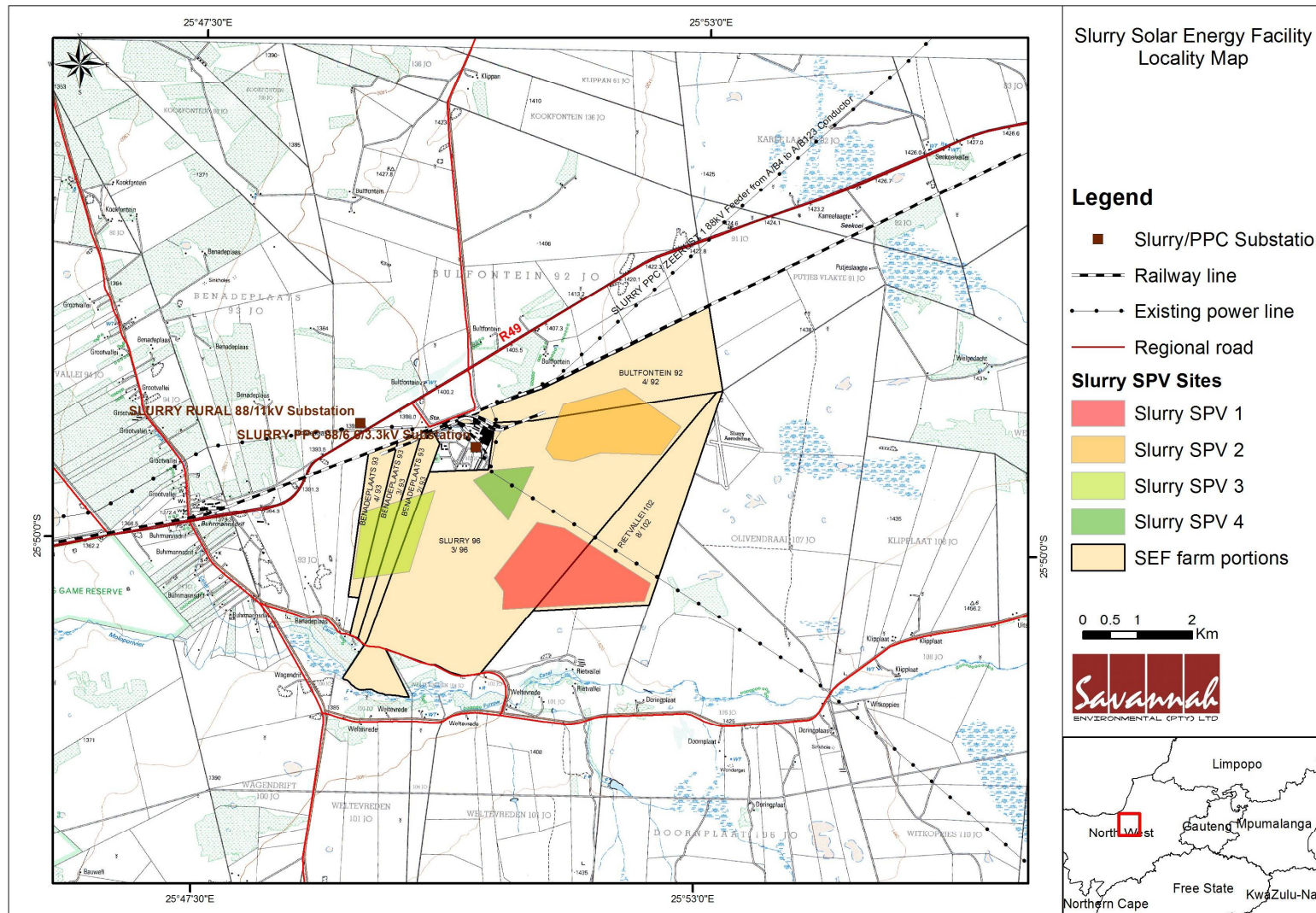


Figure 1: Locality map indicating the four proposed PPC Slurry PV site alternatives (the preferred alternative being Slurry SPV 1) within the PPC Slurry mining area, near Mahikeng

1.2 Requirement for an Environmental Impact Assessment Process

In terms of the EIA Regulations (as amended) published in terms of Section 24(5) of the National Environmental Management Act (NEMA, Act No. 107 of 1998), PPC Limited requires authorisation for the construction and operation of the proposed PPC Slurry Solar Energy Facility. NEMA is the national legislation that provides for the authorisation of 'listed activities'. In terms of sections 24 and 24D of NEMA, as read with the EIA Regulations of GN R543, R544, R545 and R546 (as amended), a Basic Assessment process is required to be undertaken for this proposed project. In terms of Section 24(1) of NEMA, the potential impact on the environment associated with these activities must be considered, investigated, assessed and reported on to the competent authority that has been charged by NEMA with the responsibility of granting environmental authorisations. As this is a proposed electricity generation project, the National Department of Environmental Affairs (DEA) is the competent authority¹ and the North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT) will act as the commenting authority. An application for authorisation has been accepted by DEA for the proposed project under application reference number **14/12/16/3/3/1/997**.

The facility development area/footprint covers an area of more than 1 hectare, but less than 20 hectares and the PV facility will have a generation capacity of up to 10 MW. In order to obtain authorisation, comprehensive and independent environmental studies must be undertaken in accordance with the EIA Regulations.

1.3. Details of an Environmental Assessment Practitioner and Expertise to conduct the Basic Assessment Process

PPC Limited has appointed Savannah Environmental as the independent environmental consultants to undertake the required Basic Assessment process and to identify and assess all the potential environmental impacts associated with the proposed project and propose appropriate mitigation and management measures in an Environmental Management Programme (EMPr). As part of these environmental studies, I&APs have been actively involved through the public involvement process. Neither Savannah Environmental nor any of the specialist sub-consultants on this project are subsidiaries of or are affiliated to PPC Limited. In addition, Savannah Environmental does not have any interest 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 assessment and planning to ensure compliance and evaluate the risk of development

¹ In terms of the Energy Response Plan, the DEA is the competent authority for all energy related applications.

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 that has been actively involved in undertaking environmental studies for a wide variety of projects throughout South Africa and neighbouring countries. Strong competencies have been developed in project management of environmental processes, as well as strategic environmental assessment and compliance advice, and the assessment of environmental impacts, the identification of environmental management solutions and mitigation/risk minimising measures.

The Savannah Environmental team has 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 Environmental Assessment Practitioners EAPs and Public Participation from Savannah Environmental who are responsible for this project are:

- » *Lusani Rathanya* - the principle author of this report holds a BSc Honours in Environmental Management and Analysis. Her key focus is on environmental impact assessments, public participation, waste and water applications, environmental management plans and programmes. She is currently the responsible EAP for several solar energy projects EIAs across the country.
- » *Karen Jodas* is a registered Professional Natural Scientist and holds a Master of Science degree. She has 16 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.
- » *Gabriele Wood* – the public participation consultant for this project, hold a BA Honours in Anthropology and has 6 years experience in public participation and social consulting, including professional execution of public participation processes for a variety of projects and Environmental Impact Assessments (EIAs and BAs).

Savannah Environmental has gained extensive knowledge and experience on potential environmental impacts associated with electricity generation projects through their involvement in related EIA processes. Savannah Environmental has completed the EIA process and received environmental authorisations for numerous solar energy facilities.

Curricula vitae for the Savannah Environmental project team consultants are included in **Appendix H**.

SECTION A: ACTIVITY INFORMATION

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 the specialist appointed and attach in Appendix I.

1. PROJECT DESCRIPTION

a) Describe the project associated with the listed activities applied for

PPC Limited is proposing to establish a 10 MW photovoltaic solar energy facility and associated infrastructure on a site located in the Mahikeng Local Municipality approximately 20 km east of Mahikeng (i.e. outside an urban area), in the North West Province. The area comprises flat to gently undulating landscape with broadly incised valleys. The proposed development site falls within the authorised mining area of PPC Cement Slurry. The majority of the site is of a transformed nature due to it being located on mining land that was previously disturbed. The following farms within the PPC mining area are being investigated for the siting of the PV facility:

- » Portion 8 of the Farm Rietvallei 102,
- » Portion 3 of the Farm Slurry 96,
- » Portion 2, 3 and 4 of the Farm Benadeplaats 93, and
- » Portion 4 of the Farm Bultfontein 92.

The 10 MW PV Solar plant is proposed to accommodate the following infrastructure on the project development site:

- » Arrays of photovoltaic (PV) panels, to be established on vacant land of more than 1 ha but less than 20ha.
- » Mounting structures to support the PV panels.
- » Cabling between project components, to be lain underground where practical, where their installation will require the excavation of soil.
- » A new on-site substation to evacuate the power from the facility into the proposed power line.
- » A new overhead power line (with a capacity of more than 33 kV but less than 275kV) to evacuate the power to an existing 66kV substation on the PPC site,
- » Internal access roads and fencing where the installation will require the excavation of soil and may impact on drainage lines.
- » Workshop area for maintenance, storage, and offices.

Activities to be undertaken during the Construction phase of the PV Facility:

In order to construct the proposed PV solar energy facility and associated

infrastructure, a series of activities will need to be undertaken. The construction process is discussed in more detail below.

a) Conduct Surveys

Prior to initiating construction, a number of surveys will be required including, but not limited to, a geotechnical survey, a survey of the site, power line and road servitudes.

b) Establishment of Access Roads to the Site

Access to the site (directly off the R49 via existing PPC Slurry Cement Factory entrance) will be required. Existing roads on the farm portions will be used and upgraded where necessary. Within the site itself, access will be required to the individual facility components for construction purposes (and later limited access for maintenance).

c) Undertake Site Preparation

Site preparation activities will include clearance of vegetation at the footprint of each support structure, if required. Vegetation will be kept undisturbed as far as possible in and between the support structures. A total area of more than 5 ha may be cleared of vegetation considered to be indigenous to the area. These activities will require the stripping of topsoil which will need to be stockpiled, backfilled and/or spread on site.

d) Transport of Components and Equipment to Site

The components and equipment required for the construction of the proposed facility will be brought to site in sections by means of the existing national and provincial roads (i.e. R49) and then onto the site via the existing access to the PPC facility and make use of existing internal access road. Some of the components (i.e. substation transformer) may be defined as abnormal loads in terms of the Road Traffic Act (Act No. 29 of 1989)² by virtue of the dimensional limitations or weight.

Typical civil engineering construction equipment will need to be brought to the site (e.g. excavators, trucks, graders, compaction equipment, cement trucks, etc.) as well as components required for the upgrade of the substation and site preparation.

e) Establishment of Laydown Areas on Site

Laydown and storage areas will be required for the typical construction equipment which will be required on site, an existing laydown area exist within the PPC site.

f) Erect PV Panels

The PV panels will be arranged in arrays. The frames will be fixed onto the ground with the use of concrete / rammed into the ground, depending on the soil conditions at the site. This will make the installation of the plant less invasive for the territory and facilitate the decommissioning at the end of its production cycle. The height of the PV

² A permit will be required for the transportation of these abnormal loads on public roads.

panel structure will be up to 6m. Inverters will be installed to change the direct current (DC) into alternating current (AC). The position of the inverters within the footprint of the broader site will be informed by the final positioning of the PV components.

g) Establishment of Ancillary Infrastructure (Substation, Power line and workshop/office)

Ancillary infrastructure includes a substation dedicated to the PV facility, an overhead power line feeding from the facility substation to the PPC 66 kV substation, a workshop and storage areas, as well as a temporary contractor's equipment camp. The workshop and storage areas will be used to store and handle dangerous goods during the construction and operation phases.

The establishment of the above ancillary infrastructure will require the clearing of vegetation and levelling of the development site and the excavation of foundations prior to construction. A laydown area for building materials and equipment associated with these buildings will also be required.

h) Undertake Site Rehabilitation

Once construction is completed and once all construction equipment is removed, the site must be rehabilitated where practical and reasonable. On full commissioning of the facility, any access points to the site which are not required during the operational phase must be closed and rehabilitated.

Activities to be undertaken during the Operational Phase of the PV Facility

The electricity that is generated from the PV panels will be stepped up through the on-site substation and fed to the existing 66kV substation via an overhead power line.

Each component within the solar energy facility will be operational except under circumstances of mechanical breakdown, unfavourable weather conditions or maintenance activities. Maintenance activities for the PV plant will include cleaning of the PV panels (using water), trimming of vegetation (underneath the panels) and maintenance of the infrastructure. Water will be required for construction and for maintenance (the cleaning the PV panels to remove dust that may collect on the panels during operation), as and when required. During operation, it is anticipated that one or two wash cycles will be required per annum, with up to 44m³ of water required per wash cycle. PPC Limited is investigating purchasing water from Mahikeng Local Municipality to supply water for the cleaning of the panels over the life of the solar facility.

Activities to be undertaken during the Decommissioning Phase of the PV Facility

The solar energy facility is expected to have a lifespan of more than 20 years (with maintenance) and the power plant infrastructure would only be decommissioned once it has reached the end of its economic life. If economically feasible/desirable the decommissioning activities would comprise the disassembly and replacement of the individual components with more appropriate technology/ infrastructure available at that time. However, if not deemed so, then the facility would be completely decommissioned which would include the following decommissioning activities.

a) Site Preparation

Site preparation activities will include confirming the integrity of the access to the site to accommodate the required equipment (e.g. laydown areas) and the mobilisation of decommissioning equipment.

b) Disassemble Components

The components would be disassembled, and reused and recycled (where possible), or disposed of in accordance with regulatory requirements.

c) Rehabilitation

Disturbed area (where infrastructure has been removed) will be rehabilitated, if required, depending on the future land-use of the facility.

b) Provide a detailed description of the listed activities associated with the project as applied for

Listed activity as described in GN R.544, 545 and 546	Description of project activity
GN 544, 18 June 2010: 1(ii) 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	<p><i>The proposed PV will have a generating capacity of 10 MW and the total extent of the facility covers an area in excess of 1 hectare</i></p>
GN 544, 18 June 2010: 10 (ii) 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	<p><i>An on-site substation and a distribution power line with a capacity of more than 33kV but less than 275kV will be constructed on the project development site</i></p>

<p>GN 544, 18 June 2010: 11(xi) The construction of: (xi). infrastructure or structures covering 50 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, excluding where such construction will occur behind the development setback line.</p>	<p><i>The proposed facility or associated infrastructure may impact on drainage lines.</i></p>
<p>GN 544, 18 June 2010: 13 The construction of facilities or infrastructure for the storage, or for the storage and handling, of dangerous good, where such storage occurs in containers with a combined capacity of 80 but not exceeding 500 cubic metres.</p>	<p><i>The proposed facility may require the storage of dangerous goods in excess of 80 m³.</i></p>
<p>GN 544, 18 June 2010: 18 The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock or more than 5 cubic metres from: (i) a watercourse; excluding where such infilling, depositing, dredging, excavation, removal or moving; (a) is for maintenance purposes undertaken in accordance with a management plan agreed to by the relevant environmental authority; or (b) occurs behind the development setback line.</p>	<p><i>The proposed facility or associated infrastructure may impact on drainage lines.</i></p>
<p>GN 544, 18 June 2010: 23 The transformation of undeveloped, vacant or derelict land to- ii. Residential, retail, 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</p>	<p>The proposed facility will have a footprint of more than 1 ha, but less than 20 ha. The site lies outside an urban area, approximately 20 km from Mahikeng.</p>
<p>GN 546, 18 June 2010: 14(a)i The clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation i. All areas outside urban areas (North West Province)</p>	<p>The proposed facility is outside urban areas, and more than 5ha of vegetation considered indigenous to the area (and where 75% or more of the vegetation cover constitutes indigenous vegetation) would be required to be removed.</p>

Other activities under Listing Notice 3 (GN546) are not applicable as the site is not considered to be located in a sensitive environment. Although areas surrounding the proposed site for the PV facility fall within a critical biodiversity area (CBA) as identified by North West Biodiversity Conservation Assessment, the proposed site (which is currently owned and occupied by PPC Slurry) does not fall within the CBA. In addition, the area is zoned for mining purposes. The majority of the area owned by PPC Limited has been transformed at some point in time over the course of the activities on the site, and although rehabilitation has been undertaken, the site is considered to be transformed.

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 as required by Regulation 22(2)(h) of GN R.543. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) 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 is 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.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

PPC Limited is proposing the establishment of a solar energy facility within the PPC mining area for the purpose of reducing total carbon emissions, diversifying electricity supply to the PPC factory, and reducing cost risk to PPC. The placement of a solar energy facility is strongly dependent on several factors including land availability, climatic conditions, relief and topography, grid connection, the extent of the site, as well as availability of the site. The PPC Slurry site was considered based on the following:

- » Availability of land: PPC Limited owns the land where the development is proposed to be constructed and large areas of historically disturbed land is available for development with reduced potential for environmental impact.
- » 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. The site experiences climatic conditions which are suitable for the implementation of PV technology.
- » Topography: The topography of the area proposed for the PV facility is predominantly flat, and therefore no shading will be caused by the surrounding topography and the vegetation on and around the site (shading affects the output of a solar PV facility).
- » Power transmission considerations: The energy generated will feed into the existing substation within the PPC Slurry site. The energy generated is planned to be utilised by the factory. A new overhead power line will be constructed to evacuate the power to an existing 66kV substation on the PPC site.
- » Environmentally suitable: The development footprint of the proposed facility would be constructed within an area of under 20ha. The development footprint is proposed within an authorised mining area on a site which has been disturbed / transformed by past activities undertaken by PPC Limited, and the site is considered to have limited environmental sensitivity as a result of the historic mining activities. Therefore, the PV panels and the associated infrastructure can be positioned within the boundaries of the broader site and avoid any environmental sensitivities.

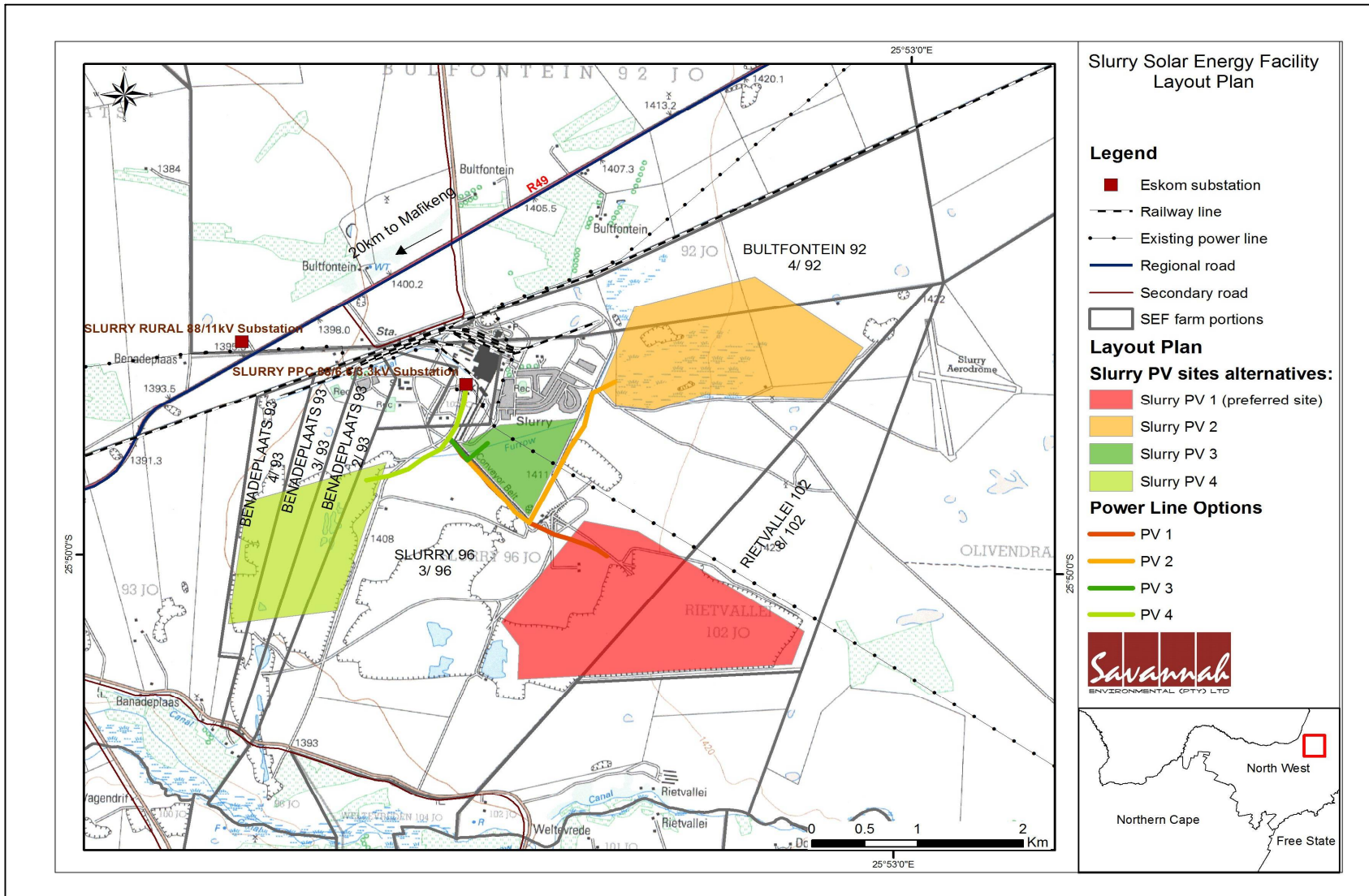


Figure 2: Map indicating the four site alternatives and associated infrastructure (the preferred alternative being Slurry SPV Site 1 in red) for the proposed PPC Slurry Solar Energy Facility, located within the PPC Slurry mining area, near Mahikeng

a) Site alternatives

Based on a pre-feasibility analysis undertaken by PPC Limited, four technically feasible areas (refer to Figure 2) have been identified as alternative sites and power lines for consideration and evaluation through a Basic Assessment Process. The proposed sites have been identified as being feasible for the establishment of a solar PV plant as per the following technical considerations:

Site Alternatives	Disadvantages	Advantages
Slurry SPV Site 1	<ul style="list-style-type: none"> » The site is 2600 m from the connection point and this will increase the total development footprint. 	<ul style="list-style-type: none"> » This site is located south east of the PPC Slurry Cement Factory and is unlikely to be impacted by dust carried by prevailing winds, therefore requiring less cleaning of panels and reduced water usage. » The site has been mined; therefore no heritage features are anticipated to occur. » The site has been mined and rehabilitated for over 10 years; therefore limited disturbance to natural areas are expected. » The topography of the area is relatively flat. » The facility will make use of existing mining infrastructure i.e. access roads and substation.
Slurry SPV Site 2	<ul style="list-style-type: none"> » The site has not been subjected to any mining activities and remains in its natural state, therefore development will result in impacts on fauna and flora. » The site is located 1000 m to North East of the PPC Slurry Cement Factory. Wind data of the surrounding area shows that the predominant wind direction is from south west to north east. The facility will be prone to impacts from dust, requiring increased water volumes for cleaning of solar panels. » The proposed power line route is approximately 3.4 km from the connection point (in order to avoid 	<ul style="list-style-type: none"> » The site is close (1000 m) to the factory, and consolidates impacts. » The facility will make use of existing mining infrastructure i.e. access roads and substation.

	and this increase the development footprint of the project.	
Slurry SPV Site 3	<ul style="list-style-type: none"> » The site was last mined in 1980 and rehabilitation has not been undertaken which could pose a risk during construction. » The site is located west of the Cement Factory. Wind data of the surrounding area shows that the predominant wind direction is from south west to north east. The facility could be prone to impacts from dust, requiring increased water volumes for cleaning of solar panels. 	<ul style="list-style-type: none"> » The site has been extensively transformed by mining activities and impact on vegetation will be very low because rehabilitation has not taken place. » Heritage sites and artefacts are not anticipated as the site was previously mined. » The facility will be using existing mining infrastructure i.e. access roads and substation. » The proposed power line is approximately 890m from the connection point and this reduces the development footprint of the project.
Slurry SPV Site 4	<ul style="list-style-type: none"> » The site has not been subjected to any direct mining activities but has been severely disturbed, therefore development will result in only minor impacts on fauna and flora. » The site has an existing heritage site (cemetery) that may be impacted upon by the proposed development. » The site is located close (less than 500m) to the south of the PPC Slurry Cement factory and infrastructure. Wind data of the surrounding area shows that the predominant wind direction is from south west to north east. The facility will be prone to impacts from dust, requiring increased water volumes for cleaning of solar panels. 	<ul style="list-style-type: none"> » The facility will be using existing mining infrastructure i.e. access roads and substation. » The proposed power line is approximately 1.3km from the connection point and this reduces the development footprint of the project.

The details of the site alternatives are as follows:

Alternative Slurry SPV Site 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 1 is located on portion 8 of the farm Rietvallei and portion 3 of the farm Slurry 96. The site is located south east of the PPC Slurry Cement Factory with a total extent of 261 ha (the development footprint will be less than 20 ha). The site has been previously mined and rehabilitated according to PPC standard. The site has been levelled (topography is relatively flat), and the vegetation has re-established on the site.	25°50'18.32"	25°51'36.97"
Alternative Slurry SPV Site 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 2 is located on portion 4 of the farm Bultfontein and portion 3 of the farm Slurry 96. The site is located east of the PPC Slurry Cement Factory with a total extent of 201 ha (the development footprint will be less than 20 ha). The site has not previously been mined and is still in a natural state. The topography is relatively flat.	25°48'48.41"	25°51'53.01"
Alternative Slurry SPV Site 3		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 3 is located on portion 2, 3 and 4 of the farm Benadeplaats and portion 3 of the farm Slurry. The site is located south west of the PPC Slurry Cement Factory with a total extent of 139 ha (the development footprint will be less than 20 ha). The site has been mined out. The site has been levelled (topography is relatively flat), and the vegetation has re-established on the site.	25°49'56.74"	25°49'33.50"
Alternative Slurry SPV Site 4		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 4 is located on portion 3 of the Farm Slurry. The site is located south west of the PPC Slurry Cement Factory with a total extent of 49 ha (the development footprint will be less than 20 ha). The site has not previously been mined and is still in a natural but degraded state. The topography is relatively flat.	25°49'26.43"	25°50'50.22"

In the case of linear activities:

The four proposed alternatives will each have a power line which will be transmitting the generated electricity into the PPC Slurry grid. The routing of the power lines corridor is influenced (and restricted) by the existing PPC Slurry mine and factory infrastructure across the extent of the study area (i.e. the PPC Slurry mining area). The sites are traversed by existing power line, a conveyor belt, and roads, as well as existing buildings, infrastructure and excavations. The power line routes are proposed to follow the existing conveyor belt route (linear feature) to where the substation is located adjacent to the factory.

Alternative:	Latitude (S):	Longitude (E):
Alternative A1 (preferred) (Power line)		
• Starting point of the activity	25°49'59.35"	25°51'12.67"
• Middle/Additional point of the activity	25°49'37.22"	25°50'40.93"
• End point of the activity	25°49'0.82"	25°50'30.65"
Alternative A2 (if any)		
• Starting point of the activity	25°48'58.14"	25°51'21.38"
• Middle/Additional point of the activity	25°49'46.54"	25°50'54.12"
• End point of the activity	25°49'0.82"	25°50'30.65"
Alternative A3 (if any)		
• Starting point of the activity	25°49'33.49"	25°49'58.31"
• Middle/Additional point of the activity	25°49'23.27"	25°50'22.61"
• End point of the activity	25°49'0.82"	25°50'30.65"
Alternative A4 (if any)		
• Starting point of the activity	25°49'21.06"	25°50'39.03"
• Middle/Additional point of the activity	25°49'12.91"	25°50'27.71"
• End point of the activity	25°49'0.82"	25°50'30.65"

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

A table has been attached as Appendix I1 with all the proposed power lines coordinates.

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the layout map provided in Appendix A.

b) Lay-out alternatives

There is one layout alternative for the proposed development.

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
<p>The development footprint is smaller than the broader Farm portion i.e. 20 ha but a larger area is being considered for assessment. Therefore the facility and associated infrastructure (i.e. PV panels, internal roads, etc.) can be appropriately located in terms of avoidance of sensitive areas within the broader site. The extent of the site allowed for the identification of a preferred site-specific layout design.</p> <p>The basic assessment process aimed to identify potentially environmentally sensitive areas which were to be avoided by the proposed development as far as possible. The information from these studies was used to inform the layout for the proposed development site. The aim of this planning process was to avoid environmentally sensitive areas as far as possible and inform the final design of the facility (i.e. specific design considerations including <i>inter alia</i> the layout of the PV panels, and alternative routes for the power line corridor and the access roads).</p>	25°50'18.32"	25°51'36.97"
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

c) Technology alternatives

<p>Alternative 1 (preferred alternative)</p> <p>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 selection. While the impacts of all PV technologies are not identical (tracking PV requires a greater area per megawatt installed), the choice of technology does not materially affect the environmental impact of the proposed development as the development footprint is considered or assessed as 'total loss'. 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.</p> <p>No activity alternatives were assessed because the site has been identified by PPC Limited as being highly desirable for the establishment of a photovoltaic plant, and the development of other renewable technologies such as wind or concentrated solar power (CSP) are not considered viable or feasible:</p> <ul style="list-style-type: none"> » A wind energy installation was not considered as a feasible and reasonable alternative as the proposed developmental area does not have the required wind resource. » A CSP installation was not considered as a feasible and reasonable alternative as the facility is proposed to be a 10 MW facility, which is not suited to CSP technology. In addition, large volumes of water are required for cooling, unlike PV where water is only required for cleaning purposes (considering the fact that the site is in an arid area.). <p>Therefore, a PV facility is considered by PPC Limited to be the only feasible power generation activity for the proposed site.</p>
<p>Alternative 2</p>
<p>Alternative 3</p>

d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)

None were assessed.

<p>Alternative 1 (preferred alternative)</p> <p>Description:</p> <p>Operating Alternatives</p> <p>This refers to the manner in which a proposed facility would function. No operating alternatives would be applicable to the proposed solar energy facility as there are no</p>
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feasible means of alternative operation for a facility of this nature.
Alternative 2
Alternative 3

e) No-go alternative

This option is assessed as the “no go alternative” or ‘do nothing’ in this Basic Assessment Report.

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

3. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative(relevant to the activity on all site alternatives):

Size of the activity:

- Alternative Slurry SPV1 (preferred activity alternative)
- Alternative SPV2
- Alternative SPV3
- Alternative SPV4

190 000 m ² (19 ha)
190 000 m ² (19 ha)
190 000 m ² (19 ha)
190 000 m ² (19 ha)

or, for linear activities:

Alternative:

Length of the activity:

- Alternative A1³ (preferred activity alternative)
- Alternative A2 (if any)
- Alternative A3 (if any)
- Alternative A4 (if any)

2600m
3400m
890m
1300m

³ “Alternative A..” refer to activity, process, technology or other alternatives.

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

Alternative:	Size of the site/servitude:
Alternative Slurry SPV1 (preferred activity alternative)	261 ha (19 ha -PV facility development footprint)
Alternative Slurry SPV2	201 ha (19 ha -PV facility development footprint)
Alternative Slurry SPV3	139 ha (19 ha -PV facility development footprint)
Alternative Slurry SPV4	49 ha (19 ha -PV facility development footprint)
Alternative A1, A2, A3, A4 (power line)	36m servitude (power line)

4. SITE ACCESS

Does ready access to the site exist?

YES ✓	
m	

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

Describe the type of access road planned:

The site is directly accessible via the PPC Slurry Cement Factory entrance from the R49. Access within the PPC-owned property is via existing internal access roads.

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.

5. 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 accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s);
- 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).

An A3 Locality Map is attached in **Appendix A**.

6. LAYOUT/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:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

A detailed site layout plan for the preferred alternative is attached as **Appendix A**. The layout alternative assessed is for the preferred site alternative (Alternative S1).

7. SENSITIVITY MAP

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- 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 infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in **Appendix A**.

A sensitivity map covering areas 100m of the site is attached in **Appendix A**.

8. 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 report. It must be supplemented with additional photographs of relevant features on the site, if applicable.

Colour photographs have been taken from the centre of the proposed site in the eight major compass directions. Annotated photographs are included in **Appendix B**.

9. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of at least 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.

A facility illustration which represents a realistic image of the planned solar energy facility is attached within **Appendix C**.

10. ACTIVITY MOTIVATION

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

1. Is the activity permitted in terms of the property's existing land use rights?	YES ✓		Please explain
The current land use of the properties owned by PPC Limited is mining and industrial use. The site is zoned for mining purposes. As such, this zoning is able to accommodate an industrial installation such as a PV plant to support the existing infrastructure on the site. If deemed necessary, an application could be made to change the land use rights to accommodate the solar energy facility.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES ✓		Please explain
The North West Province has a renewable Energy Strategy. The strategy was developed to respond to the need of the North West Province to participate meaningfully within the renewable energy sector of South Africa. The renewable energy strategy aims to improve North West Province's environment, reduce the North West Province's contribution to climate change, and alleviate energy poverty, promoting economic development and job creation in the Province while developing its green economy. The project will be in line with the plans of the province.			
(b) Urban edge / Edge of Built environment for the area	YES ✓		Please explain
The site is ~20km east of the urban edge related to the town of Mahikeng. The proposed project will be located within the Slurry Cement factory which is an industrial area. Addition of a PV Facility on this site does not affect the urban edge of Mahikeng or the Mahikeng Local Municipality. Therefore the project is consistent and compatible with the PPC Limited Slurry activities in an area outside the urban edge of the Mahikeng Local Municipality.			
(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	YES ✓		Please explain
Ngaka Modiri Molema District Municipality's IDP supports the goals set by the National Development Plan Vision 2013 i.e. expanding infrastructure and transitioning to low carbon economy. The construction of the proposed PV solar facility will assist in meeting the objective.			
(d) Approved Structure Plan of the Municipality	YES ✓		Please explain
There are several renewable energy projects that are proposed in the Ngaka Modiri			

<p>Molema District Municipality under the DoE's Renewable Energy Independent Power Producers Procurement Programme (REIPPP). The proposed PPC Slurry Solar Energy Facility is not proposed to be constructed under the REIPPP Programme as it is PPC Limited's intention to utilise the power for their existing industrial installation as a way of reducing total carbon emissions, diversifying electricity supply to the factory, and reducing cost risk. Therefore, the proposed facility falls under the same category of projects that are being approved by the municipality though its not for public use.</p>		
<p>(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)</p>		<p>NO ✓ Please explain</p>
<p>The Municipality does not have an EMF, however an Integrated Environmental Management Programme was compiled by the District Municipality to ensure that land use decision making is taken with adequate environmental resource information being available to ensure sustainable and appropriate environmental management to the benefit of its residents. One of the set goals for the Plan is ensuring that all environmental issues are appropriately addressed.</p> <p>Renewable energy projects such the proposed PPC Slurry Solar Energy Facility will contribute to clean energy generation as a sustainable resource and holds huge benefits for the local region and the country as a whole. Renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future, the project aims on achieving the set goals for the Plan through addressing all possible environmental issues associated with the development and address measure to mitigate environmental issues.</p>		
<p>(f) Any other Plans (e.g. Guide Plan)</p>	<p>YES ✓</p>	<p>Please explain</p>
<p>The proposed facility supports the guidelines as set by Department of Agriculture, Forestry and Fisheries which focuses on the conservation of arable land.</p>		
<p>3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?</p>	<p>YES ✓</p>	<p>Please explain</p>
<p>The main IDP and SDP objective of the Ngaka Modiri Molema District Municipality is to support the National Development Plan Vision 2013 of expanding infrastructures and transitioning to low carbon economy. The construction of the proposed PV solar panels</p>		

will be meeting the objective.		
<p>4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)</p>	YES ✓	Please explain
<p>The generation of a dedicated power supply for the Slurry Cement Factory will serve to:</p> <ul style="list-style-type: none"> » Reduce carbon emissions » Diversify electricity supply and » Reduce cost risk <p>The proposed activity is not a necessarily a societal priority for the community; however the development will benefit the local community through jobs creation, skills development opportunities and training which will in turn reduce poverty level that the area is currently facing. The use of power generated specifically for PPC will reduce the reliance on Eskom power available to this area, and surplus power generated could also have the potential to strengthen electricity supply for the area.</p>		
<p>5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</p>	YES ✓	Please explain
<p>The Slurry cement factory has existing infrastructures to accommodate the proposed solar energy facility i.e. access roads, switching station and water.</p>		
<p>6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</p>		NO ✓ Please explain
<p>The proposed project is to be developed by a private developer (i.e. PPC Limited) and not the Municipality. It therefore does not fall within the infrastructure planning of the Municipality. The project will not have any implications for the municipality but assist them in their infrastructural planning priorities through the increasing electricity capacity.</p>		

<p>7. Is this project part of a national programme to address an issue of national concern or importance?</p>	<p>NO ✓</p>	<p>NO</p>	<p>Please explain</p>
<p>There are several renewable energy projects that are proposed in the Ngaka Modiri Molema District Municipality under the DoE's Renewable Energy Independent Power Producers Procurement Programme (REIPPP). The proposed PPC Slurry Solar Energy Facility is not proposed to be constructed under the REIPPP Programme as it is PPC Limited's intention to utilise the power for their existing industrial installation as a way of reducing total carbon emissions, diversifying electricity supply to the factory, and reducing cost risk. The direct benefits are for the PPC Limited Slurry factory.</p>			
<p>8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)</p>	<p>YES ✓</p>	<p>YES</p>	<p>Please explain</p>
<p>The proposed facility is being proposed in a mining areas where there is an existing infrastructure to cater for the facility i.e. availability of land, access roads, grid connection etc</p>			
<p>9. Is the development the best practicable environmental option for this land/site?</p>	<p>YES ✓</p>	<p>YES</p>	<p>Please explain</p>
<p>The proposed activity will occupy an area less than 20 ha and will represent a change in land use and land form to what is currently the status quo. The land is currently underutilised and is lying fallow; the development of the proposed facility is the best practicable environmental option for the type of land since the proposed development can allow the current land-use (mining activities) to continue on the rest of the farm portion (i.e. the rest of the land which is not utilised for the facility).</p>			
<p>10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?</p>	<p>YES ✓</p>	<p>YES</p>	<p>Please explain</p>
<p>» This basic assessment report identified that no environmental fatal flaws are associated with the project. The potential negative impacts for the project include:</p> <ul style="list-style-type: none"> ○ Clearing of rehabilitated vegetation for the proposed footprint area, ○ Increasing the potential for soil erosion within the development footprint. <p>» The development footprint is proposed within an authorised mining area on a site which has been disturbed/transformed by past activities undertaken by PPC Limited, and the site is considered to have limited environmental sensitivity as a result of the historic mining activities.</p> <p>» Environmental impacts can be managed and mitigated as outlined in the Impact Assessment and Environmental Management Programme. Below are some of the benefits associated with the development:</p> <ul style="list-style-type: none"> ○ 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. ○ Employment creation: The sale, development, installation, maintenance, and 			

<p>management of renewable energy facilities have significant potential for job creation in South Africa.</p> <ul style="list-style-type: none"> o Acceptability to society: Renewable energy offers a number of tangible benefits to society including reduced pollution concerns, improved human, and ecosystem health. o Support to a new industry sector: The development of renewable energy offers the opportunity to establish a new industry within the South African economy. <p>The negative impacts referred to above could also result from activities associated with the current land use. This is not true of the positive impacts. It is considered reasonable that the benefits of the proposed land use/development will outweigh the negative impacts.</p>			
<p>11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?</p>	YES ✓		Please explain
<p>There are similar developments being proposed in the Ngaka Modiri Molema District Municipality which have received environmental authorisations; however no solar projects have been developed yet in the area. It is considered that the precedent for the development of renewable energy projects in this area and within this Municipality has already been set, and local support has been shown by landowners, and the Municipality. The precedent of utilising transformed land for the development of dedicated power generating facilities for use by the generator would be supported.</p>			
<p>12. Will any person's rights be negatively affected by the proposed activity/ies?</p>		NO ✓	Please explain
<p>The proposed project will be taking place in a privately owned land and will not in any way infringe on any person's rights.</p>			
<p>13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?</p>		NO ✓	Please explain
<p>The site is ~20km east of the urban edge related to the town of Mahikeng. The proposed project will be located within the Slurry Cement factory which is an industrial area. Addition of a PV Facility on this site will not significantly alter the urban edge of Mahikeng or the Mahikeng Local Municipality, as the current activities will continue on areas of the site which will not be occupied by infrastructure for the solar energy facility. Therefore the project is compatible with the slurry cement factory activities in a rural area which is outside the urban edge of the Mahikeng Local Municipality.</p>			
<p>14. Will the proposed activity/ies contribute to any of the 18 Strategic Integrated Projects (SIPS)?</p>	YES ✓		Please explain
<p>One of the 18 Strategic Integrated Project (SIPS) is to address issues of electricity infrastructure, unemployment and climate change. The proposed project will be addressing these issues.</p>			
<p>15. What will the benefits be to society in general and to the local communities?</p>	Please explain		
<p>Job opportunities, albeit limited, will be created during the construction and operation</p>			

<p>of the proposed facility. In addition, local and regional economic benefits would be realised through the additional revenue generated as a result of the proposed project (through direct and indirect job opportunities, local spend, local procurement, etc.). .</p>	
<p>16. Any other need and desirability considerations related to the proposed activity?</p>	<p>Please explain</p>
<p>The PPC Limited Slurry Factory has identified the need for the infrastructure. The power generated at the PV facility is proposed to be used by the PPC Slurry factory. The project is considered to be desirable for PPC Limited as it will reduce overall carbon emissions, diversify electricity supply for the existing factory, and reduce cost risk.</p>	
<p>17. How does the project fit into the National Development Plan for 2030?</p>	<p>Please explain</p>
<p>One of the 18 SIP within the National Development Plan for 2030 is the transition to low carbon energy through speeding up and expanding renewable energy. This project will fit into this vision since it aims on increasing electricity supply through carbon-free methods.</p>	
<p>18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.</p>	
<p>The general objectives of Integrated Environmental Management have been taken into account for this Basic Assessment report by means of identifying, predicting and evaluating the actual and potential impacts on the environment, socio-economic conditions and cultural heritage component. The risks, consequences, alternatives as well as options for mitigation of activities have also been considered with a view to minimise negative impacts, maximise benefits, and promote compliance with the principles of environmental management.</p>	
<p>19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.</p>	
<p>The principle of environmental management as set out in section of NEMA states that:</p> <ul style="list-style-type: none"> » Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably; » Development must be sustainable socially (people), environmentally (planet) and economically (prosperity);and » Sustainable development requires the consideration of all the relevant factors. <p>These principles have been taken into account for this Basic Assessment report by means of identifying, predicting and evaluating the actual and potential impacts on the environment, socio-economic conditions and cultural heritage component. The risks, consequences, alternatives as well as options for mitigation of activities have also been considered with a view to minimise negative impacts, maximise benefits, and promote compliance with the principles of environmental management.</p>	

11. 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:

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
National Legislation			
National Environmental Management Act (Act No 107 of 1998)	<p>The Environmental Assessment Regulations have been promulgated in terms of Chapter 5 of the Act. Listed activities which may not commence without an environmental authorisation are identified within these Regulations.</p> <p>In terms of S24(1) of NEMA, the potential impact on the environment associated with these listed activities must be assessed and reported on to the competent authority charged by NEMA with granting of the relevant environmental authorisation.</p> <p>In terms of GN R543, R544, R545 and R546 of 18 June 2010, a Basic Assessment Process is required to be undertaken for the proposed project.</p>	<p>Department of Environmental Affairs – competent authority</p> <p>North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT)</p>	<p>The listed activities triggered by the proposed solar energy facility have been identified and assessed in the Basic Assessment Process being undertaken. This Basic Assessment Report will be submitted to the competent and commenting authority in support of the application for authorisation.</p>
National Environmental Management Act (Act No 107 of 1998)	<p>In terms of the Duty of Care Provision in S28(1) the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to ensure that any pollution or degradation of the environment associated with this project is avoided, stopped or minimised.</p> <p>In terms of NEMA, it has become the legal duty of a project proponent to consider a project holistically, and to consider the cumulative effect of a variety of impacts.</p>	<p>Department of Environmental Affairs</p> <p>North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT)</p>	<p>While no permitting or licensing requirements arise directly by virtue of the proposed project, this section has found application during the Basic Assessment Process through the consideration of potential impacts (cumulative, direct, and indirect). It will continue to apply throughout the life cycle of the project.</p>

<p>Environment Conservation Act (Act No 73 of 1989)</p>	<p>National Noise Control Regulations (GN R154 dated 10 January 1992)</p>	<p>Department of Environmental Affairs North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT) Mahikeng Local Municipality</p>	<p>Noise impacts are expected to be associated with the construction phase of the project and are not likely to present a significant intrusion to the local community and every day operation of the PPC Slurry Cement Factory. On-site activities should be limited to 6:00am - 6:00pm, Monday - Saturday (excluding public holidays). Should activities need to be undertaken outside of these times, the surrounding communities will need to be notified and appropriate approval will be obtained from DEA and the Local Municipality.</p>
<p>National Water Act (Act No 36 of 1998)</p>	<p>Water uses under S21 of the Act must be licensed, unless such water use falls into one of the categories listed in S22 of the Act or falls under the general authorisation (and then registration of the water use is required). Consumptive water uses may include the taking of water from a water resource - Sections 21a and b. Non-consumptive water uses may include impeding or diverting of flow in a water course - Section 21c; and altering of bed, banks or characteristics of a watercourse - Section 21i.</p>	<p>Department of Water Affairs Provincial Department of Water Affairs</p>	<p>The water required for this project will be sourced from Mahikeng Local Municipality. No License would be required from DWA for the taking of water. Should any water resources be impacted</p>

			through construction, the relevant license would be required to be applied for.
Minerals and Petroleum Resources Development Act (Act No 28 of 2002)	<p>A mining permit or mining right may be required where a mineral in question is to be mined (e.g. materials from a borrow pit) in accordance with the provisions of the Act.</p> <p>Requirements for Environmental Management Programmes and Environmental Management Plans are set out in S39 of the Act.</p> <p>S53 Department of Mineral Resources: Approval from the Department of Mineral Resources (DMR) may be required to use land surface contrary to the objects of the Act in terms of section 53 of the Mineral and Petroleum Resources Development Act, (Act No 28 of 2002): In terms of the Act approval from the Minister of Mineral Resources is required to ensure that proposed activities do not sterilise a mineral resources that might occur on site.</p>	Department of Mineral Resources	<p>The proposed facility will be taking place in an area zoned for mining purposes. The sites proposed for development do not compromise any known resources. The areas have been mined.</p> <p>A Section 53 approval would not be required as the area proposed for development has been mined out. .</p>
Minerals and Petroleum Resources Development Act (Act No 28 of 2002)	<p>A reconnaissance permission, prospecting right, mining right, mining permit, retention permit, technical corporation permit, reconnaissance permit, exploration right and production right work programme; mining work programme, environmental management programme, and environmental management plan may not be amended or varied (including by extension of the area covered by it or by the addition of minerals or a share or shares or seams, mineralised bodies, or strata, which are not at the time the subject thereof) without the written consent of the Minister.</p>	Department of Mineral resources	DMR were consulted with regard to the proposed facility and due process is underway to obtain permission
National Environmental Management: Air Quality Act (Act No 39 of 2004)	<p>Measures in respect of dust control (S32) – no regulations promulgated yet.</p> <p>Measures to control noise (S34) - no regulations promulgated yet.</p>	Department of Environmental Affairs	No permitting or licensing requirements arise for this facility from this legislation.

			The Act provides that an air quality officer may require any person to submit an atmospheric impact report if there is reasonable suspicion that the person has failed to comply with the Act.
National Heritage Resources Act (Act No 25 of 1999)	<ul style="list-style-type: none"> » Stipulates assessment criteria and categories of heritage resources according to their significance (S7). » Provides for the protection of all archaeological and paleontological sites, and meteorites (S35). » Provides for the conservation and care of cemeteries and graves by SAHRA where this is not the responsibility of any other authority (S36). » Lists activities which require developers any person who intends to undertake to notify the responsible heritage resources authority and furnish it with details regarding the location, nature, and extent of the proposed development (S38). » Requires the compilation of a Conservation Management Plan as well as a permit from SAHRA for the presentation of archaeological sites as part of tourism attraction (S44). 	South African Heritage Resources Agency	A notification letter was submitted to SARHA informing them about the project and request for comments. A Basic Assessment Report will also be submitted to SAHRA for review.
National Environmental Management: Biodiversity Act (Act No 10 of 2004)	<ul style="list-style-type: none"> » Provides for the MEC/Minister to identify any process or activity in such a listed ecosystem as a threatening process (S53) » A list of threatened and protected species has been published in terms of S 56(1) - Government Gazette 29657. » Three government notices have been published, i.e. GN R 150 (Commencement of Threatened and Protected Species Regulations, 2007), GN R 151 (Lists of critically endangered, vulnerable and protected species) and GN R 152 (Threatened or Protected Species Regulations). 	Department of Environmental Affairs	Not likely to be required for those areas which have been transformed. A destruction permit will be applied for should there be any species which are protected or endangered. In addition, a weed control and management plan

	<ul style="list-style-type: none"> » Provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), and vulnerable (VU) or protected. The first national list of threatened terrestrial ecosystems has been gazetted, together with supporting information on the listing process including the purpose and rationale for listing ecosystems, the criteria used to identify listed ecosystems, the implications of listing ecosystems, and summary statistics and national maps of listed ecosystems (National Environmental Management: Biodiversity Act: National list of ecosystems that are threatened and in need of protection, (G 34809, GN 1002), 9 December 2011). » This Act also regulates alien and invader species. » Under this Act, a permit would be required for any activity which is of a nature that may negatively impact on the survival of a listed protected species. 		must be implemented.
Conservation of Agricultural Resources Act (Act No 43 of 1983)	<ul style="list-style-type: none"> » Prohibition of the spreading of weeds (S5) » Classification of categories of weeds & invader plants (Regulation 15 of GN R1048) & restrictions in terms of where these species may occur. » Requirement & methods to implement control measures for alien and invasive plant species (Regulation 15E of GN R1048). 	Department of Agriculture	This Act will find application throughout the life cycle of the project. In this regard, soil erosion prevention and soil conservation strategies must be developed and implemented. In addition, a weed control and management plan must be implemented.
National Forests Act (Act No. 84 of 1998)	According to this act, the Minister has declared a tree, group of trees, woodland or a species of trees as protected. The prohibitions provide that 'no person may cut, damage, disturb, destroy or remove any protected tree, or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of	National Department of Forestry	A destruction permit will be applied for should there be any species which are protected or endangered.

	any protected tree, except under a licence granted by the Minister’.		
National Veld and Forest Fire Act (Act 101 of 1998)	<p>In terms of S12 the applicant must ensure that the firebreak is wide and long enough to have a reasonable chance of preventing the fire from spreading, not causing erosion, and is reasonably free of inflammable material.</p> <p>In terms of S17, the applicant must have such equipment, protective clothing, and trained personnel for extinguishing fires.</p>	Department of Agriculture, Forestry and Fisheries (DAFF)	While no permitting or licensing requirements arise from this legislation, this act will find application during the construction and operational phase of the project.
Hazardous Substances Act (Act No 15 of 1973)	<p>This Act regulates the control of substances that may cause injury, or ill health, or death due to their toxic, corrosive, irritant, strongly sensitising or inflammable nature or the generation of pressure thereby in certain instances and for the control of certain electronic products. To provide for the rating of such substances or products in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, modification, disposal or dumping of such substances and products.</p> <p>Group I and II: Any substance or mixture of a substance that might by reason of its toxic, corrosive etc., nature or because it generates pressure through decomposition, heat or other means, cause extreme risk of injury etc., can be declared as Group I or Group II substance</p> <p>Group IV: any electronic product; and</p> <p>Group V: any radioactive material.</p> <p>The use, conveyance, or storage of any hazardous substance (such as distillate fuel) is prohibited without an appropriate license being in force.</p>	Department of Health	It is necessary to identify and list all the Group I, II, III, and IV hazardous substances that may be on the site and in what operational context they are used, stored or handled. If applicable, a license is required to be obtained from the Department of Health.
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)	The Minister may by notice in the <i>Gazette</i> publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment.	National Department of Water and Environmental Affairs	As no waste disposal site is to be associated with the proposed project, no permit is required in this

	<p>The Minister may amend the list by –</p> <ul style="list-style-type: none"> » Adding other waste management activities to the list. » Removing waste management activities from the list. » Making other changes to the particulars on the list. <p>In terms of the Regulations published in terms of this Act (GN 718), A Basic Assessment or Environmental Impact Assessment is required to be undertaken for identified listed activities.</p> <p>Any person who stores waste must at least take steps, unless otherwise provided by this Act, to ensure that:</p> <ul style="list-style-type: none"> » The containers in which any waste is stored, are intact and not corroded or in » Any other way rendered unfit for the safe storage of waste. » Adequate measures are taken to prevent accidental spillage or leaking. » The waste cannot be blown away. » Nuisances such as odour, visual impacts and breeding of vectors do not arise; and » Pollution of the environment and harm to health are prevented. 	<p>Provincial Department of Environmental Affairs (general waste)</p>	<p>regard.</p> <p>Waste handling, storage and disposal during construction and operation is required to be undertaken in accordance with the requirements of the Act.</p> <p>The volumes of waste to be generated and stored on the site during construction and operation of the facility will not require a waste license (provided these remain below the prescribed thresholds).</p>
<p>National Road Traffic Act (Act No 93 of 1996)</p>	<ul style="list-style-type: none"> » The technical recommendations for highways (TRH 11): "Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads" outline the rules and conditions which apply to the transport of abnormal loads and vehicles on public roads and the detailed procedures to be followed in applying for exemption permits are described and discussed. » Legal axle load limits and the restrictions imposed on abnormally heavy loads are discussed in relation to the damaging effect on 	<ul style="list-style-type: none"> » South African National Roads Agency Limited (national roads) » Provincial Department of Transport 	<p>An abnormal load/vehicle permit may be required to transport the various components to site for construction. These include route clearances and permits will be required for vehicles carrying abnormally heavy</p>

	<p>road pavements, bridges, and culverts.</p> <p>» The general conditions, limitations, and escort requirements for abnormally dimensioned loads and vehicles are also discussed and reference is made to speed restrictions, power/mass ratio, mass distribution, and general operating conditions for abnormal loads and vehicles. Provision is also made for the granting of permits for all other exemptions from the requirements of the National Road Traffic Act and the relevant Regulations.</p>		<p>or abnormally dimensioned loads.</p> <p>Transport vehicles exceeding the dimensional limitations (length) of 22m. Depending on the trailer configuration and height when loaded, some of the project components may not meet specified dimensional limitations (height and width).</p>
Promotion of Access to Information Act (Act No 2 of 2000)	All requests for access to information held by state or private body are provided for in the Act under S11.	Department of Environmental Affairs	No permitting or licensing requirements.
Promotion of Administrative Justice Act (Act No 3 of 2000)	<p>In terms of S3 the government is required to act lawfully and take procedurally fair, reasonable, and rational decisions.</p> <p>Interested and affected parties have a right to be heard.</p>	Department of Environmental Affairs	No permitting or licensing requirements.
Provincial Plans			
North West province Spatial Development Framework (2008)	Provides a spatial interpretation of the Provincial Growth and Development Strategy to guide future land use and development	North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT)	No permitting or licensing requirements.
North West Province Growth and Development Strategy (2004-2014)	Provides a framework for integrated and sustainable growth and economic development for the Province and its people over the next ten years. It addresses the formulation of a common vision, goals	North West Department of Economic	No permitting or licensing requirements.

	and objectives of what should be achieved and how the provincial government and its social partners should achieve its objectives	Development, Environment, Conservation and Tourism (DEDECT)	
North West Biodiversity Conservation Assessment Plan (2009) x	<ul style="list-style-type: none"> » inform the development of the Provincial Biodiversity Sector plans, bioregional plans, and also be used to inform Spatial Development Frameworks (SDFs), Environmental Management Frameworks (EMFs), Strategic Environmental Assessments (SEAs) and in the Environmental Impact Assessment (EIA) process in the province. 	North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT)	No permitting or licensing requirements.
North West Renewable Energy Strategy (2012)	The renewable energy strategy aims to improve the North West Province's environment, reduce the North West Province's contribution to climate change, and alleviate energy poverty, whilst promoting economic development and job creation in the province whilst developing its green economy.	North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT)	No permitting or licensing requirements.
Local Government			
Ngaka Modiri Molema District Municipality IDP (2011-2016)	<ul style="list-style-type: none"> » Ensure the provision of services to communities in a sustainable manner » Promote safe and healthy environment 	Local Authorities	No permitting or licensing requirements.

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

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

YES ✓

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

± 3m³

Approximately 3m³ of solid construction waste consisting mainly of vegetation, spoil material from clearing activities and metal and cabling off cuts. Therefore minimal quantities of packaging materials for the various components, excess concrete spillage and excess building materials will be produced on site during the construction phase. The quantity would be readily handled by contractors on site.

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

It is anticipated that construction waste will be comprised mainly of spoil material from cleaning activities as well as metal and cabling off-cuts. Non-recyclable waste will be trucked to the nearest licensed waste disposal facility for appropriate disposal.

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 the nearest licensed waste disposal facility for appropriate disposal.

Will the activity produce solid waste during its operational phase?

NO ✓

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

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

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

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

Waste that does not feed into the municipal stream will be transported to the nearest landfill site.

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 NEM:WA? NO ✓

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

Is the activity that is being applied for a solid waste handling or treatment facility? NO ✓

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. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

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?

m³

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:			
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:

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c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?

	NO ✓

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

If YES, the applicant must 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:

Solar energy installations operate by converting solar energy into electricity. This is characterised as a non-consumptive use of a natural resource and consumes no fuel for its continuing operation. Solar power produces an insignificant quantity of greenhouse gases over its lifecycle as compared to conventional coal-fired power stations. The operational phase of a solar facility does not produce carbon dioxide, sulphur dioxide, mercury, particulates, or any other type of pollution.

d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?

	NO ✓
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If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

e) 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:

Minimal noise will be made during construction phase by moving vehicles; this is not regarded as significant noise source/ impact and will most likely not constitute a "disturbing noise". Furthermore, the proposed facility is about 2 km away from the mining infrastructure and will generate less noise compared with the mining activities.

13. WATER USE

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

Municipal ✓	Water board	Groundwater	River,	Other	The activity
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			stream, dam or lake		will not use water
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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 authorisation (general authorisation or water use license) from the Department of Water Affairs?

	NO ✓

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

14. 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 B and indicate the area, which is covered by each copy No. on the Site Plan.

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

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

- 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 and attach it in Appendix I. All specialist reports must be contained in Appendix D.

Property description/ physical address:

Province	North West Province
District Municipality	Ngaka Modiri Molema District Municipality
Local Municipality	Mahikeng Local Municipality
Ward Number(s)	4
Farm name and number	» Portion 8 of the Farm Rietvallei 102, » Portion 3 of the Farm Slurry 96, » Portion 2, 3 and 4 of the Farm Benadeplaats 93 and » Portion 4 of the Farm Bultfontein 92.
Portion number	» Portion 8 of the Farm Rietvallei 102, » Portion 3 of the Farm Slurry 96, » Portion 2, 3 and 4 of the Farm Benadeplaats 93 and » Portion 4 of the Farm Bultfontein 92.
SG Code	T0JO00000000010200008 T0JO00000000009600003 T0JO00000000009300002 T0JO00000000009300003 T0JO00000000009300004 T0JO00000000009200004

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

Current land-use zoning as per local municipality IDP/records:

Mining

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? NO ✓

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative SPV1, SPV2, SPV3, SPV4 (relevant to all 4 alternatives):

Flat ✓	1:50	-	1:20	-	1:15	-	1:10	-	1:7,5	-	Steeper than 1:5
	1:20		1:15		1:10		1:7,5		1:5		

Alternative S2 (if any):

Flat	1:50	-	1:20	-	1:15	-	1:10	-	1:7,5	-	Steeper than 1:5
	1:20		1:15		1:10		1:7,5		1:5		

Alternative S3 (if any):

Flat	1:50	-	1:20	-	1:15	-	1:10	-	1:7,5	-	Steeper than 1:5
	1:20		1:15		1:10		1:7,5		1:5		

2. LOCATION IN LANDSCAPE

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

Alternative SPV1, SPV2, SPV3, SPV4 (relevant to all 4 alternatives):

2.1 Ridgeline	<input type="checkbox"/>	2.4 Closed valley	<input type="checkbox"/>	2.7 Undulating plain / low hills	<input checked="" type="checkbox"/>
2.2 Plateau	<input type="checkbox"/>	2.5 Open valley	<input type="checkbox"/>	2.8 Dune	<input type="checkbox"/>
2.3 Side slope of hill/mountain	<input type="checkbox"/>	2.6 Plain	<input checked="" type="checkbox"/>	2.9 Seafront	<input type="checkbox"/>

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

	Alternative SPV1, SPV2, SPV3, SPV4 (relevant to all 4 alternatives):	Alternative S2 (if any):	Alternative S3 (if any):
Shallow water table (less than 1.5m deep)	NO ✓		
Dolomite, sinkhole or doline areas	NO ✓		
Seasonally wet soils (often close to water bodies)	NO ✓		
Unstable rocky slopes or steep slopes with loose soil	NO ✓		
Dispersive soils (soils that dissolve in water)	YES ✓		
Soils with high clay content (clay fraction more than 40%)	NO ✓		
Any other unstable soil or geological feature	NO ✓		
An area sensitive to erosion	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.

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).

Alternative SPV1, SPV2, SPV3, SPV4 (relevant to all 4 alternatives):

Natural veld - good condition ^E	Natural veld with	Natural veld with heavy	Veld dominated by alien	Gardens
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	scattered aliens^E ✓	alien infestation ^E	species ^E	
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.

A terrestrial Ecology Assessment study was conducted by De Castro & Brits ecological Consulting in May 2008 for the full extent of the PPC Slurry site. The objective of the study was to conduct a field survey of plant and animal life, focusing on conservation-important taxa, to recommend management measures, if any regarding the properties and to comment on the rehabilitation work being undertaken by the mine.

According to the study, the proposed study area is situated in Carletonville Dolomite Grassland within the Dry Highveld Grassland Bioregion in the Grassland Biome. This vegetation type is mostly confined to the North West Province, marginally extending into Gauteng and Free State Provinces. It occurs in a narrow band from just west of the Slurry site, stretching east to Centurion and south to just south of Potchefstroom. Carletonville Dolomite Grassland originally covered about 9117 km², of which 24% has been transformed, mostly through cultivation, mining and urbanisation. Only about 1.8% of this vegetation type has been formally protected, and it is considered Vulnerable.

Based on the nature of the proposed facility and where it is being proposed no further specialist input was required.

Slurry SPV Site 1 and 3 have been transformed by mining activities and are dominated by grass and ruderal weed species and locally hardy indigenous tree species that are tolerant of severe disturbance and are known to act as pioneer species under certain conditions e. g. *Rhus lancea*.

Slurry SPV Site 2 and 4 are still in their natural state and has not been transformed by any mining activities. The vegetation within this site is mainly *Rhus lancea* Open Woodland and *Acacia Hyparrhenia* Open Woodland. The site is considered to be untransformed, although moderately disturbed in places through overgrazing, bush encroachment and infestations by alien invasive plant species. The current land-use in the vicinity of the mine is agriculture in the form of large stock farming, open-cast limestone mining and low density rural farmland.

5. SURFACE WATER (SPV1, SPV2, SPV3, SPV4 (relevant to all 4 alternatives))

Indicate the surface water present on and or adjacent to the site and alternative sites?

Alternative SPV1, SPV2, SPV3, SPV4 (relevant to all 4 alternatives):

Perennial River		NO ✓	
Non-Perennial River		NO ✓	
Permanent Wetland		NO ✓	
Seasonal Wetland		NO ✓	
Artificial Wetland		NO ✓	
Estuarine / Lagoonal wetland		NO ✓	

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

None occur on the site

6. LAND USE CHARACTER OF SURROUNDING AREA

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

The proposed solar energy facility is being proposed within the PPC Slurry Cement Factory. The area has existing infrastructure in place and these will not be impacted upon by the proposed development.

Alternative SPV1, SPV2, SPV3, SPV4 (relevant to all 4 alternatives):

Natural area ✓	Dam or reservoir	Polo fields
Low density residential ✓	Hospital/medical centre	Filling station ^H
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential ^A	Church	Agriculture ✓
Retail commercial & warehousing	Old age home	River, stream or wetland
Light industrial	Sewage treatment plant ^A ✓	Nature conservation area
Medium industrial ^{AN}	Train station or shunting yard ^N	Mountain, koppie or ridge
Heavy industrial ^{AN} ✓	Railway line ^N ✓	Museum

Power station	Major road (4 lanes or more) ^N	Historical building
Office/consulting room ✓	Airport ^N	Protected Area
Military or police base/station/compound	Harbour	Graveyard ✓
Spoil heap or slimes dam ^A ✓	Sport facilities	Archaeological site
Quarry, sand or borrow pit ✓	Golf course	Other:

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

There is an existing railway line which will not be impacted upon as the proposed facility will be taking place within a demarcated development footprint. There will be no impact on the railway line.

If any of the boxes marked with an "AN" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

The proposed facility will be developed outside the Slurry Cement Factory on land that has been previously mined and subsequently rehabilitated. The proposed facility will have insignificant impact on the mining areas and surroundings. The area preferred for the proposed facility has been transformed and this reduces any environmental impacts. The industrial facility will not negatively impact the facility, except where wind-blown dust resulting from the activities may affect the efficiency of the PV facility.

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

Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan)		NO ✓
Core area of a protected area?		NO ✓
Buffer area of a protected area?		NO ✓
Planned expansion area of an existing protected area?		NO ✓
Existing offset area associated with a previous Environmental Authorisation?		NO ✓
Buffer area of the SKA?		NO ✓

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

7. 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 Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain:	NO ✓
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A Heritage study was conducted for the PPC Slurry Cement Factory to provide a detailed description of all archaeological artefacts, structures (including graves) and settlements and also estimate the level of significance/importance of the archaeological remains within the area.

Slurry SPV site 1 and 3 have been transformed through mining processes. The extent of disturbance by mining and by the rehabilitation/recycling of historic mining features and infrastructure mean that from a heritage perspective almost nothing of significance remains and a highly unusual virtual 'clean slate' exists for the envisaged development. The Slurry SPV Site 2 and 4 are still in their natural form and no mining activities has occurred within the development footprint. Heritage sites could potentially be found within the site development footprint, but the heritage study conducted revealed that no heritage features or material was found at the time of the study.

For Slurry SPV Site 2 and 4, there is a chance that some material may occur subsurface which, if encountered, should be brought to the attention of heritage authorities.

A letter was submitted to South African Heritage Resources Agency explaining the studies undertaken for the PPC Slurry Cement Factory, as well as the findings of the study in the context of this application. In addition, a copy of the Draft Basic Assessment Report will be submitted to the South African Heritage Resources Agency (SAHRA) for a formal response.

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

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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 provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

8. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

Level of unemployment:

The Mahikeng Local Municipality has the highest unemployment rate compared with other municipalities within the Ngaka Modiri Molema District Municipality. The major structural issues that have contributed to high unemployment and poverty in the area include persistent low economic growth, retrenchments from mining due to decline in mining and insufficient diversification of the economy. Approximately 93 500 people have been indicated as the economically active population, with an estimated 46 052 of the total population being unemployed (MLM, 2012).

Economic profile of local municipality:

The municipality is a predominantly rural municipality and its rural economy is unable to provide individuals with remunerative jobs or self - employment opportunities. An estimated 55% of the people in the municipality had no income in 2007. In general terms, the majority of households in the municipality earns less than the poverty line (about R1600 per household per month) and can be considered poor. Those classified as economically active are employed in the services sector. This sector is dominated by the services in terms of the various departments that render services such as health, justice, local government, education, SAPS (MLM, 2012).

Level of education:

Unavailability and inadequate educational facilities in some areas of the municipality leads to relocation or migration of learners to assumedly better schools, possible closing of some schools and under-utilisation of existing ones. Walking long distances to schools in rural areas contributes to school drop-out rate. There is only one university (North West University – Mafikeng Campus) and it does not have all the relevant subjects required by the current economic standing. There is also one FET college (Taletso college). There is a need to approach other tertiary institutions to

have satellite campuses within the municipal area. The Community Survey conducted in 2007 indicated an estimated that 17% of the population had no schooling in 2007 with only that small percentage (4%) of the population having completed grade 12. This low percentage of the population with grade 12 as compared to the highest population of some having attended primary and some having attended secondary schooling as well as the significant school drop - out rate of pupils at grade 12, might equally be attributed to social and economic reasons. This highlights the literacy level of the population which to some extent contributes to poverty (MLM, 2012).

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R200 million	
What is the expected yearly income that will be generated by or as a result of the activity?	R16 million escalating at Consumer Price Index (CPI)	
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 and construction phase of the activity/ies?	Construction (40-50) Operation (up to 8)	
What is the expected value of the employment opportunities during the development and construction phase?	This will become known after an initial total price has been calculated for the project, but estimated at R5 - 10 million	
What percentage of this will accrue to previously disadvantaged individuals?	50%	
How many permanent new employment opportunities will be created during the operational phase of the activity?	Up to 8	
What is the expected current value of the employment opportunities during the first 10 years?	Estimated at R1 million	
What percentage of this will accrue to previously disadvantaged individuals?	100%	

9. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult <http://bgis.sanbi.org> or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698.

This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

A map showing the biodiversity for the site has been attached as **Appendix D1**.

a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)

Alternative SPV 1 & SPV 3:

Systematic Biodiversity Planning Category				If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR) ✓	

Alternative SPV 2 & SPV 4

Systematic Biodiversity Planning Category	Biodiversity	Planning	If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA) ✓	No Natural Area Remaining (NNR)

b) Indicate and describe the habitat condition on site

SPV 1

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural		
Near Natural (includes areas		

with low to moderate level of alien invasive plants)		
Degraded (includes areas heavily invaded by alien plants)		
Transformed (includes cultivation, dams, urban, plantation, roads, etc) ✓	100%	Slurry SPV Site 1 has been mined out and rehabilitated for over 10 years according to PPC standards

SPV 2

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural ✓	100%	Slurry SPV Site 2 has not been mined and is still in its natural state
Near Natural (includes areas with low to moderate level of alien invasive plants)		
Degraded (includes areas heavily invaded by alien plants)		
Transformed (includes cultivation, dams, urban, plantation, roads, etc)		

SPV 3

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural		
Near Natural (includes areas with low to moderate level of alien invasive plants)		
Degraded (includes areas heavily invaded by alien plants)		
Transformed (includes cultivation, dams, urban, plantation, roads, etc) ✓	100%	Slurry SPV Site 3 has been mined out and has not been rehabilitated

SPV 4

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural		
Near Natural (includes areas with low to moderate level of alien invasive plants)		
Degraded (includes areas heavily invaded by alien plants)	100%	Slurry SPV Site 4 has not undergone mining activities but is heavily degraded

Transformed (includes cultivation, dams, urban, plantation, roads, etc)		
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c) Complete the table to indicate:

- (i) the type of vegetation, including its ecosystem status, present on the site; and
- (ii) whether an aquatic ecosystem is present on site.

The proposed study area (all 4 sites) is situated in Carletonville Dolomite Grassland within the Dry Highveld Grassland Bioregion in the Grassland Biome. Carletonville Dolomite Grassland in its natural state is considered Vulnerable by Mucina and Rutherford (2006), but has not been listed as such by current legislation.

Terrestrial Ecosystems		Aquatic Ecosystems						
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Critical	Wetland (including rivers, depressions, channelled and unchanneled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline	
	Endangered							
	Vulnerable ✓							
	Least Threatened							

d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

A terrestrial Ecology Assessment study was conducted by De Castro & Brits Ecological Consulting in May 2008 for the full extent of the PPC Slurry site. The objective of the study was to conduct a field survey of plant and animal life, focusing on conservation-important taxa, to recommend management measures, if any regarding the properties and to comment on the rehabilitation work being undertaken by the mine.

According to the study, the proposed study area is situated in Carletonville Dolomite Grassland within the Dry Highveld Grassland Bioregion in the Grassland Biome. This vegetation type is mostly confined to the North West Province, marginally extending into Gauteng and Free State Provinces. It occurs in a narrow band from just west of the Slurry site, stretching east to Centurion and south to just south of Potchefstroom. Carletonville Dolomite Grassland originally covered about 9117 km², of which 24% has been transformed, mostly through cultivation, mining and urbanisation. Only about 1.8% of this vegetation type has been formally protected, and it is considered Vulnerable by Mucina and Rutherford (2006), but has not yet been listed as such in NEMA: BA.

The transformed sites, namely Slurry SPV Site 1, 3 and 4 are covered by grass, ruderal weed species and hardy indigenous tree species that are tolerant of severe disturbance and are known to act as pioneer species under certain conditions (e.g. *Searsia lancea*). Grass species are dominated by *Cymbopogon excavatus*, *Melinis repens*, *Hyparrhenia hirta*, *Cynodon dactylon* and *Chloris virgata*. Less common grasses include *Sporobolus africanus*, *Eragrostis chloromelas*, *Fingerhuthia africana*, *Paspalum dilatatum*, *Setaria pallide-fusca*, *Setaria verticillata* and *Aristida congesta*.

The untransformed site i.e. Slurry SPV Site 2 is in its natural state. The vegetation structure comprises mainly Open Woodland but in some parts Closed Woodland where canopy cover is denser. A high density of geophytes and herbs are present in the vegetation community and these include *Aloe greatheadii* var. *davyana*, and the protected species *Anancampseros filamentosa* and *Babiana hypogea*



Figure 4: Photograph illustrating the typical vegetation within the PPC Slurry Cement site (i.e. Slurry SPV site 1, 2, 3 and 4)

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	Noordwester and Mafikeng Mail	
Date published	30 th August 2013	
Site notice position	Latitude	Longitude
	-25.811397°	25.846422°
Date placed	21/08/2013	

Include proof of the placement of the relevant advertisements and notices in **Appendix E1**.

2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 54(2)(e) and 54(7) of GN R.543.

The public consultation process has included the publishing of notices regarding the proposed project, distribution of notification letters and a background information documentation (BID) to identified I&APs. Affected and neighbouring landowners and occupiers have been given written notice of the project.

Key stakeholders (other than organs of state) identified in terms of Regulation 54(2)(b) of GN R.543:

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
Autumn Solar Trading 195 (Pty) Ltd	Adjacent landowner	
Hendrik le Roux	Adjacent landowner	

Include proof that the key stakeholder received written notification of the proposed activities as **Appendix E2**. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

Proof of notification to stakeholders has been attached as appendix E2.

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
S.H Booyesen: General interest in the environment and conservation	The comment made was noted and the I&APs will be notified of further progress with regard to the project.
John Geeringh (Eskom): The proposed development does not affect any existing or planned Eskom Transmission infrastructure; however it may impact on Eskom Distribution infrastructure. Please find attached the requirements for works at or near Eskom infrastructure.	The comments raised were submitted to the client to be considered during final layout design.
Tawane Larence Molamu: I kindly advice local construction companies be first to be considered. Local community of Slurry be first to be considered so as to tray to reduce rate of unemployment. The project should benefit the local community. When do you anticipate the project to start?	Comments raised were addressed by the client and will be taken into consideration throughout the Basic Assessment Process and once construction phase commences.

Written comments received to date are included in Appendix E.

4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR 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 the Final BAR as **Appendix E3**.

5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Title	Contact person (Name and Surname)	Tel No	Fax No	e-mail	Postal address
Birdlife South Africa		Carolyn Ah Shene-Verdoorn				
Department of Agriculture, Forestry & Fisheries		Thoko Buthelezi				
Department of Water Affairs		J.C. van Rooyen				
Department of Water Affairs		Marie Brisley-Clarvis				
Eskom – North West Region		Xolisa Songcaka				
Eskom - Renewables		John Geeringh				
Department of Mineral Resources		Pieter Swart				
National Department of Energy		Wolsey Otto Barnard				
Regional Department of Energy		Teboho Sephosa				
Mahikeng Local Municipality		Paulus Nkosi				
Mahikeng Local Municipality		Letlhogonolo David Segomotso				
Mahikeng Local Municipality		Bonolo Modise				
Ngaka Modiri Molema District Municipality		Mojalefa Matlole				
Ngaka Modiri Molema District Municipality		Thansanqa Mbekeni				
North West Province Department of Local Government and Traditional Affairs		Mpho Molosi				
North West Provincial Heritage Resources Agency		Mosiane Mothlabane				
South African Heritage Resources Agency (SAHRA)		Phillip Hine				
South African Civil Aviation Authority		Lizell Stroh				
South African National Parks		Peter Novelli				

South African National Roads Agency Limited		Ismail Essa				
Wildlife and Environment Society of South Africa (WESSA)		John Wesson				
SKA		Adrian Tiplady				
North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT)		Abbey Tlaletsi				

Include proof that the Authorities and Organs of State received written notification of the proposed activities as **Appendix E4**.
 In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

6. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for any activities (linear or other) 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. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

A list of registered I&APs must be included as **Appendix E5**.

Copies of any correspondence and minutes of any meetings held must be included in **Appendix E6**.

The I&AP database for the project is included in Appendix A5. Correspondence distributed is attached in Appendix A6.

The following meetings have been held.

Stakeholder Forum:

Venue: PPC Offices (Mahikeng)

Date: 19 September 2013 at 3pm

Focus Group Meeting: Director Environmental Management

Venue: Mahikeng Local Municipality offices

Date: 20 September 2013

Minutes of the meetings held will be attached to the Final Basic Assessment Report.

SECTION D: IMPACT ASSESSMENT

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

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

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts 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. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A (2) of this report.

Activity	Impact Summary	Significance	Proposed mitigation
Alternative S1 (preferred alternative)			
CONSTRUCTION PHASE			
Construction of PV array and associated infrastructure	<p><u>Slurry SPV 1:Ecology Impacts</u> The site has been mined out and rehabilitated in the past 10 years; vegetation has re-established on the site and can currently be considered to be in a semi-natural state i.e. condition of vegetation.</p> <p><i>Direct Impacts:</i></p> <ul style="list-style-type: none"> » Loss of vegetation due to site clearing » Increase in runoff and erosion during construction of the PV facility: as a result of removal of vegetation and compaction of 	Low	<ul style="list-style-type: none"> » Keep the clearing of semi-natural vegetation to a minimum » It is recommended that prior to commencement of activity, any succulents or visible geophytes that have become re-established on the site be removed, stored and used in post-construction rehabilitation efforts » Indigenous woody vegetation that needs to be cleared must be shredded and used as mulch to suppress dust and act as erosion

Activity	Impact Summary	Significance	Proposed mitigation
	<p>surfaces</p> <p>Indirect Impacts:</p> <ul style="list-style-type: none"> » Establishment of alien and invasive plant due to clearing of vegetation » Increased erosion risk as a result of soil disturbance and loss of vegetation cover during construction <p>Cumulative Impacts:</p> <ul style="list-style-type: none"> » Possible spread and establishment of alien invasive species » Fragmentation 		<p>control</p> <ul style="list-style-type: none"> » Development should be limited to demarcated areas. Make use of existing access roads as far as possible » All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and re-vegetation techniques. <p>» Monitor the establishment of alien invasive species and remove as soon as detected, wherever possible before regenerative material can be formed.</p> <ul style="list-style-type: none"> » All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and re-vegetation techniques. <p>» The potential for cumulative impacts is low on account of the small development footprint of the facility relative to mining structures on site.</p>
<p>Destruction of heritage sites due to the construction of PV panels, access roads and power lines</p>	<p>Slurry SPV 1: Heritage Impacts:</p> <p>Slurry SPV site 1 has undergone mining activities in the past and has subsequently been rehabilitated. Heritage features are considered unlikely to be found based on the study conducted (Francois Coetzee, 2008).</p> <p>Direct Impacts:</p> <ul style="list-style-type: none"> » Destruction of archaeological heritage site due to excavation and diggings associated with the construction of solar panels, access roads and power lines 	<p>Low</p>	<ul style="list-style-type: none"> » If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) so that systematic and professional investigation/ excavation can be undertaken. » Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.

Activity	Impact Summary	Significance	Proposed mitigation
	<p>Indirect Impacts:</p> <ul style="list-style-type: none"> » Irreplaceable loss of archaeological heritage resources. 		<ul style="list-style-type: none"> » If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) so that systematic and professional investigation/ excavation can be undertaken. » Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.
	<p>Cumulative Impacts:</p> <ul style="list-style-type: none"> » Irreplaceable loss of archaeological heritage resources. 		<ul style="list-style-type: none"> » If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) so that systematic and professional investigation/ excavation can be undertaken. » Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.

Alternative S2			
CONSTRUCTION PHASE			
Construction of PV array and associated infrastructure	<p>Slurry SPV 2: Ecology Impacts</p> <p>These sites have not been subjected to historic mining activities and remain in a natural state.</p>		
	<p>Direct Impacts:</p> <ul style="list-style-type: none"> » Loss of vegetation and species of conservation concern due to clearing » Loss of a range of microhabitats available for the persistence of a 	<p>High-Moderate</p>	<ul style="list-style-type: none"> » After the final layout has been approved, conduct a thorough footprint investigation to detect and map (by GPS) any protected plant species and animal burrows <ul style="list-style-type: none"> ○ Protected geophytes and succulent species: must be relocated ○ Animal burrows: must be monitored by ECO prior to

	<p>higher species diversity</p> <ul style="list-style-type: none"> » Increase in runoff and erosion during construction of the PV facility as a result of removal of vegetation and compaction of surfaces 		<p>construction for activity/presence of animal species. If detected, such animals must be removed and relocated by a qualified professional/contractor</p> <ul style="list-style-type: none"> » Create designated turning areas and strictly prohibit any off-road driving or parking of vehicles and machinery outside demarcated footprint areas » Make use of existing access roads as far as possible » Shred all indigenous woody vegetation that needs to be cleared and apply as mulch to suppress dust and prevent erosion » All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures » Re-establish a low indigenous grass layer after construction to stabilise the soil surface
	<p>Indirect Impacts:</p> <ul style="list-style-type: none"> » Establishment of alien and invasive plants due to disturbance of vegetation » Increased erosion risk as a result of soil disturbance and loss of vegetation cover during construction » Ecological degradation/loss of ecological integrity. 		<ul style="list-style-type: none"> » Monitor the establishment of alien invasive species and remove as soon as detected, wherever possible before regenerative material can be formed. » All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and re-vegetation techniques. » Re-establish a low indigenous grass layer after construction to stabilise the soil surface and reduce the risk of invasion
	<p>Cumulative Impacts:</p> <ul style="list-style-type: none"> » Possible spread and establishment of alien invasive species » Possible excessive fragmentation of ecosystems 	<p>High-Moderate</p>	<ul style="list-style-type: none"> » The potential for cumulative impacts is quite low on account of the small development footprint of the facility relative to mining structures on site. » Cumulative impacts of developments on population viability of species can be reduced significantly if new developments are kept as close as possible to existing developed areas or, where such is not possible, different sections of a development be kept as close together as possible

Destruction of heritage sites due to the construction of PV panels, access roads and power lines	Slurry SPV Site 2 : Heritage Impacts		
	The site has not been subjected to any mining activities and remains in a natural state.		
	Direct Impacts:	High-Moderate	<ul style="list-style-type: none"> » Destruction of archaeological heritage site due to excavation and diggings associated with the construction of solar panels, access roads and power lines
	Indirect Impacts:		<ul style="list-style-type: none"> » If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) so that systematic and professional investigation/ excavation can be undertaken. » Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.
Cumulative Impacts:	<ul style="list-style-type: none"> » Irreplaceable loss of archaeological heritage resources. 		
		<ul style="list-style-type: none"> » A fence has already been put in place around the cemetery according to National Heritage Act. » If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) so that systematic and professional investigation/ excavation can be undertaken. » Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites. 	
		<ul style="list-style-type: none"> » Irreplaceable loss of archaeological heritage resources. 	<ul style="list-style-type: none"> » If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) so that systematic and professional investigation/ excavation can be undertaken. » Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.

Alternative S3			
CONSTRUCTION PHASE			
Construction of PV array and associated infrastructure	<u>Slurry SPV 3: Ecology Impacts</u>		
	The site was last mined in 1980 and rehabilitation has not taken place. Vegetation has established but consists of ruderal and pioneer species only as the site has not been rehabilitated in accordance with a rehabilitation plan.		
	<i>Direct Impacts:</i> » Increase in runoff and erosion during construction of the PV facility: as a result of removal of vegetation and compaction of surfaces » A positive impact of removal of alien invasive species and other weeds » Re-landscaping the area will assist in a more rapid revegetation of the area and a prevention of seasonal stagnant pools that may facilitate the breeding of pests such as mosquitoes	<i>Minor</i>	» Rip and landscape the area to prevent localised water logging or erosion » Remove all weeds and invasive species that have established on site » Make use of existing access roads as far as possible, prevent excessive compaction of newly landscaped areas » Create designated turning areas and strictly prohibit any off-road driving or parking of vehicles and machinery outside demarcated footprint areas » Make use of existing access roads as far as possible » Shred all indigenous woody vegetation that needs to be cleared and apply as mulch to suppress dust and prevent erosion » All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures » Re-establish a low indigenous grass layer after construction to stabilise the soil surface
	<i>Indirect Impacts:</i> » Increased erosion risk as a result of soil disturbance » Increased spread of alien invasive plants and weeds		» Monitor the establishment of alien invasive species and remove as soon as detected, wherever possible before regenerative material can be formed. » All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and re-vegetation techniques.
<i>Cumulative Impacts:</i> » Increased spread and establishment of alien invasive species		» The potential for cumulative impacts is quite low on account of the small development footprint of the facility relative to mining structures on site.	

Destruction of heritage sites due to the construction of PV panels, access roads and power lines	Slurry SPV Site 3: Heritage Impacts		
	Slurry SPV site 3 has undergone mining activities in the past (last mined in 1980) and has not been rehabilitated, therefore the likelihood of finding heritage sites is low (Francois Coetzee, 2008).		
	<p>Direct Impacts</p> <ul style="list-style-type: none"> » Destruction of archaeological heritage site due to excavation and diggings associated with the construction of solar panels, access roads and power lines 	Minor	<ul style="list-style-type: none"> » If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) so that systematic and professional investigation/ excavation can be undertaken. » Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.
	<p>Indirect Impacts</p> <ul style="list-style-type: none"> » Irreplaceable loss of archaeological heritage resources. 		<ul style="list-style-type: none"> » If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) so that systematic and professional investigation/ excavation can be undertaken. » Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.
<p>Cumulative Impacts</p> <ul style="list-style-type: none"> » Irreplaceable loss of archaeological heritage resources. 	<ul style="list-style-type: none"> » If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) so that systematic and professional investigation/ excavation can be undertaken. » Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites. 		
Construction	Social Impacts:		

phase (Including all related infrastructure such as power lines, access roads, office)	Within the PPC Slurry site, which is subject to major industrial and mining impacts, the following social impacts are expected to occur during the construction of the PV facility		
	Direct Impacts: » Job creation » dust nuisance	Low	» Where possible, PPC Solar Energy should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically semi and low-skilled job categories. This will reduce the potential impact that this category of worker could have on local family and social networks » Maximise the use of local labour for low – semi skilled jobs far as possible. » crime, misconduct and other social impacts normally inflicted on adjacent communities can be contained to the PPC Slurry facility which is a contained site with its own set of security protocols. The impact is anticipated to be low. » Access to PPC is formalised and controlled and traffic nuisance impacts are anticipated to be low. » Nuisance impacts including noise, dust and visual impacts will be insignificant as the impacts will be consistent with the existing land use and activities at PPC Slurry.
	Indirect Impacts: » Transfer of skills to local people » misconduct and crime		
Cumulative Impacts: » Transfer of skills to local people			

Alternative 4			
CONSTRUCTION PHASE			
Construction of PV array and associated infrastructure	<u>Slurry SPV 4:Ecology Impacts</u> The site has not been mined but is heavily degraded		
	Direct Impacts: » Loss of vegetation due to site clearing » Increase in runoff and erosion during construction of the PV facility: as a result of removal of vegetation and compaction of	Low	» Keep the clearing of semi-natural vegetation to a minimum » It is recommended that prior to commencement of activity, any succulents or visible geophytes that have become re-established on the site be removed, stored and used in post-construction rehabilitation efforts » Indigenous woody vegetation that needs to be cleared must be shredded and used as mulch to suppress dust and act as erosion

	surfaces		control » Development should be limited to demarcated areas. Make use of existing access roads as far as possible » All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and re-vegetation techniques.
	Indirect Impacts: » Establishment of alien and invasive plant due to clearing of vegetation » Increased erosion risk as a result of soil disturbance and loss of vegetation cover during construction		» Monitor the establishment of alien invasive species and remove as soon as detected, wherever possible before regenerative material can be formed. » All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and re-vegetation techniques.
	Cumulative Impacts: » Possible spread and establishment of alien invasive species » Fragmentation	Low	» The potential for cumulative impacts is low on account of the small development footprint of the facility relative to mining structures on site.
Destruction of heritage sites due to the construction of PV panels, access roads and power lines	Slurry SPV 4: Heritage Impacts: A study was conducted by Francois Coetzee, 2008; the study revealed that site 4 has an existing cemetery.		
	Direct Impacts: » Destruction of archaeological heritage site due to excavation and diggings associated with the construction of solar panels, access roads and power lines	Low	» If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) so that systematic and professional investigation/ excavation can be undertaken. » Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.
	Indirect Impacts: » Irreplaceable loss of		» If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease

	archaeological heritage resources.		immediately and be reported to the South African Heritage Resources Agency (SAHRA) so that systematic and professional investigation/ excavation can be undertaken. » Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.
	Cumulative Impacts: » Irreplaceable loss of archaeological heritage resources.		» If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) so that systematic and professional investigation/ excavation can be undertaken. » Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.

Alternative A1, A2, A3, A4			
CONSTRUCTION PHASE			
Construction of all related infrastructure, including power lines and underground cables	<u>Slurry SPV A1:Ecology Impacts</u> The development footprint of the proposed facility is 19 ha and the layout comprise of the following infrastructure: » Power line connecting the facility into the PPC Slurry grid » underground cables connecting to the proposed on-site substation		
	Direct Impacts: » Loss of vegetation due to site clearing » Increase in runoff and erosion during construction of the PV facility: as a result of removal of vegetation and compaction of	Low	» Minimise clearing of vegetation and prevent unnecessary compaction of topsoils outside the footprint area » It is recommended that prior to commencement of activity, any succulents or visible geophytes that have become re-established on the site be removed, stored and used in post-construction rehabilitation efforts » During all excavation work, separate topsoil from subsoil and store

	surfaces		<p>separately. Always ensure that topsoil is re-applied last to maintain its rehabilitation potential</p> <ul style="list-style-type: none"> » Any new power lines required as part of the development should be aligned with existing power lines or other linear features (such as roads) , where possible, to reduce development footprint. » All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and re-vegetation techniques.
	<p>Indirect Impacts:</p> <ul style="list-style-type: none"> » Establishment of alien and invasive plant due to clearing of vegetation » Increased erosion risk as a result of soil disturbance and loss of vegetation cover during construction 		<ul style="list-style-type: none"> » Monitor the establishment of alien invasive species and remove as soon as detected, wherever possible before regenerative material can be formed. » All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and re-vegetation techniques.
	<p>Cumulative Impacts:</p> <ul style="list-style-type: none"> » Possible spread and establishment of alien invasive species 	Low	<ul style="list-style-type: none"> » The potential for cumulative impacts is low on account of the small development footprint of the facility relative to mining structures on site.

Activity	Impact summary	Significance	Proposed mitigation
OPERATION PHASE			
Alternative A1,A2,A3, A4(preferred alternative)			
Operation of the solar energy facility and associated infrastructure	<u>Ecology Impacts</u>		
	<p>Direct Impacts</p> <ul style="list-style-type: none"> » loss of vegetation » altered vegetation cover » altered distribution of rainfall and resultant runoff patterns 	Low	<ul style="list-style-type: none"> » Monitor the area below the PV panels regularly after larger rainfall events to determine where erosion may be initiated and then mitigate by modifying the soil micro-topography accordingly. » Aim to maintain a reasonable cover of indigenous perennial vegetation throughout the operation phase within and on the

Activity	Impact summary	Significance	Proposed mitigation
OPERATION PHASE			
	<p>» increase in runoff and accelerated erosion during operation of PV panels</p> <p>Indirect Impacts:</p> <p>» altered topsoil characteristics</p> <p>» altered vegetation composition</p> <p>» possible positive impact where existing alien vegetation can be eradicated on a long-term basis</p> <p>» possible positive impact where disturbed areas were re-landscaped to create more natural landscapes where natural revegetation is facilitated and erosion prevented</p> <p>Cumulative Impacts</p> <p>» possible spread and establishment of alien invasive species</p>		<p>periphery of the PV array, preferably dwarf shrubs or a low grass cover – these also have a relatively low flammability.</p> <p>» Prevent leakage of oil or other chemicals.</p> <p>» Monitor the establishment of alien invasive species and remove as soon as detected, whenever possible before regenerative material can be formed.</p>
Operation of power line	<p>Direct Impacts:</p> <p>» Collision and/ electrocution of bird species with the power line.</p> <p>Indirect Impacts:</p> <p>» Bird mortality</p> <p>Cumulative Impacts:</p> <p>» Bird mortality</p>	Low	<p>» Utilise bird perches to discourage birds perching on electrical infrastructure.</p> <p>» In addition to the Bird Perch, the structure must conform to Eskom’s bulletin on bird friendly structures.</p> <p>» Increase the visibility of overhead power lines to birds with appropriate markers</p>
Operation of	<u>Social Impacts</u>		

Activity	Impact summary	Significance	Proposed mitigation
OPERATION PHASE			
Solar energy facility and associated infrastructure	<p>Direct Impacts:</p> <ul style="list-style-type: none"> » Captive power generation for high energy user (PPC) will result in relief on the Eskom grid » Creation of job opportunities (approximately 8 permanent jobs will be created) 	Low-Medium (+)	<ul style="list-style-type: none"> » Extend employment opportunities to local communities as far as possible » Promote the supply of goods and services from local suppliers as far as possible.
	<p>Indirect Impacts:</p> <ul style="list-style-type: none"> » Bolstering of the local economy » Meeting objectives of the IDP for the local / district municipality in terms of renewable energy supply 	Low (+)	
	<p>Cumulative Impacts:</p> <ul style="list-style-type: none"> » Improved grid capacity in the region. 	Medium (+)	

A complete impact assessment in terms of Regulation 22(2)(i) of GN R.543 must be included as **Appendix F**.

2. 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 SPV1, SPV2, SPV3, SPV4

PPC Limited is proposing to establish a 10 MW photovoltaic solar energy facility and associated infrastructure on a site located in the Mahikeng Local Municipality approximately 20 km east of Mahikeng, North West Province.

The proposed PV facility will have a generating capacity of up to 10 MW and will be known as the **PPC Slurry Solar Energy Facility**. The proposed project will be developed in two phases. The first phase will have generating capacity of 1 MW, with the second phase up to 9 MW. Based on a pre-feasibility analysis undertaken by PPC Limited, four technically feasible areas have been identified as alternative sites for consideration and evaluation through a Basic Assessment Process. By undertaking a technical feasibility study which considered favourable climatic conditions (solar renewable energy facilities are directly reliant on average solar radiation values for a particular area), accessibility to and capacity of the electricity grid, availability and accessibility of the study site, as well as local site topography, the four alternative sites are considered by the project proponent to be technically feasible for the establishment of the solar energy facility.

The following conclusions can be drawn from the studies undertaken within this Basic Assessment for the proposed site alternatives and their power lines. All site alternatives have similar environmental impacts based on proposed development activities and associated infrastructure:

- » The overall ecology impact will be **low**. Regarding past disturbance levels (i.e. mining activities), it is not expected that any Red Data or nationally protected plant species will be present on the site. However, due to natural veld in the close proximity of the site, it can be expected that several provincially protected plant species may have re-established. It is also expected that several Baboon spiders, which are protected, have re-established on the site. To avoid undue damage and loss of these species of conservation concern, it is imperative that a detailed walkthrough be undertaken. This will have to be done during the growing season for the area, preferably between January and April.
- » The overall Heritage impact will be **low**. Past mining disturbance would have destroyed all the heritage and archaeological structures.
- » The overall Social impact will be **high positive** based on the mining activities and

environment surrounding the proposed facility.

All impacts that were identified as part of this Basic Assessment Report were rated as **Low**. The majority of the impacts identified could be mitigated by means of implementing certain measures, while the remaining impacts did not require any mitigation measures. Positive impacts of the proposed PPC Slurry Solar PV facility include the creation of employment and business opportunities, skills development and training and the contribution towards establishing infrastructure to generate renewable energy. From an ecological perspective, the presence of undesirable alien invasive plants and weeds can be reduced, which will also reduce the production of propagules of such plants that can be spread to surrounding areas. The cumulative impacts for the proposed solar energy facility within a mining site, is considered insignificant due to transformed land and existing infrastructure. Therefore, it is recommended that the project should be authorised for the **preferred alternative**. However, a number of issues requiring mitigation have been highlighted in the impact assessment (Appendix F). In response to these potential environmental impacts, environmental specifications for the management of these issues/impacts are detailed within the draft Environmental Management Programme (EMPr) included within Appendix G.

In conclusion, the proposed development of the PPC Slurry Solar PV Facility is not foreseen to have any detrimental impacts on the environment and its surrounds. The key rationale for this being the context of the area in which the proposed study site is located (i.e. an already transformed piece of land situated within an existing mining and industrial area).

Alternative B: N/A

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Alternative C: N/A

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No-go alternative (compulsory)

The 'do-nothing' alternative is the option of not constructing the PPC Slurry Solar Energy Facility on the identified site. This alternative would result in no new environmental impacts on the site or surrounding area. Due to the transformed nature of the site as a result of historic mining activities, the potential for impact on the site is considered to be low with development, and therefore the do nothing alternative has little benefit to the current environment.

PPC Limited is proposing the establishment of a dedicated solar energy facility within the PPC mining area for the purpose of reducing total carbon emissions, diversifying electricity supply to the PPC factory, and reducing cost risk to PPC. Should the facility not be constructed, PPC's reliance on fossil-fuel based power as a sole-source of power to the plant will continue and the demand on Eskom's resources will increase over time.

Failure to establish a dedicated power supply source for the Slurry Cement Factory would also result in an increased demand of power to be supplied from Eskom, which will add pressure on the grid infrastructure in the region (and would require the additional consumption of fossil fuels to achieve the same level of electrical supplied to the factory). The electricity demand in South Africa is placing increasing pressure on the country's existing power generation capacity. There is, therefore, a need for additional electricity generation options to be developed throughout the country.

The support for renewable energy policy is guided by the need to address climate change as well as a rationale that South Africa has a very attractive range of renewable resources, particularly solar and wind and that renewable applications are in fact the least-cost energy service in many cases - and more so when social and environmental costs are taken into account.

The generation of electricity from renewable energy in South Africa offers a number of socio-economic and environmental benefits. These benefits include:

- » *Exploitation of our significant renewable energy resource:* At present, valuable national resources including biomass by-products, solar radiation and solar 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.
- » *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.
- » *Support to a new industry sector* - the development of renewable energy offers the opportunity to establish a new industry within the South African economy.

The 'do nothing' alternative will not assist the PPC Limited in addressing issues such as diversifying their electricity supply at the Slurry site, reducing total carbon emissions from the Slurry operations, and reducing cost risk to PPC. As the construction of the facility within the PPC mining area does not have any detrimental environmental impacts, and is seen to be a positive project, the '**do nothing alternative**' is,

therefore, not a preferred alternative.

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 insurmountable environmental or social constraints that prevent the establishment of the proposed PPC Slurry Solar Energy Facility. The site alternative SPV1 is the preferred alternative for development based on the following:

- » The site has been mined; therefore no heritage features are anticipated to occur.
- » The site has been mined and rehabilitated for over 10 years; therefore limited disturbance to natural areas are expected.
- » The facility will make use of existing mining infrastructure i.e. access roads and substation.
- » From the land use perspective, the proposed facility and its power line is located further away from the PPC Slurry infrastructure which is technically preferred as the potential for impacts from dust from the mining area is reduced.
- » The power line will be required to be up to 2.6km in length, however the alignment is consolidated with other existing linear mining infrastructure which reduces the potential for new impacts.

The construction of the proposed PPC Slurry Solar Energy Facility should be implemented according to the EMPr 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 EMPr, the Environmental Authorisation (once issued) and all other relevant environmental legislation. Relevant conditions to be adhered to include:

Design, Construction, and Decommissioning Phases:

- » The draft Environmental Management Programme (EMPr) as contained within Appendix G of this report should form part of the contract with the Contractors appointed to construct and maintain the proposed solar energy facility, and will be used to ensure compliance with environmental specifications and management measures. The implementation of this EMPr for all life cycle phases of the proposed project is considered to be key in achieving the appropriate environmental

management standards as detailed for this project.

- » During construction, unnecessary disturbance to habitats should be strictly controlled and the footprint of the impact should be kept to a minimum.
- » Disturbed areas should be rehabilitated as soon as possible once construction is complete in an area.
- » An on-going monitoring programme should be established to detect and quantify any alien species.
- » All declared aliens 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.
- » Develop emergency maintenance operational plan to deal with any event of contamination, pollution, or spillages.
- » If large areas are cleared for the storage of equipment, these could be rehabilitated using PPC standard site rehabilitation techniques.
- » Compile and implement a detailed waste management plan.
- » Compile and implement a stormwater management plan.

Operation Phase:

The mitigation and management measures previously listed in this Basic Assessment Report should be implemented in order to minimise potential environmental impacts. The following mitigation measures should also be implemented.

- » Maintenance of erosion control measures
- » Development and implementation of a stormwater management plan.
- » On-going monitoring of the site to detect and restrict the spread of alien plant species.

Is an EMPr attached?

YES ✓

The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

KAREN JODAS

NAME OF EAP

SIGNATURE OF EAP

DATE

SECTION F: APPENDICES

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Additional Information

- » *I1: List of Co-Ordinates for Power Line*
- » *I2: Ecology Specialist report undertaken for the site previously*
- » *I3: Heritage Specialist Report undertaken for the site previously*