

FINAL BASIC ASSESSMENT REPORT FOR THE PROPOSED WHEATLANDS URBAN SOLAR FARM

ON PART OF THE REMAINING EXTENT OF THE FARM WHEATLANDS 260 IQ,
RAND WEST DISTRICT MUNICIPALITY, GAUTENG



REFERENCE: 002/17-18/E0062

SEPTEMBER 2017

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Compliance with Appendix 1 Basic Assessment Process of 2014 NEMA EIA Regulations, as amended

Section	Section 3 Requirement	Location addressed in BAR
3(1)	A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include—	
(a)	details of—	Refer Report Details on Page 4
(i)	the EAP who prepared the report; and	
(ii)	the expertise of the EAP, including a curriculum vitae;	
(b)	the location of the activity, including:	
(i)	the 21 digit Surveyor General code of each cadastral land parcel;	Refer to Section B point 1 and 2
(ii)	where available, the physical address and farm name;	
(iii)	where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	
(c)	a plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale; or, if it is—	Refer to Figure 7 on Page 31 and Refer to Section B point 1 and 2
(i)	a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or	
(ii)	on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	
(d)	a description of the scope of the proposed activity, including—	Refer to Section A point 1
(i)	all listed and specified activities triggered and being applied for; and	
(ii)	a description of the activities to be undertaken including associated structures and infrastructure;	
(e)	a description of the policy and legislative context within which the development is proposed including—	Refer to Section A point 2
(i)	an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and	
(ii)	how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;	
(f)	a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	Refer to Section E point 9
(g)	a motivation for the preferred site, activity and technology alternative;	Refer to Section A point 3
(h)	a full description of the process followed to reach the proposed preferred alternative within the site, including	Refer to Section A point 3
(i)	details of all the alternatives considered;	
(ii)	details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Refer to Section C point 1
(iii)	a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	Refer to Section C point 2 and 3
(iv)	the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section B Points 3 to 10
(v)	the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts—	Section E Points 3 to 6
(aa)	can be reversed;	
(bb)	may cause irreplaceable loss of resources; and	
(cc)	can be avoided, managed or mitigated;	
(vi)	the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	Section E Point 2
(vii)	positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	

Section	Section 3 Requirement	Location addressed in BAR
(viii)	the possible mitigation measures that could be applied and level of residual risk;	
(ix)	the outcome of the site selection matrix;	
(x)	if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and	
(xi)	a concluding statement indicating the preferred alternatives, including preferred location of the activity;	Section E Point 5 and 6
(i)	a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including—	
(i)	a description of all environmental issues and risks that were identified during the environmental impact assessment process; and	
(ii)	an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	
(j)	an assessment of each identified potentially significant impact and risk, including—	
(i)	cumulative impacts;	Section E Points 2 to 5
(ii)	the nature, significance and consequences of the impact and risk;	
(iii)	the extent and duration of the impact and risk;	
(iv)	the probability of the impact and risk occurring;	
(v)	the degree to which the impact and risk can be reversed;	
(vi)	the degree to which the impact and risk may cause irreplaceable loss of resources; and	
(vii)	the degree to which the impact and risk can be avoided, managed or mitigated;	
(k)	where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report;	Section E Point 8
(l)	an environmental impact statement which contains—	Section E Point 5
(i)	a summary of the key findings of the environmental impact assessment;	
(ii)	a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and	
(iii)	a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	
(m)	based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management outcomes for the development for inclusion in the EMPr;	Section E Point 6 and 8
(n)	any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;	Section E Point 8
(o)	a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	
(p)	a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	Section E Point 8
(q)	where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised;	
(r)	an undertaking under oath or affirmation by the EAP in relation to	Refer Report Details on Page 4
(i)	the correctness of the information provided in the reports;	
(ii)	the inclusion of comments and inputs from stakeholders and I&APs;	
(iii)	the inclusion of inputs and recommendations from the specialist reports where relevant; and	
(iv)	any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties; and	
(s)	where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	NA
(t)	any specific information that may be required by the competent authority; and	NA
(u)	any other matters required in terms of section 24(4)(a) and (b) of the Act.	

Report details

Status	Rev 0
Report Title	Final Basic Assessment Report for the proposed Wheatlands urban solar farm
Date Submitted	September 2017
Project Consultant	Bokamoso Landscape Architects and Environmental Consultants CC
Prepared by	Adéle Drake, BA. (University of Pretoria) , NQF Level 7 Air Quality Management (University of Johannesburg) Adéle has 15 years' experience in the field of environmental management within the following industries; mining, forestry, renewables and consulting.
Reviewed by	Lizelle Gregory, (BLArch) Lizelle has 25 years' experience in the field of environmental management and is a member of the South African Council of the Landscape Architects Profession (SACLAP Professional Practice Number: 97078
Declaration	I, Adéle Drake, as authorised representative of Bokamoso Landscape Architects and Environmental Consultants CC hereby confirm my independence in terms of Section 13.(1)(a) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) 2014 EIA Regulations as amended.
Copyright Warning	Unless otherwise noted, the copyright in all text and other content (including the manner of presentation) is the exclusive property of Bokamoso Landscape Architects and Environmental Consultants CC.

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GAUTENG PROVINCE

AGRICULTURE AND RURAL DEVELOPMENT
REPUBLIC OF SOUTH AFRICA

Basic Assessment Report in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014 (Version 1)

Kindly note that:

1. This **Basic Assessment Report** is the standard report required by GDARD in terms of the EIA Regulations, 2014.
2. This application form is current as of 8 December 2014. It is the responsibility of the EAP to ascertain whether subsequent versions of the form have been published or produced by the competent authority.
3. **A draft Basic Assessment Report must be submitted, for purposes of comments within a period of thirty (30) days, to all State Departments administering a law relating to a matter likely to be affected by the activity to be undertaken.**
4. **A draft Basic Assessment Report (1 hard copy and two CD's) must be submitted, for purposes of comments within a period of thirty (30) days, to a Competent Authority empowered in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended to consider and decide on the application.**
5. Five (5) copies (3 hard copies and 2 CDs-PDF) of the final report and attachments must be handed in at offices of the relevant competent authority, as detailed below.
6. 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.
7. Selected boxes must be indicated by a cross and, when the form is completed electronically, must also be highlighted.
8. An incomplete report may lead to an application for environmental authorisation being refused.
9. **Any report that does not contain a titled and dated full colour large scale layout plan of the proposed activities including a coherent legend, overlain with the sensitivities found on site may lead to an application for environmental authorisation being refused.**
10. 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 application for environmental authorisation being refused.
11. No faxed or e-mailed reports will be accepted. Only hand delivered or posted applications will be accepted.
12. Unless protected by law, and clearly indicated as such, all information filled in on this application will become public information on receipt by the competent authority. The applicant/EAP must provide any interested and affected party with the information contained in this application on request, during any stage of the application process.
13. Although pre-application meeting with the Competent Authority is optional, applicants are advised to have these meetings prior to submission of application to seek guidance from the Competent Authority.

DEPARTMENTAL DETAILS

Gauteng Department of Agriculture and Rural Development
Attention: Administrative Unit of the of the Environmental Affairs Branch
P.O. Box 8769
Johannesburg
2000

Administrative Unit of the of the Environmental Affairs Branch
Ground floor Diamond Building
11 Diagonal Street, Johannesburg

Administrative Unit telephone number: (011) 240 3377
Department central telephone number: (011) 240 2500

(For official use only)

NEAS Reference Number:						
File Reference Number:						
Application Number:						
Date Received:						

If this BAR has not been submitted within 90 days of receipt of the application by the competent authority and permission was not requested to submit within 140 days, please indicate the reasons for not submitting within time frame.

Not applicable

Is a closure plan applicable for this application and has it been included in this report?

NO

If not, state reasons for not including the closure plan.

Not applicable

Has a draft report for this application been submitted to a competent authority and all State Departments administering a law relating to a matter likely to be affected as a result of this activity?

YES

Is a list of the State Departments referred to above attached to this report including their full contact details and contact person?

YES

If no, state reasons for not attaching the list.

Have State Departments including the competent authority commented?

Yes

If no, why?

Not applicable

SECTION A: ACTIVITY INFORMATION

1. PROPOSAL OR DEVELOPMENT DESCRIPTION

Project title (must be the same name as per application form):

The establishment of the Wheatlands Urban Solar Farm and associated infrastructure on Part of the Remaining Extent of the Farm Wheatlands 260 IQ

SOLARRESERVE South Africa Management (Pty) Ltd appointed Bokamoso Landscape Architects and Environmental Consultants CC to conduct a Basic Assessment process in terms of the National Environmental Management Act (NEMA), Act 107 of 1998 (as amended) for the proposed development, construction and operation of a 9.3MW Urban Photovoltaic (PV) Solar Power Plant and associated infrastructure (hereafter referred to as "Proposed Development") on less than 20 ha of "leased land", situated on Part of the Remainder of the Farm Wheatlands 260 IQ, Rand West City Local Municipality, West Rand District Municipality, Gauteng Province. The power generated by the Proposed Development will be supplied to the Drowell Substation via an 11kV overhead powerline.

The Proposed Development site is zoned "Undetermined" in terms of the Peri-Urban Areas Town Planning Scheme, 1975 and was historically used for crop cultivation. An Eskom servitude and electrical route alignment servitude transects the northern boundary of the Proposed Development site from east to west. The servitude for the planned PWV1 runs along the western boundary of the site. A Special Consent Application was submitted to the Rand West City Local Municipality in terms of Section 35 of the Rand West Local Municipality Spatial Planning and Land Use Management By-laws, 2017. Refer to *Motivating Memorandum* appended as **Appendix C1** and proposed layout appended as **Appendix C2**.

The Proposed Development is approximately 8.4km from Randfontein situated to the east, and is bordered by the Wheatlands Agricultural Holdings to the north, with the Middelvlei Agricultural Holdings occurring to the south. Road 6 occurs towards the east of the study area, which connects with the R41 (Lazar Road) to the north, and the R559 (Main Road) to the south. The Proposed Development site is accessible via Road 6 off the R41.

A non-perennial stream and associated wetland occurs approximately 250m to the west of the Proposed Development site, and the proposed 11kV powerline route Option 1 passes within 500m of two (2) pans, and route Option 2 passes within 500m of three (3) pans.

SOLARRESERVE South Africa Management (Pty) Ltd entered into a long term lease agreement with the land owner for the purpose of developing, constructing and operating the Proposed Development.

The Proposed Development will produce energy by converting solar radiation into electricity. Power is generated by the solar cells (PV elements) during exposure to sunlight. The Proposed Development of the Wheatlands urban solar farm shall consist of several arrays of PV solar panels (31,200) that encase the solar cells, as well as utility integrated flow batteries with a combined export capacity limit of 9.3MW AC.

For further detail pertaining to the technical aspects of the urban solar farm, refer to **Appendix E1 – Technical Description**.

In the application submitted to the Gauteng Department of Agriculture and Rural Development (GDARD) it was indicated that the developer was applying for the following 2014 NEMA listed activities, as amended 7 April 2017 **Notice 1 and 3 (983 and R985)**:

Indicate the number of the relevant Government Notice:	Activity No (s) (relevant notice): e.g. Listing notices 1, 2 or 3	Describe each listed activity as per the wording in the listing notices:
GN. R 983, 8 December 2014, as amended	LN1 Activity 14	The development and related operation of facilities and infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic meters or more but not exceeding 500 cubic meters.
<p>Reason for inclusion: The Proposed Development shall have a battery bank containing more than 80m³ of vanadium sulphide / chloride electrolyte which is a hazardous substance, but less than 500m³. The EAP is of the opinion that Listed Activity 14 of LN1 is triggered by the Proposed Development.</p>		
GN. R 983, 8 December 2014, as amended	LN1 Activity 27	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.
<p>Reason for inclusion: The Proposed Development will require the clearance of more than 1ha of indigenous vegetation and thus triggers Activity 27 of LN 1.</p>		
GN. R 983, 8 December 2014, as amended	LN1 Activity 56	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre- (i) where the existing reserve is wider than 13,5 meters; or (ii) where no reserve exists, where the existing road is wider than 8 metres; excluding where widening or lengthening occur inside urban areas.
<p>Reason for inclusion: The Proposed Development shall require the upgrading of Road 6 in order to provide access to the Proposed Development site as well as the construction of internal roads with</p>		

Indicate the number of the relevant Government Notice:	Activity No (s) (relevant notice): e.g. Listing notices 1, 2 or 3	Describe each listed activity as per the wording in the listing notices:
a total length of 2 kilometres, outside an urban area. The EAP is of the opinion that Listed Activity 56 of LN1 is triggered .		
GN. R 985, 8 December 2014, as amended	LN3 Activity 4	<p>The development of a road wider than 4 metres with a reserve less than 13,5 metres.</p> <p>(c) In Gauteng:</p> <ul style="list-style-type: none"> i. A protected area identified in terms of NEMPAA, excluding conservancies; ii. National Protected Area Expansion Strategy Focus Areas; iii. Gauteng Protected Area Expansion Priority Areas; iv. Sites identified as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans; v. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004); vi. Sensitive areas identified in an environmental management framework adopted by relevant environmental authority; vii. Sites identified as high potential agricultural land in terms of Gauteng Agricultural Potential Atlas; viii. Important Bird and Biodiversity Area (IBA); ix. Sites or areas identified in terms of an International Convention; x. Sites managed as protected areas by provincial authorities, or declared as nature reserves in terms of the Nature Conservation Ordinance (Ordinance 12 of 1983) or the National Environmental Management: Protected Areas Act (Act No. 57 of 2003); xi. Sites designated as nature reserves within municipal SDFs; or xii. Sites zoned for a conservation or public open space or equivalent zoning.
<p>Reason for inclusion:</p> <p>The Proposed Development occurs in an area denoted as CBA and as having high agricultural potential in terms of Gauteng Agricultural Potential Atlas. Considering that internal roads will be 4.5m wide and 2 kilometres in length, the EAP is of the opinion that Listed Activity 4 of LN3 is triggered.</p>		
GN. R 985, 8 December 2014, as amended	LN3 Activity 12	<p>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>c) Gauteng</p> <ul style="list-style-type: none"> i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity

Indicate the number of the relevant Government Notice:	Activity No (s) (relevant notice): e.g. Listing notices 1, 2 or 3	Describe each listed activity as per the wording in the listing notices:
		Assessment 2004; ii. Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans; or iii. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.
Reason for inclusion: The Proposed Development shall require clearance of more than 300m² of indigenous vegetation denoted as CBA or ESA in terms of Gauteng C-Plan. The EAP is of the opinion that Listed Activity 12 of LN3 is triggered .		
GN. R 985, 8 December 2014, as amended	LN3 Activity 18	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. (c) In Gauteng: i. A protected area identified in terms of NEMPAA, excluding conservancies; ii. National Protected Area Expansion Strategy Focus Areas; iii. Gauteng Protected Area Expansion Priority Areas; iv. Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans; v. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004); vi. Sensitive areas identified in an environmental management framework adopted by relevant environmental authority; vii. Sites identified as high potential agricultural land in terms of Gauteng Agricultural Potential Atlas; viii. Sites or areas identified in terms of an International Convention; ix. Important Bird and Biodiversity Area (IBA); x. Sites managed as protected areas by provincial authorities, or declared as nature reserves in terms of the Nature Conservation Ordinance (Ordinance 12 of 1983) or the National Environmental Management: Protected Areas Act (Act No. 57 of 2003); xi. Sites designated as nature reserves within municipal SDFs; or xii. Sites zoned for a conservation or public open space or equivalent zoning.
Reason for inclusion: The Proposed Development shall require construction of internal roads 4.5m in width and 2 kilometres in length in an area denoted as CBA or ESA in terms of Gauteng C-Plan. The EAP is of the opinion that Listed Activity 18 of LN3 is triggered .		

Select the appropriate box

The application is for an upgrade of an existing development

The application is for a new development

Other, specify

Does the activity also require any authorisation other than NEMA EIA authorisation?

YES X	NO
------------------------	----

If yes, describe the legislation and the Competent Authority administering such legislation

In terms of the **National Water Act, 1998** (Act No 36 of 1998) the proposed development triggers a Section 21 (c) and (i) General Authorisation (GA). The Wetland Risk Assessment conducted as part of the Wetland Assessment, concluded that the risk posed by the Proposed Development to the adjacent wetland, is low. An application for GA has to be submitted to the Department of Water & Sanitation (DWS).

In terms of the **Rand West City Local Municipality Spatial Planning and Land Use Management By-law, 2017**, a Special Consent application is required for the proposed Solar Farm. A Special Consent Application was submitted to Rand West City Local Municipality for approval.

If yes, have you applied for the authorisation(s)?

YES X Special Consent Application submitted 31 August 2017 Refer Appendix F1	NO X GA not yet submitted to DWS, awaiting detail design specifications
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If yes, have you received approval(s)? (attach in appropriate appendix)

YES	NO X
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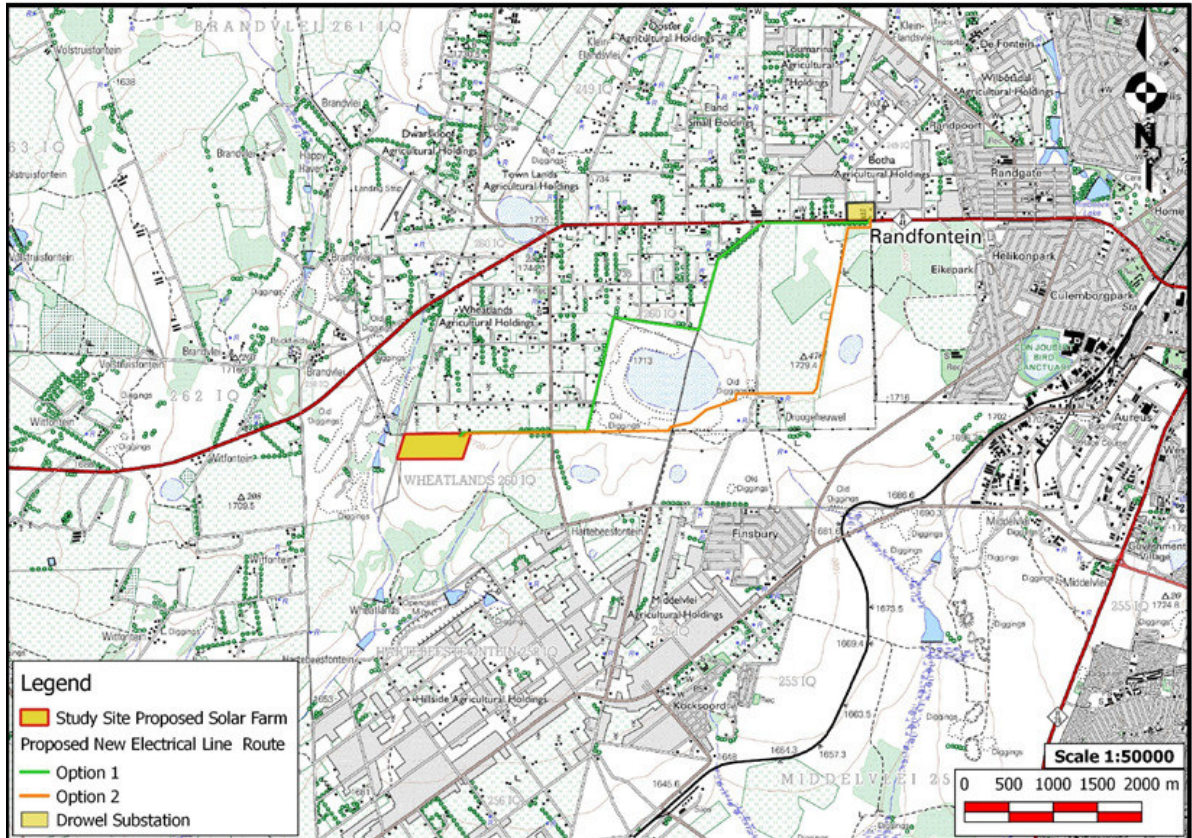


Figure 1: Locality map

Enlargement of all maps are attached as **Appendix A** to this Final Basic Assessment Report (BAR).

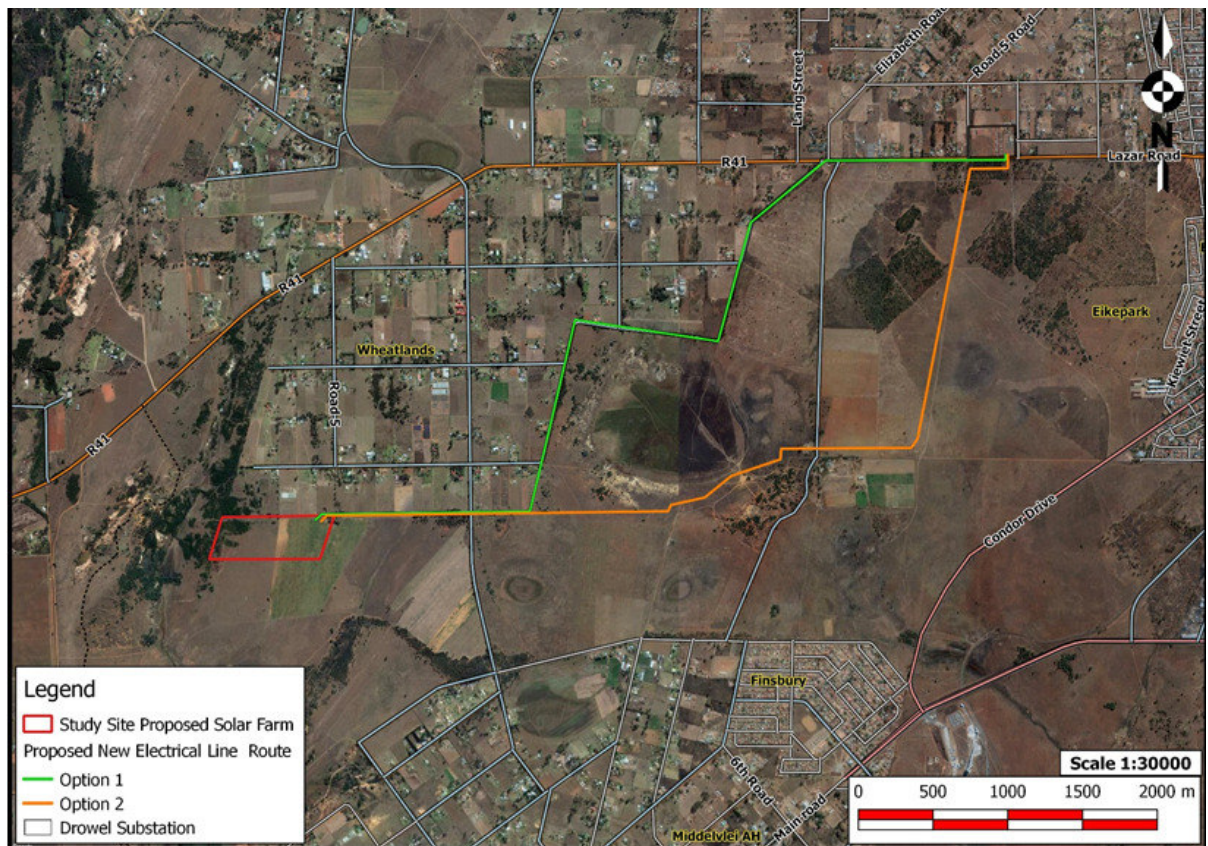


Figure 2: Aerial map

2. 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:

Title of legislation, policy or guideline:

Administering authority:

Promulgation Date:

National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended	National & Provincial	27 November 1998
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The NEMA is primarily an enabling Act in that it provides for the development of environmental implementation plans and environmental management plans. The principles listed in the act serve as a general framework within which environmental management and implementation plans must be formulated.

The Minister of Environmental Affairs and Tourism passed (in April 2006) Environmental Impact Assessment Regulations¹ (the Regulations) in terms of Chapter 5 of the National Environmental Management Act, 1998² (NEMA). The new Regulations came into effect on 3 July 2006.

The Minister of Environmental Affairs passed (in June 2010) the Amended Environmental Impact Assessment Regulations in terms of Chapter 5 of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA). The Regulations were amended once again in 2014. The Amended Regulations came into effect on 8 December 2014, and therefore all new applications must be made in terms of the Amended NEMA regulations and not in terms of the 2010 NEMA Regulations. The 2014 NEMA EIA Regulations were amended on 7 April 2017. The purpose of this process is to determine the possible negative and positive impacts of the proposed development on the surrounding environment and to provide measures for the mitigation of negative impacts and to maximize positive impacts.

Notice **No. R 983, R 984 and R 985** of the 2014 NEMA EIA Regulations as amended during 2017, list the activities that indicate the process to be followed. The activities listed in Notice No. R 983 requires that a Basic Assessment process be followed and the Activities listed in terms of Notice No. R 984 requires that the Scoping and EIA process be followed. Notice No. 985 has been introduced to make provision for activities in certain geographical and sensitive areas.

National Water Act (Act No. 36 of 1998)	National & Provincial	20 August 1998
<p>The purpose of this Act is to ensure that the Nation's water resources are protected, used, developed, conserved, managed and controlled in ways that take into account, amongst other factors, the following:</p> <ul style="list-style-type: none"> ❑ Meeting the basic human needs of present and future generations; ❑ Promoting equitable access to water; ❑ Promoting the efficient, sustainable and beneficial use of water in the public interest; ❑ Reducing and preventing pollution and degradation of water resources; ❑ Facilitating social and economic development; and ❑ Providing for the growing demand for water use. <p>In terms of the section 21 of the National Water Act, the developer must obtain water use licences if the following activities are taking place:</p> <ul style="list-style-type: none"> a) Taking water from a water resource; b) Storing water; c) Impeding or diverting the flow of water in a water course; d) Engaging in a stream flow reduction activity contemplated in section 36; e) Engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1); f) Discharging waste or water containing waste into a water resource through a pipeline, canal, sewer, sea outfall or other conduit; g) Disposing of waste in a manner which may detrimentally impact on a water resource; h) Disposing in any manner which contains waste from or which has been heated in any industrial or power generation process; i) Altering the bed, banks, course or disposing of water found underground if it is necessary for the safety of people; j) Removing, discharging, or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and k) Using water for recreational purposes. <p>The National Water Act also requires that (where applicable) the 1:50 and 1:100 year flood line be indicated on all the development drawings (even the drawings for the external services) that are submitted for approval.</p>		

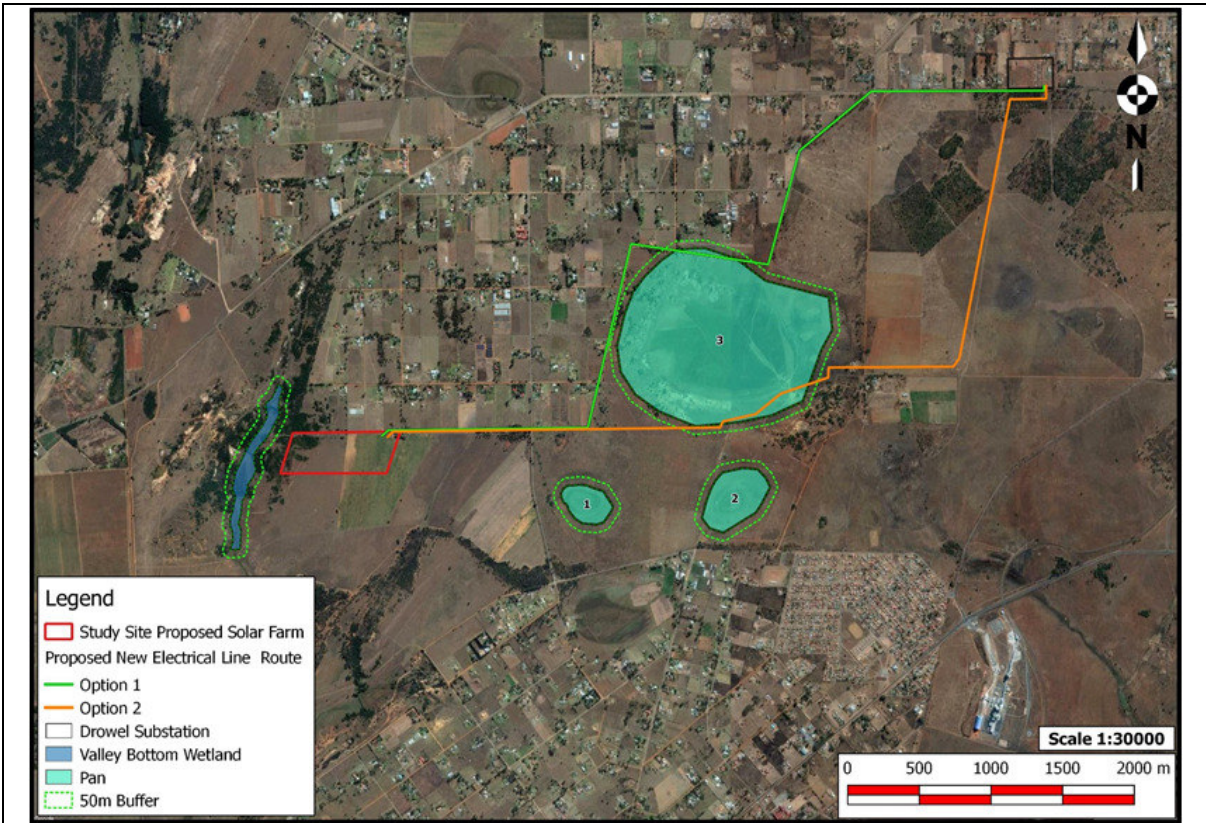


Figure 3: Rivers and wetlands

Conservation of Agricultural Resources Act (Act No. 43 of 1983)	National	1 June 1983
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This act provides for control over the utilization of natural agricultural resources of South Africa in order to promote the conservation of soil, water sources and the vegetation as well as the combating of weeds and invader plants; and for matters connecting therewith.

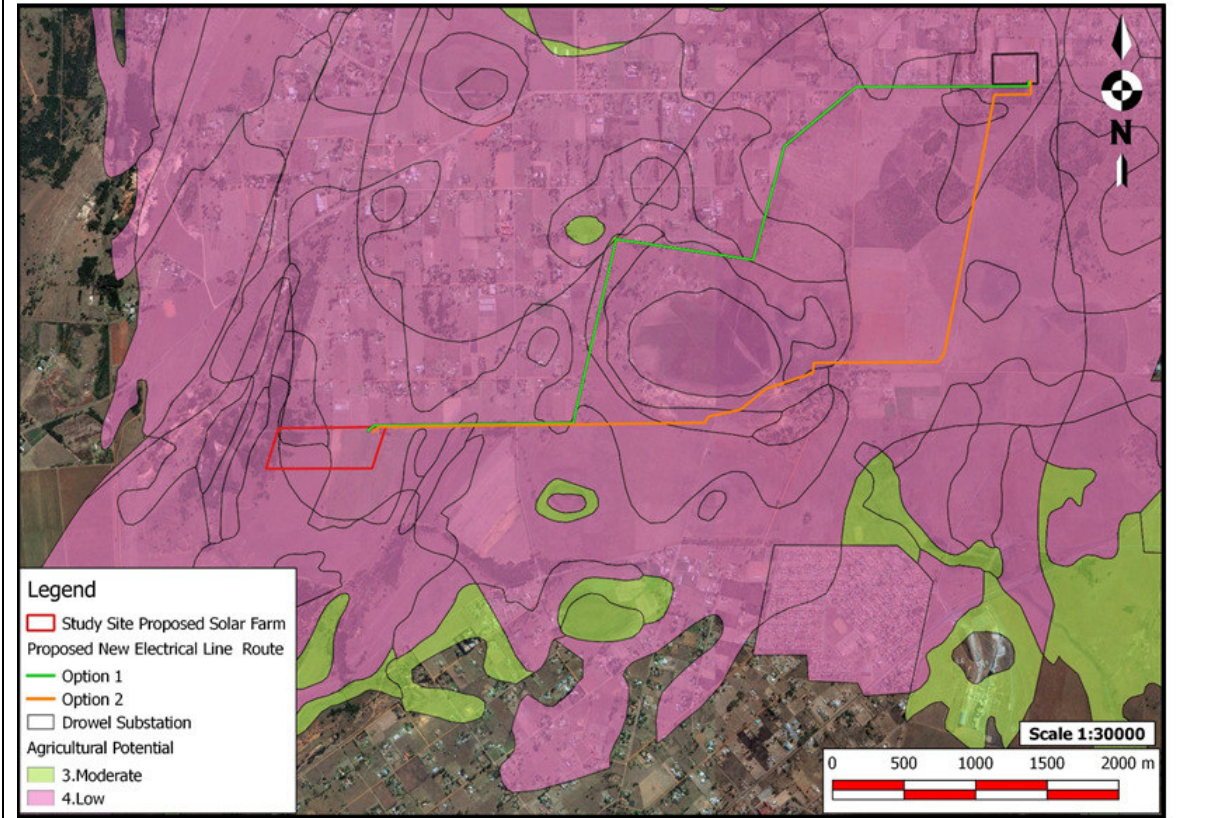


Figure 4: Agricultural potential

National Heritage Resources Act (Act No. 25 of 1999)	National & Provincial	1999
<p>The National Heritage Resources Act legislates the necessity and heritage impact assessment in areas earmarked for development, which exceed 0.5ha and linear development exceeding 300m in length. The Act makes provision for the potential destruction to existing sites, pending the archaeologist's recommendations through permitting procedures. Permits are administered by the South African Heritage Resources Agency (SAHRA).</p>		
National Environmental Management: Waste Act (Act 59 of 2009)	National	11 June 2010
<p>This Act came into effect on 11 June 2009. It aims to consolidate waste management in South Africa, and contains a number of commendable provisions, including:</p> <ul style="list-style-type: none"> • The establishment of a national waste management strategy, and national and provincial norms and standards, for amongst other, the classification of waste, waste service delivery, and tariffs for such waste services; • Addressing reduction, reuse, recycling and recovery of waste; • The requirements for industry and local government to prepare integrated waste management plans; • The establishment of control over contaminated land; • Identifying waste management activities that requires a license, which currently include facilities for the storage, transfer, recycling, recovery, treatment and disposal of waste on land; • Co-operative governance in issuing licenses for waste management facilities, by means of which a licensing authority can issue an integrated or consolidated license jointly with other organs of state that has legislative control over the activity; and • The establishment of a national waste information system. <p>On the 29th of November 2013 the Minister of Environmental Affairs and Tourism amended the list of waste management activities that might have a detrimental effect on the environment.</p>		
National Environmental Management Protected Areas Act (Act No. 57 of 2003) as amended	National	2003
<p>The purpose of this Act is to provide for the protection, conservation, and management of ecologically viable areas representative of South Africa's biological biodiversity and its natural landscapes.</p>		
National Environmental Management: Biodiversity Act (Act 10 of 2004)	National	2004
<p>The Biodiversity Act provides for the management and protection of the country's biodiversity within the framework established by NEMA. It provides for the protection of species and ecosystems in need of protection, sustainable use of indigenous biological resources, equity, and bio prospecting, and the establishment of a regulatory body on biodiversity- South African National Biodiversity Institute.</p> <p>Objectives of the Act:</p> <p>(a) With the framework of the National Environmental Management Act, to</p>		

provide for:

- (i) The management and conservation of biological diversity within the Republic and of the components of such biological diversity;
 - (ii) The use of indigenous biological resources in a sustainable manner; and
 - (iii) The fair and equitable sharing among stakeholders of benefits arising from bio-prospecting involving indigenous biological resources;
- (b) To give effect to ratified international agreements relating to biodiversity which are binding on the republic;
- (c) To provide for co-operative governance in biodiversity management and conservation; and
- (d) To provide for a South African National Biodiversity Institute to assist in achieving the objectives of this Act.

Under this Act notices are published in terms of alien and invasive species or threatened ecosystems in order to promote the biodiversity of natural resources and protect species endemic to South Africa.

National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004)

National & Provincial

2004

The NEM: AQA serves to repeal the Atmospheric Pollution Prevention Act (45 of 1965) and various other laws dealing with air pollution and it provides a more comprehensive framework within which the critical question of air quality can be addressed.

The purpose of the Act is to set norms and standards that relate to:

- Institutional frameworks, roles and responsibilities
- Air quality management planning
- Air quality monitoring and information management
- Air quality management measures
- General compliance and enforcement.

Amongst other things, it is intended that the setting of norms and standards will achieve the following:

- The protection, restoration and enhancement of air quality in South Africa
- Increased public participation in the protection of air quality and improved public access to relevant and meaningful information about air quality.
- The reduction of risks to human health and the prevention of the degradation of air quality.

The Act describes various regulatory tools that should be developed to ensure the implementation and enforcement of air quality management plans. These include:

- Priority Areas, which are air pollution 'hot spots'.
- Listed Activities, which are 'problem' processes that require an Atmospheric Emission Licence.
- Controlled Emitters, which includes the setting of emission standards for

<p>'classes' of emitters, such as motor vehicles, incinerators, etc.</p> <ul style="list-style-type: none"> • Control of Noise. • Control of Odours. 		
Gauteng Transport Infrastructure Act	Provincial	2001
<p>The act was created to consolidate the laws relating to roads and other types of transport infrastructure in Gauteng; and to provide for the planning, design, development, construction, financing, management, control, maintenance, protection and rehabilitation of provincial roads, railway lines and other transport infrastructure in Gauteng; and to provide for matters connected therewith.</p> <p>In terms of Section 46 of the Act, no person may erect, construct, or lay, or establish a structure or object on or over, or below the surface of a provincial road or railway line or land in a building restriction area.</p>		
Gauteng Transport Infrastructure Amendment Act	Provincial	2003
<p>The aim of this Amendment Act is to amend the Gauteng Transport Infrastructure Act, 2001 so as to amend and insert certain definitions; to provide for the necessary land use rights with respect to stations and for the necessary powers of the MEC to enter into contracts for road and rail projects; to amend the procedure in relation to route determination; to make a second environmental investigation at the stage of preliminary design of a road or railway line unnecessary where the competent environmental authority decides that the environmental investigation at the stage of route determination is adequate; and to provide for incidental matters.</p>		
The Deeds Registries Act, 47 of 1937	National & Provincial	1 September 1937
<p>The Act was created to consolidate and amend the laws in force in the Republic relating to the Registration of deeds. The act caters for the registration of servitudes.</p>		
Occupational Health & Safety Act, 85 of 1993 (as amended)	National & Provincial	1993
<p>The Act was created to provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety; and to provide for matters connected therewith.</p> <p>The storage of hazardous substances is regulated by this Act.</p>		
The Electricity Regulation Act, 2006 (Act No. 4 of 2006)	National	2006
<p>The objects of this Act are to-</p> <ol style="list-style-type: none"> achieve the efficient, effective, sustainable and orderly development and operation of electricity supply infrastructure in South Africa; ensure that the interests and needs of present and future electricity customers and end users are safeguarded and met, having regard to the governance, efficiency, effectiveness and long-term sustainability of the electricity supply industry within the broader context of economic energy regulation in the Republic; facilitate investment in the electricity supply industry; facilitate universal access to electricity; 		

- (e) promote the use of diverse energy sources and energy efficiency;
- (f) promote competitiveness and customer and end user choice; and
- (g) facilitate a fair balance between the interests of customers and end users, licensees, investors in the electricity supply industry and the public.

GDARD Draft Ridges Policy	Provincial	2001
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This policy is provided for the protection, conservation and maintenance of ridges within the Gauteng Province.

Gauteng conservation plan (C-Plan) Version 3.3	Provincial	October 2011
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Gauteng Nature Conservation (hereafter Conservation), a component of the Gauteng Department of Agriculture and Rural Development (GDARD) produced the Gauteng Conservation Plan Version 3 (C-Plan 3) in December 2010. The conservation plan was edited on three occasions since then: C-Plan 3.1 was released in July 2011 after it became apparent that some areas were not desirable in Critical Biodiversity Areas (CBAs hereafter). Not all areas were addressed in the first round of editing, so this was done during September 2011 resulting in C-Plan Version 3.2. It was soon released however, that some CBAs became separated by the removal of undesirable areas causing some attributes not to be completely reflective of that CBAs any longer. C-Plan 3.3 became available in October 2011 after this issue was addressed.

The main purposes of C-Plan 3.3 are:

- to serve as the primary decision support tool for the biodiversity component of the Environmental Impact Assessment (EIA) process;
- to inform protected area expansion and biodiversity stewardship programs in the province;
- To serve as a basis for development of Bioregional Plans in municipalities within the province.

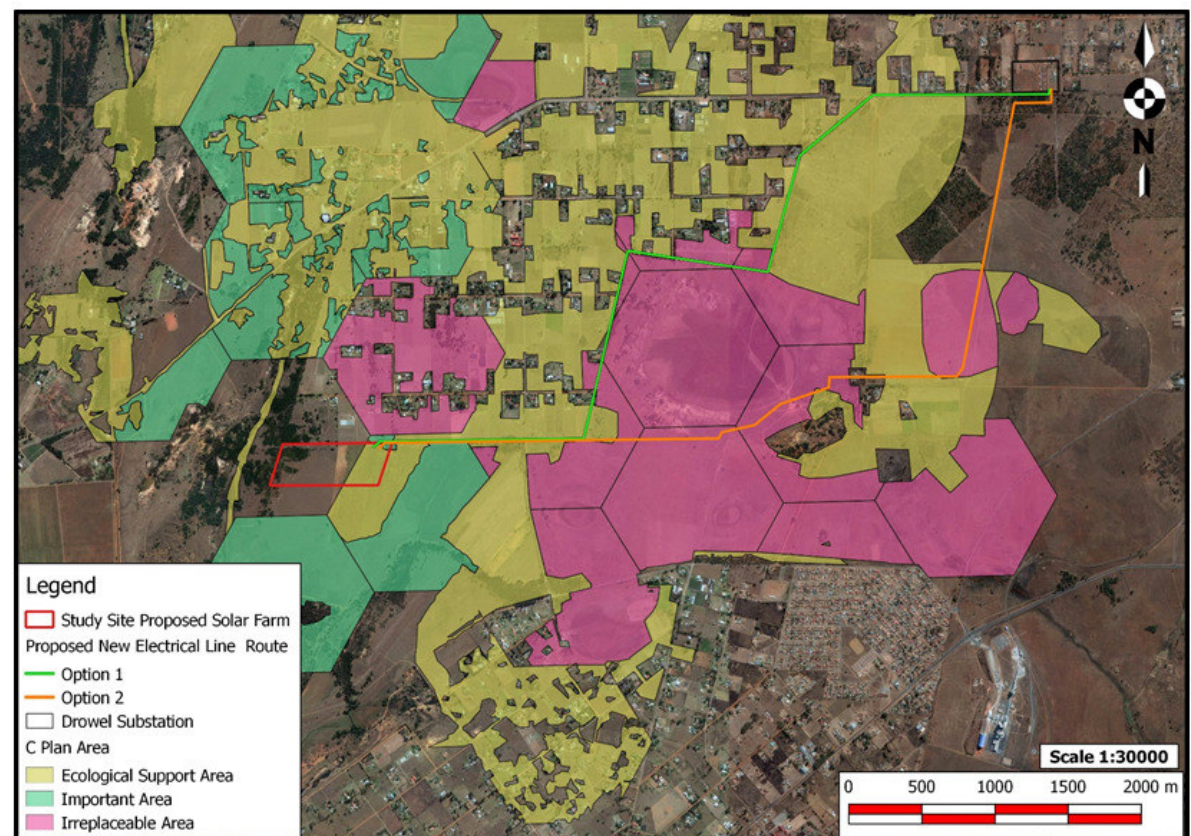


Figure 5: Conservation Plan Areas

GDARD Agricultural Hub Policy	Provincial	2006
GDARD identified 7 Agricultural Hubs in Gauteng province. These hubs are earmarked for agricultural activities and there are policies and guidelines that should be taken into consideration when one plans to develop in these hubs areas. Urban development is usually not supported in these hubs. Refer to Figure 4 .		
Gauteng Noise Control Regulations	Provincial	1999
The regulation controls noise pollution. According to the acceptable noise levels in a residential area situated within an urban area is 55dBA and the maximum acceptable noise levels in a rural area is 45dBA.		
Gauteng Urban Edge	Provincial	2011
According to the Gauteng Department of Economic Development the urban edge is now delineated on a yearly basis and it is the responsibility of the local authorities to request for a yearly amendment to the urban edge. The aim of the Urban Edge Policy is to curb unbridled urban growth.		

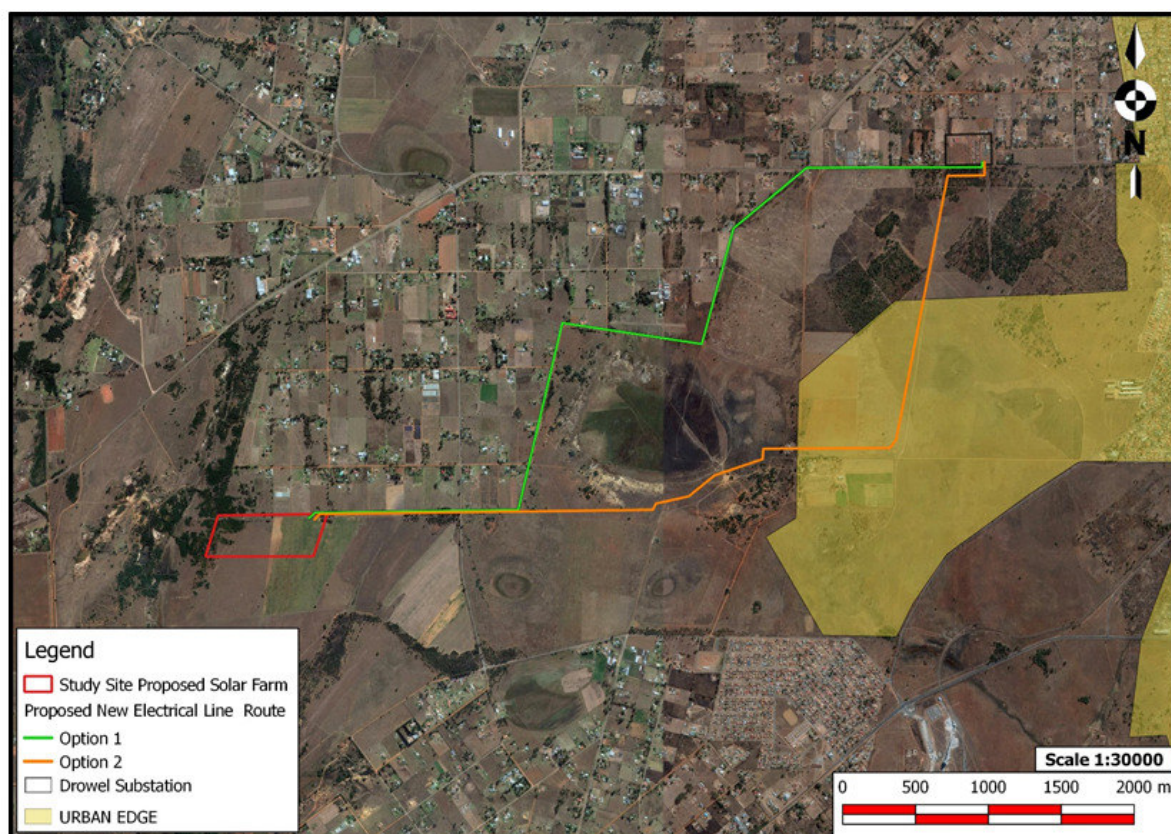


Figure 6: Gauteng Urban Edge

Gauteng Integrated Energy Strategy	Provincial	2010
<p>In terms of the Gauteng Integrated Energy Strategy following on from the national climate change summit, Gauteng is committed to –</p> <ul style="list-style-type: none"> <input type="checkbox"/> moving the province to a low-carbon economy; <input type="checkbox"/> ensuring that the province's carbon emissions peak and start declining by 2030; <input type="checkbox"/> ensuring that there is an improvement in energy efficiency; <input type="checkbox"/> ensuring the scaling up of renewable energy options; and 		

□ ensuring that energy access for the poor is a priority.

The strategy has established a set of targets over a period of time.

Gauteng Provincial Environmental Management Framework	Provincial	2014
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The objective of the Gauteng Provincial Environmental Management Framework (GPEMF) is to guide sustainable land use management within Gauteng Province.

The GPEMF serve the following purposes:

- Provide framework for environmental management in Gauteng;
- Align development initiatives with environmental resources, and development pressures;
- Determine geographical areas where certain activities can be excluded form EIA process; and
- Identify appropriate activities for each management zone.

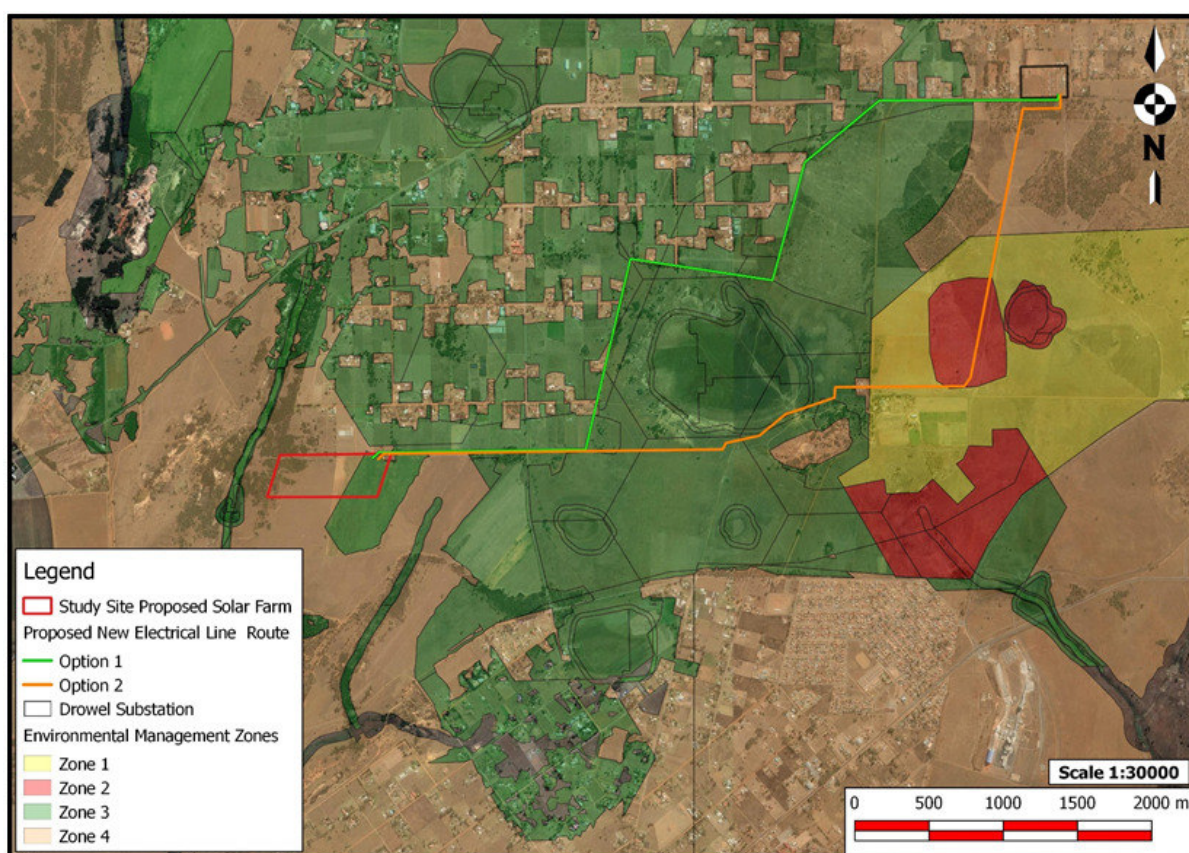


Figure 7: GPEMF zones

West Rand District Municipality Spatial Development Framework	District	2014
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In terms of Chapter 5 of the Municipal Systems Act which was promulgated in 2000, each local authority in South Africa is required to compile an Integrated Development Plan for its area of jurisdiction. In Section 26 of the Municipal Systems Act it is furthermore stated that the core components of an Integrated Development Plan are the following: a) the municipal council's vision for the long term development of the municipality with special emphasis on the municipality's most critical development and internal transformation needs; b) an assessment of the existing level of development in the municipality, which must include an identification of communities which do not have access to basic municipal

services; c) the council's development priorities and objectives for its elected term, including its local economic development aims and its internal transformation needs; d) the council's development strategies which must be aligned with any national or provincial sectoral plans and planning requirements binding on the municipality in terms of legislation; e) a spatial development framework which must include the provision of basic guidelines for a land use management system for the municipality; f) the council's operational strategies; g) applicable disaster management plans; h) a financial plan, which must include a budget projection for at least the next three years; and i) the key performance indicators and performance targets determined.

West Rand District Municipality Environmental Management Framework (EMF) Rev 2	District	2013
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The EMF will serve as a management and decision-support tool that provides authorities with information about the status quo of the environment and the associated planning parameters. It will identify and spatially represent areas of potential conflict between sensitive environments and development proposals, thus assisting in integrating social, economic and environmental factors into planning. It is also noted that in accordance with the EMF regulations the aim of the EMF is to:

- promote sustainability;
- secure environmental protection; and
- promote cooperative environmental governance.

Randfontein Spatial Development Framework	Local	2015/2016
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The purpose of the Spatial Development Framework is to identify sectors of development and to identify geographical areas for specific development activities.

West Rand District Bio-regional plan	District	2014
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The purpose of a bioregional plan is to inform land-use planning, environmental assessment and authorisations, and natural resource management, by a range of sectors whose policies and decisions impact on biodiversity. This is done by providing a map of biodiversity priority areas, including Critical Biodiversity Areas and Ecological Support Areas, with accompanying land-use planning and decision-making guidelines.

Description of compliance with the relevant legislation, policy or guideline:

Legislation, policy of guideline	Description of compliance
National Environmental Management Act No. 107 of 1998 (as amended)	The application for the Proposed Development consists of activities listed under Notice R. 983 and R. 985 (Listing No. 1 and 3) and therefore a Basic Assessment Report is submitted to GDARD for consideration.
National Water Act (Act No. 36 of 1998)	The Proposed Development and associated infrastructure occurs within 500m radius of the buffer from the delineated valley bottom wetland and two pans and therefore a Wetland Risk Assessment was conducted. According to the Risk Assessment the risk posed by the urban solar farm to the adjacent wetland is low, and therefore a Water Use Licence

	Application (WULA) is not required, only a General Authorisation.
Conservation of Agricultural Resources Act (Act No. 43 of 1983)	<p>Despite the Proposed Development site falling within one of the seven Agricultural hubs of Gauteng, a <i>Soil and Agricultural Potential Survey</i> conducted concluded that the site has low agricultural potential.</p> <p>A number of alien species were identified on site. In order to promote the conservation of the soil, water sources and the natural vegetation an invasive management programme will be initiated to combat any weeds and invader plants</p>
National Heritage Resources Act (Act No. 25 of 1999)	Considering the Proposed Development is bigger than 0.5ha a Phase 1 Heritage Impact assessment (HIA) was conducted. No sites of archaeological or cultural significance occur within the Proposed Development site.
National Environmental Management: Waste Act (Act 59 of 2009)	<p>No listed waste activities will take place on site and therefore a waste license will not be required.</p> <p>Construction and operational general waste will be removed to the Randfontein landfill site. A Strict Waste Management Programme will have to be applied during the construction phase with regards to plastic and polystyrene packaging material of solar panels to prevent it from becoming airborne.</p>
National Environmental Management Protected Areas Act (Act No. 57 of 2003) (as amended)	The Proposed Development site does not form part of a declared protected area.
National Environmental Management: Biodiversity Act (Act 10 of 2004)	<p>According to the Gauteng Conservation Plan Version 3.3., the Proposed Development site borders a Critical Biodiversity Area and part of the site is denoted as Ecological Support Area. The <i>Vegetation Survey</i> conducted concluded that approximately 7ha of the proposed development site has moderate environmental significance due to the presence of an Orange Listed species <i>Boophane disticha</i> occurring within the Grassland vegetation unit.</p> <p>The 7ha may be developed, however Search and Rescue will have to be carried out by an Ecologist of the Grassland vegetation unit as well as Option 1 of the powerline route, prior to construction commencing.</p> <p>Biodiversity permit to be applied for in order to conduct Search and Rescue.</p>
National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004)	During the construction phase of the Proposed Development, the clearing of land for the construction of solar panels could result in dust nuisance, and construction activities could result in noise nuisance, to adjacent land owners.
Gauteng	The proposed development site is in close proximity to the

Transport Infrastructure Act	<p>R41 to the north and a Class 3 Road (D2309) running from north to south due east of the proposed development site. The planned PWV1 borders the site along the western boundary.</p> <p>These roads are controlled and managed by the Gauteng Department of Roads and Transport (GDRT) and therefore road upgrades associated with the Proposed Development require Gauteng Department of Roads and Transport approval.</p> <p>Upgrade of Road 6 in order to obtain access to the Proposed Development requires Municipal approval.</p>
Gauteng Transport Infrastructure Amendment Act	<p>This Act does not apply as the Proposed Development site is not affected by a Railway servitude.</p>
The Deeds Registries Act, 47 of 1937	<p>Considering the Proposed Development entails the installation of an 11kV external powerline transecting existing servitudes and access via Road 6, the developer will apply for Wayleaves and register the relevant servitudes for the proposed access road.</p>
Occupational Health & Safety Act, 85 of 1993	<p>The Act not only applies to the persons who will be responsible for construction and operation of the Proposed Development, but also to the safety of members of the public during the life of the project.</p>
The Electricity Regulation Act, 2006	<p>The generation of electricity at the Proposed Development, triggers a Generation License of terms of the Act.</p>
GDARD Draft Ridges Policy	<p>No ridges occur on, or in the direct vicinity of the Proposed Development. The development site slopes slightly from north to south.</p>
Gauteng conservation plan (C-Plan) Version 3.3	<p>According to the Gauteng Conservation Plan Version 3.3., the Proposed Development site borders a Critical Biodiversity Area and part of the site is denoted as Ecological Support Area. The <i>Vegetation Survey</i> conducted concluded that approximately 7ha of the proposed development site has high environmental significance due to the presence of an Orange Listed species <i>Boophane disticha</i> occurring within the Grassland vegetation unit. Search and Rescue will have to be carried out by an Ecologist of the Grassland vegetation unit prior to construction commencing.</p>
GDARD Agricultural Hub Policy	<p>Despite the Proposed Development site falling within one of the seven Agricultural hubs of Gauteng, a <i>Soil and Agricultural Potential Survey</i> conducted concluded that the site has low agricultural potential.</p> <p>After the decommissioning of the Solar Farm it will again be possible to exercise agricultural activities on the study area. No soil will be removed and the development will only require a limited amount of water for the cleaning of the panels.</p> <p>Care must however be taken during all the planning, construction and operation phases to prevent/limit erosion,</p>

	siltation and the loss of large areas covered with vegetation.
Gauteng Draft Red Data Policy	No Red Data Listed plant species are known to occur on the Proposed Development site according to the Gauteng Conservation Plan Version 3.3. The <i>Vegetation Survey</i> conducted confirmed the aforementioned.
Gauteng Noise Control Regulations	During the construction phase of the Proposed Development, construction activities could result in noise nuisance to adjacent land owners. Construction activities should be limited to hours of daylight, unless otherwise permitted, as per EMPr mitigation measures.
Gauteng Urban Edge	The Proposed Development site falls outside the Gauteng Urban Edge and therefore GDARD was consulted regarding the feasibility of an urban solar farm outside the urban edge.
Gauteng Integrated Energy Strategy	The Proposed Development will ensure that the following commitment made in the Gauteng Integrated Energy Strategy is met: ensuring the scaling up of renewable energy options.
Gauteng Provincial Environmental Management Framework	The western part of the Proposed Development site as well as the powerline transects Zone 3: High control zone (outside the urban environment) in terms of the Gauteng Provincial Environmental Management Framework. These areas are sensitive to development due to its agricultural potential. It was however established that the site has low agricultural potential.
West Rand District Municipality Environmental Management Framework Rev 2	Although the proposed development site does not occur within the Western Corridor of the district municipal area, the environmental management plan is in favour of renewable energy development within the district.
Randfontein Spatial Development Framework 2015/2016	According to the SDF the West Rand region has been earmarked for renewable energy development focusing on solar energy. Municipal and household energy costs can be reduced by the introduction of renewable energy.
West Rand District Bio-regional plan	<p>According to the Bio-regional Plan of the West Rand District Municipality the proposed development site falls within an area classified as vulnerable, the wetland associated with the tributary occurring to the west of the proposed development site is regarded as least threatened, the land cover is denoted as Agriculture, the Soweto Highveld Grassland unit is not protected in terms of protection level.</p> <p>Despite the West Rand District Municipalities request to comply with the Bio-regional Plan of the West Rand, it is not possible to establish whether or not the proposed development site falls within a CBA or ESA in terms of the West Rand District Bio-regional Plan due to the size of Figure 6 on Page 27, and due to unavailability of this information in GIS format.</p> <p>Based on studies and surveys conducted, the sensitivity of the site is regarded as low, and the site is regarded as suitable for the Proposed Development due to need for alternative energy within the Municipal Area, and Province.</p>

3. ALTERNATIVES

Describe the proposal and alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished. The determination of whether the 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.

The no-go option must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. **Do not include the no go option into the alternative table below.**

Note: 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.

Please describe the process followed to reach (decide on) the list of alternatives below

3.1 Alternatives assessment method statement

In accordance with Appendix 1 – Basic Assessment Process, as promulgated under the 2014 EIA Regulations and as amended in 2017, “alternatives” did not undergo a comparative assessment in terms of (a) property on which or location where the activity is proposed to be undertaken (b) type of activity to be undertaken (c) design or layout of the activity (d) technology to be used in the activity or (e) operational aspects of the activity; and includes the option of not implementing the activity.

This section will provide the required motivation as to why no alternative comparative assessment was undertaken for the activity in accordance with section 3 (h) (i), of Appendix 1 of the 2014 EIA Regulations as amended in 2017.

(a) **Property on which or location where the activity is proposed to be undertaken**

The assessment on the location where the activity is proposed was not undertaken as part of this assessment and was discounted based on the Applicant undertaking a pre-feasibility site selection assessment in order to determine if the Project Site complies with the primary feasibility parameters for a facility of this scale and nature and in order to ensure the site proposed for the solar power development is secured by means of a commercial Option Agreement. Project sites for these facilities, are subject to several external (non-environmental) parameters which could ultimately deem a project unfeasible if they do not comply with the minimum requirements, thus site selection i.e. location alternatives are derived before the environmental impact assessment process commences. These parameters include –

- Location to substation/evacuation point
- Resource determination
- Location and availability of services
- Point of delivery (where the electricity is needed)
- Topographical constraints
- Land use & Site ownership
- Environmental constraints such as surface water resource features^[1]

With reference to the lease agreement between the Land Owner and the Applicant the site was pre-selected based on location, land availability, cost, ease of permitting, financial viability based on facility MW capacity and potential environmental and social constraints. The proposed Wheatlands site was identified as the preferred site for the establishment of a USF as the site as the site had the least environmental and social constraints and the site was sufficiently large to allow for a financially viable USF development.

(b) **type of activity to be undertaken**

The type of activity assessment was not undertaken as part of this assessment and was discounted based on the needs and desirability of the

^[1] This is considered as a fatal flaw analysis – where the environmental features prominent and present on site will deem the surface area too small for development if the required buffers and no-go area are implemented such as water resources or ridges.

activity. The project aligns directly and indirectly with the West Rand District Municipalities EMP and SDF.

Although the proposed development site does not occur within the Western Corridor of the district municipal area, the environmental management plan is in favour of renewable energy development within the district.

According to the SDF the West Rand region has been earmarked for renewable energy development focusing on solar energy. Municipal and household energy costs can be reduced by the introduction of renewable energy.

(c) design or layout of the activity

The design or layout assessment was not undertaken as part of this assessment and was discounted as the layout was finalised in order to ease connectivity to the Drowell substation, as well as optimise the feasibility and efficiency of the solar power plant. However it should be noted that the transformers and battery storage containers were located on the eastern boundary, furthest away from the wetland bordering the site along the western frontier to minimise the environmental impacts. Based on this evaluation the Applicant has indicated that this is their preferred design and layout as it has the shortest connection point with the least environmental impacts. **Refer to Appendix C2.**

(d) technology to be used in the activity or

The environmental impacts differ between PV technologies. The primary differences which affect the potential for environmental impacts relate to the extent of the project development area, or land-take (disturbance or loss of habitat), as well as the height of the facility (visual impacts). Two solar energy technologies were considered for the proposed project and include:

- Fixed / static PV panels;
- Tracking PV panels (with solar panels that rotate to follow the sun's movement).

The PV panels will be fixed to a support structure, set at an angle so to receive the maximum amount of solar radiation, or mounted to a tracking frame. The angle of the fixed panel is dependent on the latitude of the proposed Project and the angles may be adjusted to optimise for summer or winter solar radiation characteristics. Alternatively tracking technology (which tilts to follow the sun's movement) ensures, in terms of energy production, an advantage of about 25% capacity compared to the fixed or static technology.

Fixed mounted PV system

In a fixed mounted PV system (fixed-tilt), PV panels are installed at a pre-determined angle from which they will not move during the lifetime of the plant's operation. The limitations imposed on this system due to its static placement are offset by the fact that the PV panels are able to absorb incident radiation reflected from surrounding objects. In addition, the misalignment of the angle of PV panels has been shown to only marginally affect the efficiency of energy collection. There are further advantages which are gained from fixed mounted systems, including:

- The maintenance and installation costs of a fixed mounted PV system

are lower than that of a tracking system, which is mechanically more complex given that PV mountings include moving parts

- Fixed mounted PV systems are an established technology with a proven track record in terms of reliable functioning. In addition, replacement parts are able to be sourced more economically and with greater ease than with alternative systems
- Fixed mounted systems are robustly designed and able to withstand greater exposure to wind than tracking systems
- Fixed mounted PV systems occupy less land space than the tracking systems as tracking systems must be spaced in order to avoid shading one another as they track the sun

Tracking system

Tracking PV System (single axis or dual axis trackers) are fixed to mountings which track the sun's movement. There are various tracking systems. A 'single axis tracker' will track the sun from east to west, while a dual axis tracker will in addition be equipped to account for the seasonal waning of the sun. These systems utilise moving parts and complex technology, including solar irradiation sensors to optimise the exposure of PV panels to sunlight. The tracking system can generate up to 25% more energy than fixed mounting systems. Tracking systems are a newer technology and require consideration of the following:

- A high degree of maintenance is required due to the nature of the machinery used in the system, which consists of numerous components and moving parts. A qualified technician is required to carry out regular servicing of these parts, which places a question on the feasibility of this system given the remote location of the proposed project site; and
- A larger project development site is required for this system given that the separate mountings need to be placed a distance apart to allow for their tracking movement and avoid shading of PV arrays.

The PV panels are designed to operate continuously for more than 20 years, unattended and with low maintenance.

Preferred technology alternative

A fixed / static PV panel technology is considered the preferred alternative for the USF Project due to the lower maintenance requirements, reduced project footprint and the installation costs are lower.

(e) operational aspects of the activity;

In line with the technology alternatives that were considered during the pre-feasibility phase of the project, the operation aspects of the project were assessed. The preferred technology is a very low maintenance installation which will reduce and limit possible future social impacts associated with PV project maintenance and management operations such as nuisance dust generation via cleaning vehicles. Based on these operational benefits, the operation aspects of the facility was not assessed but aligned with the lower impact technology alternative.

No-Go Option

The No-Go option regarding the proposed development of the USF Project was

discounted as the needs and desirability of the activity far outweighs the potential negative impact the facility will have on the receiving environment.

Provide a description of the alternatives considered

No.	Alternative type, either alternative: site on property, properties, activity, design, technology, energy, operational or other (provide details of "other")	Description
1	Proposal (Preferred)	Proposed Urban Solar Farm
2	No-Go Alternative	No development

In the event that no alternative(s) has/have been provided, a motivation must be included in the table below.

Refer to table above.

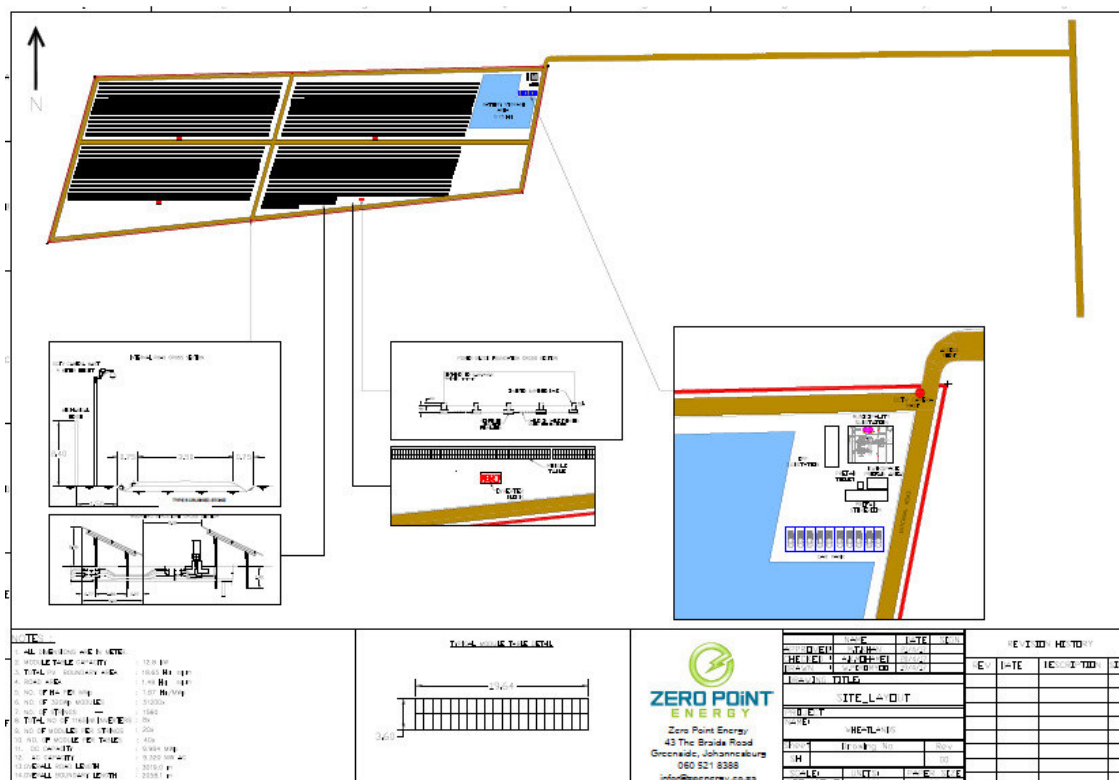


Figure 8: Proposed layout [Source: Zero Point Energy]

Refer to Appendix C2 for enlargement of the proposed layout.

4. PHYSICAL SIZE OF THE ACTIVITY

Indicate the total physical size (footprint) of the proposal as well as alternatives. Footprints are to include all new infrastructure (roads, services etc), impermeable surfaces, and landscaped areas:

Proposed activity (Total environmental (landscaping, parking, etc.) and the building footprint)

Size of the activity:
19.9ha

Alternatives:

Alternative 1 (if any)
Alternative 2 (if any)

Ha/ m²

or, for linear activities:

Proposed activity

Length of the activity:
7km

Alternatives:

Alternative 1 (if any)

7.1km

Alternative 2 (if any)

m/km

Indicate the size of the site(s) or servitudes (within which the above footprints will occur):

Proposed activity

Size of the site/servitude:

200,000m ² (site) plus 21000m ² (powerline)

Alternatives:

Alternative 1 (if any)

Alternative 2 (if any)

Ha/m²

5. SITE ACCESS

Proposal

Does ready access to the site exist, or is access directly from an existing road?

YES	NO
X	
m	

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

Describe the type of access road planned:

Access to the Proposed Development shall be obtained from the existing road Road 6 (D2309) connecting to the R41 to the north. A graded gravel road will be constructed from Road 6 along the northern boundary of the Remainder of the farm Wheatlands 260 IQ running parallel to the existing Eskom servitude. This road will be coated with a dust suppression solution to mitigate dust entrainment by vehicles.

Include the position of the access road on the site plan (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

Alternative 1

Does ready access to the site exist, or is access directly from an existing road?

YES	NO
m	

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

Describe the type of access road planned:

Include the position of the access road on the site plan. (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

Alternative 2

Does ready access to the site exist, or is access directly from an existing road?

YES	NO
m	

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

Describe the type of access road planned:

Include the position of the access road on the site plan. (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

PLEASE NOTE: Points 6 to 8 of Section A must be duplicated where relevant for alternatives

Section A 6-8 has been duplicated

0

Number of times

(only complete when applicable)

6. LAYOUT OR ROUTE PLAN

A detailed site or route (for linear activities) plan(s) must be prepared for each alternative site or alternative activity. It must be attached to this document. The site or route plans must indicate the following:

- the layout plan is printed in colour and is overlaid with a sensitivity map (if applicable);
- layout plan is of acceptable paper size and scale, e.g.
 - A4 size for activities with development footprint of 10sqm to 5 hectares;
 - A3 size for activities with development footprint of > 5 hectares to 20 hectares;
 - A2 size for activities with development footprint of >20 hectares to 50 hectares);
 - A1 size for activities with development footprint of >50 hectares);
- The following should serve as a guide for scale issues on the layout plan:
 - A0 = 1: 500
 - A1 = 1: 1000
 - A2 = 1: 2000
 - A3 = 1: 4000
 - A4 = 1: 8000 (±10 000)
- shapefiles of the activity must be included in the electronic submission on the CD's;
- the property boundaries and Surveyor General numbers of all the properties within 50m of the site;
- the exact position of each element of the activity as well as any other structures on the site;
- the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, sewage pipelines, septic tanks, stormwater infrastructure;
- servitudes indicating the purpose of the servitude;
- sensitive environmental elements on and within 100m of the site or sites (including the relevant buffers as prescribed by the competent authority) including (but not limited thereto):
 - Rivers and wetlands;
 - the 1:100 and 1:50 year flood line;
 - ridges;
 - cultural and historical features;
 - areas with indigenous vegetation (even if it is degraded or infested with alien species);
- Where a watercourse is located on the site at least one cross section of the water course must be included (to allow the position of the relevant buffer from the bank to be clearly indicated)

FOR LOCALITY MAP (NOTE THIS IS ALSO INCLUDED IN THE APPLICATION FORM REQUIREMENTS)

- the scale of locality map must be 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 locality map and all other maps must be in colour;
- locality map must show property boundaries and numbers within 100m of the site, and for poultry and/or piggery, locality map must show properties within 500m and prevailing or predominant wind direction;
- for gentle slopes the 1m contour intervals must be indicated on the map and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the map;
- areas with indigenous vegetation (even if it is degraded or infested with alien species);
- locality map must show exact position of development site or sites;
- locality map showing and identifying (if possible) public and access roads; and
- the current land use as well as the land use zoning of each of the properties adjoining the site or sites.

Refer to **Appendix A** for locality map as well as sensitivity maps.

7. SITE PHOTOGRAPHS

Colour photographs from the center 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 the appropriate Appendix. It should be supplemented with additional photographs of relevant features on the site, where applicable.

Site photographs were not appended as Appendix B, but were included in specialist reports to denote the environment associated with the proposed development site.

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 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 to be attached in the appropriate Appendix.

Refer **Appendix C2** for the proposed layout of the urban solar farm.

SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT

Note: Complete Section B for the proposal and alternative(s) (if necessary)

Instructions for completion of Section B for linear activities

- 1) For linear activities (pipelines etc) it may be necessary to complete Section B for each section of the site that has a significantly different environment.
- 2) Indicate on a plan(s) the different environments identified
- 3) Complete Section B for each of the above areas identified
- 4) Attach to this form in a chronological order
- 5) Each copy of Section B must clearly indicate the corresponding sections of the route at the top of the next page.

Section B has been duplicated for sections of the route times

Instructions for completion of Section B for location/route alternatives

- 1) For each location/route alternative identified the entire Section B needs to be completed
- 2) Each alternative location/route needs to be clearly indicated at the top of the next page
- 3) Attach the above documents in a chronological order

Section B has been duplicated for location/route alternatives times (complete only when appropriate)

Instructions for completion of Section B when both location/route alternatives and linear activities are applicable for the application

Section B is to be completed and attachments order in the following way

- All significantly different environments identified for Alternative 1 is to be completed and attached in a chronological order; then
- All significantly different environments identified for Alternative 2 is to be completed and attached chronological order, etc.

Section B - Section of Route (complete only when appropriate for above)

Section B – Location/route Alternative No. (complete only when appropriate for above)

1. PROPERTY DESCRIPTION

Property description:
(Including Physical Address and Farm name, portion etc.)

Part of the Remainder of the Farm Wheatlands 260 IQ, Randfontein Local Municipality, West Rand District Municipality, Gauteng Province

2. Activity POSITION

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

Alternative:

Latitude (S):	Longitude (E):
26° 11'47.07"S	27°37'02.93"E

In the case of linear activities:

Alternative:

- Starting point of the activity
- Middle point of the activity
- End point of the activity

Latitude (S):	Longitude (E):
26°10'20.67	27°39'59.33
26°11'02.37	27°38'49.92
26°11'42.19	27°37'14.79

For route alternatives that are longer than 500m, please provide co-ordinates taken every 250 meters along the route and attached in the appropriate Appendix

Addendum of route alternatives attached

Refer to **Figure 9** below for coordinates of the linear activity

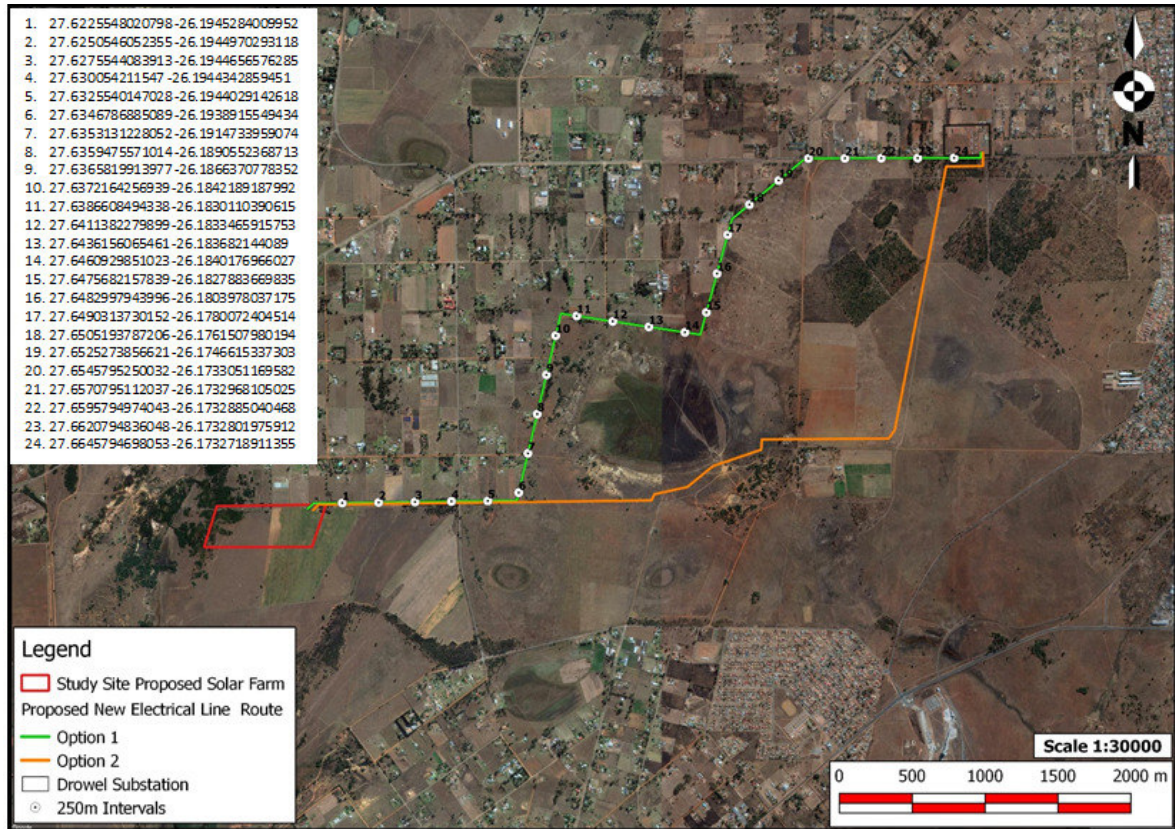


Figure 9: Proposed powerline route (Option1)

The 21 digit Surveyor General code of each cadastral land parcel

PROPOSAL	T	0	I	Q	0	0	0	0	0	0	0	0	0	0	0	2	6	0	0	0	0
----------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

4. LOCATION IN LANDSCAPE

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

Ridgeline	Plateau	Side slope of hill/ridge	Valley	Plain X	Undulating plain/low hills X	River front
-----------	---------	--------------------------	--------	------------	---------------------------------	-------------

5. **GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE**

a) Is the site located on any of the following?

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

(Information in respect of the above will often be available at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

An *Engineering Geological Investigation Report of a Part of Remainder Wheatlands 260-IQ Mogale City* compiled by Africa Exposed Consulting Engineering Geologists for the approved Mixed Use Development **in close proximity to the Proposed Development concluded that part of the Remainder Wheatlands 260-IQ is underlain by quartzite.**

No groundwater seepage was detected in the test pits; however fluctuation of the perched water table can be expected.

Randfontein falls within an active seismic area associated with stress release as a result of intense mining.

b) are any caves located on the site(s)

YES	NO X
-----	-----------------

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S): _____ **Longitude (E):** _____

c) are any caves located within a 300m radius of the site(s)

YES	NO X
-----	-----------------

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S): _____ **Longitude (E):** _____

d) are any sinkholes located within a 300m radius of the site(s)

YES	NO X
-----	-----------------

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S): _____ **Longitude (E):** _____

If any of the answers to the above are "YES" or "unsure", specialist input may be requested by the Department

6. **AGRICULTURE**

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?

YES X	NO
An Agricultural Potential Survey conducted concluded that the site has low agricultural potential due to shallow and rocky soils. Refer to Appendix E2.	

Please note: The Department may request specialist input/studies in respect of the above.

7. GROUNDCOVER

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

Indicate the types of groundcover present on the site and include the estimated percentage found on site

Natural veld - good condition (Grassland) % = 35	Natural veld with scattered aliens (Disturbed Grassland) % = 25	Natural veld with heavy alien infestation % =	Veld dominated by alien species % =	Landscaped (vegetation) % =
Sport field % =	Cultivated land (transformed) % = 40	Paved surface (hard landscaping) % =	Building or other structure % =	Bare soil % =

Please note: The Department may request specialist input/studies depending on the nature of the groundcover and potential impact(s) of the proposed activity/ies.

Are there any rare or endangered flora or fauna species (including red list species) present on the site

YES X	NO
------------------------	----

If YES, specify and explain:

Flora

The *Vegetation Survey* conducted concluded that approximately 7ha of the proposed development site has moderate environmental significance due to the presence of an Orange Listed species *Boophane disticha* occurring within the Grassland vegetation unit. Search and Rescue will have to be carried out by a flora specialist of the Grassland vegetation unit prior to construction commencing in according to Biodiversity permit to be applied for. **Refer to Appendix E3.**

Fauna

A *Fauna Habitat Assessment* conducted concluded that a third of the proposed development site comprising of the Grassland vegetation unit has moderate conservation importance due to the potential presence of Red Listed species such as the South African Hedgehog (*Atelerix frontalis*), Vlei rat (*Otomys auratus*) and Coppery Grass Lizard (*Chamaesaura aenea*). The Ecologist recommended that a mammalian specialist confirm the presence of the mentioned Red List species on site prior to construction on site.

The Overhead Power Lines are not likely to affect fauna species movement or cause extensive habitat loss for utilisation by fauna species and the impacts are therefore considered to be low.

Refer to Appendix E4.

Avifauna

An *Avifaunal Review* conducted by Wild Skies Ecological Services established that the proposed development site does not fall within an important bird and biodiversity area. The closest important bird area occurs approximately 13km to the north. The Ornithological Specialist concluded that two of the Red Listed bird species prioritised by GDARD (African Grass-Owl & White-bellied Korhaan), has a likelihood of occurring on site and thus recommended that a full avifaunal specialist study be conducted prior to construction, with specific reference to these two species. The Ornithological Specialist interpreted that the proposed site would be classified as Small and Low sensitivity in terms of the BirdLife South Africa *Best Practice Guidelines for Birds & Solar Energy*, and therefore qualify for "Regime 1" monitoring. **Refer to Appendix E5.**

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.

YES X	NO
------------------------	----

If YES, specify and explain:

Considering the second site visit for purpose of assessing the impact of the proposed powerline routes was conducted outside the sampling season, no survey was undertaken of the two route options. The preferred powerline route runs along and existing dirt road where disturbance caused by alien vegetation and human activities are evident. According to the Gauteng Conservation Plan, the proposed powerline route transects an area classified as Irreplaceable i.e. CBA. It is therefore recommended that an Ecologist walk the route of the proposed powerline prior to construction commencing and rescue any Orange and Red Listed species visible within the planned route.

Are there any special or sensitive habitats or other natural features present on the site?

YES X	NO
-----------------	----

If YES, specify and explain:

The study area is located in the Soweto Highveld Grassland, which is regarded as Vulnerable (Mucina and Rutherford, 2006). The study site has suitable habitat for one Red Listed flora species and two Orange Listed flora species, of which one Orange List species was recorded within the Grassland vegetation unit during the survey. The Ecologist recommended that GDARD to be contacted regarding relocation of *Boophane Distichia* within the Grassland vegetation unit classified as having a high sensitivity.

The Grassland which supports the Orange List species as well as other graminoids and herbaceous species covers approximately 35% of the proposed development site. 35% of the study site has a moderate sensitivity while the rest of the site is considered to have a low sensitivity.

According to the wetland specialist who conducted a wetland risk assessment and compiled a *Wetland Report* for the proposed development, a channelled Valley Bottom wetland occurs approximately 200m to the west of the proposed development site, while the preferred alternative for the powerline, Option 1, passes within 500m of a small pan and run along the border of a larger pan classified as a CBA. According to the Wetland Specialist the Present Ecological State (PES) of the valley bottom wetland is C = Moderately Modified, and the pans are B = Largely natural with few modifications. The wetland and pans are considered to be ecologically important and sensitive. Despite the aforementioned the Risk Assessment conducted in terms of the National Water Act (Act no 36 of 1998) Regulations pertaining to Section 21 (c) and (i) water use, concluded that the risk posed by the Proposed Development and powerline to the wetland and pans is regarded as low and therefore only a General Authorisation is required in terms of the National Water Act, Act 36 of 1998, and not a Water Use License. Refer to Appendix E6.

Was a specialist consulted to assist with completing this section

YES X	NO
-----------------	----

If yes complete specialist details

Name of the specialist:

Lizette Delpont

Qualification(s) of the specialist:

MSc (Aquatic Health)

Postal address:

PO BOX 11375, Maroelana

Postal code:

0161

Telephone:

012 346 3810

Cell:

082 504 2565

E-mail:

reception@bokamoso.net

Fax:

Are any further specialist studies recommended by the specialist?

YES

NO
X

If YES, specify:

If YES, is such a report(s) attached?

YES

NO

If YES list the specialist reports attached below

Signature of specialist: _____

Date: _____

If yes complete specialist details

Name of the specialist:

Crone Niemandt

Qualification(s) of the specialist:

MSc (Plant Science)

Postal address:

P.O. Box 11375, Maroelana

Postal code:

0161

Telephone:

(012) 346 3810

Cell:

073 405 5708

E-mail:

come@bokamoso.net

Fax:

086 570 5659

Are any further specialist studies recommended by the specialist?

YES

NO

X

If YES,

specify:

If YES, is such a report(s) attached?

YES

NO

If YES list the specialist reports attached below

Signature of specialist: _____

Date: _____

Please note; If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated

8. LAND USE CHARACTER OF SURROUNDING AREA

Using the associated number of the relevant current land use or prominent feature from the table below, fill in the position of these land-uses in the vacant blocks below which represent a 500m radius around the site

1. Vacant land	2. River, stream, wetland	3. Nature conservation area	4. Public open space	5. Koppie or ridge
6. Dam or reservoir	7. Agriculture	8. Low density residential	9. Medium to high density residential	10. Informal residential
11. Old age home	12. Retail	13. Offices	14. Commercial & warehousing	15. Light industrial
16. Heavy industrial ^{AN}	17. Hospitality facility	18. Church	19. Education facilities	20. Sport facilities
21. Golf course/polo fields	22. Airport ^N	23. Train station or shunting yard ^N	24. Railway line ^N	25. Major road (4 lanes or more)^N
26. Sewage treatment plant ^A	27. Landfill or waste treatment site ^A	28. Historical building	29. Graveyard	30. Archaeological site
31. Open cast mine	32. Underground mine	33. Spoil heap or slimes dam ^A	34. Small Holdings	
Other land uses (describe):	Electricity			

NOTE: Each block represents an area of 250m X250m



Please note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed activity/ies. Specialist reports that look at health & air quality and noise impacts may be required for any feature above and in particular those features marked with an ^{AN} and with an ^N respectively.

Have specialist reports been attached

YES X	NO
----------	----

If yes indicate the type of reports below

Soil and Agricultural Potential Survey – Refer **Appendix E2**
Vegetation Survey – Refer **Appendix E3**
Fauna Habitat Assessment – Refer **Appendix E4**
Avifaunal Review – Refer **Appendix E5**
Wetland Report – Refer **Appendix E6**

9. SOCIO-ECONOMIC CONTEXT

Describe the existing social and economic characteristics of the area and the community condition as baseline information to assess the potential social, economic and community impacts.

The bulk of South Africa's power is generated by coal fired power stations and a number of coal fired power stations are being planned to meet the ever increasing demand for power. This makes coal South Africa's primary energy resource. Beyond the fact that coal is not a renewable resource the burning of coal for the generation of electricity also has a very negative impact on the environment from the point of view that vast amounts of CO₂ is being released into the atmosphere and contributing to the ever growing concern of the greenhouse effect and global warming (SolarReserve, 2014). Currently Gauteng is facing issues of environmental decay.

However it should be noted that South Africa is a signatory to the United Nations Framework Convention on Climate Change committing to the stabilization of atmospheric greenhouse gas concentrations at a level that would prevent dangerous anthropogenic interference with the climate system. With this commitment in place and the ever growing need for power, South Africa is urged to expand its generation capacity through the development and utilisation of alternative resources, which are renewable and more environmentally sustainable (SolarReserve, 2014). South Africa's climate is ideal with regards to solar resources, with a broad time band of sunlight and a high level of energy delivered by area of land. Utilising this solar resource in combination with the proposed USF (with storage) makes it an ideal system in the generation of renewable energy.

The Proposed USF Project is designed to meet the increasing demand for clean, renewable electrical power in South Africa – not only on a utility National scale but also for the smaller off-takers. The multiple benefits associated with developing renewable energy infrastructure have been recognized by both local regional and National policy-makers. Development of solar resources reduces reliance on foreign sources of fuel, promotes national energy security, diversifies energy portfolios and contributes to the reduction of greenhouse gas emissions at the same time creating a large number of jobs within a new industry while at the same time raising the core knowledge bases of the country (SolarReserve, 2014).

The project aligns directly and indirectly with the West Rand District Municipalities EMP and SDF.

Although the proposed development site does not occur within the Western

Corridor of the district municipal area, the environmental management plan is in favour of renewable energy development within the district.

According to the SDF the West Rand region has been earmarked for renewable energy development focusing on solar energy. Municipal and household energy costs can be reduced by the introduction of renewable energy.

Indicate any benefits that the activity will have for society in general:

- Contribute towards the R20 billion investment to be facilitated within the province.
 - This project will approximate R4 billion investment into the Municipality over a five year period will foster social, socio-economic and economic upliftment as well as increase the city's GDP.
- Contribute towards the 10 000 additional SMMEs supported in the Province
 - This project will allow for procurement from local manufacturers and suppliers will promote the development of secondary industries.
- Enhance service delivery by contributing towards meeting the current energy demand in Gauteng.
- Contributes towards the expansion of renewable energy sector in the country – aiding in the reduction of emissions
- The project will allow for spatial connectivity and integration by establishing the ability for the area to support a wide range of urban users and operators, through the distribution of clean energy around the local Municipality.
- Improve infrastructure through the development of cleaner energy.

Benefits to service provider:

- Mitigates the risk of Rand West City Local Municipality Power revenue loss from "behind the meter" off grid connections through an agreed wheeling (or use of system) tariff payable.
- Will reduce maximum demand charges and penalties payable since battery power will be exported onto the distribution network during peak energy demand times when Eskom time of use (TOU) tariffs are at their highest.
- Reductions in reactive power charges (R/kVArh) since battery storage inverters can operate in SVC mode and export reactive power when required, thus reducing Rand West City Local Municipality power factor (pf) at key load points.

Indicate any benefits that the activity will have for the local communities where the activity will be located:

In line with the IDP KPI's this project will allow the Municipality, in association with City power to achieve its goals of creating a culture of enhanced service delivery as well as creating a city that responds to the needs of its residents. This project will benefit the local community by:

- Providing cleaning renewable energy to the surrounding residential and industrial/commercial community
- Creating employment opportunities (temporary and permanent) and skills development of those employed during the life of the project
- Community upliftment with improved health and safety in the near vicinity of the USF by the conversion of brownfield defunct, vacant land to land of a commercial nature
 - Re-utilisation of a site currently being used for illegal dumping and

mining and transforming it into a commodity for commercial and local usage

- Enhance security of the area by controlling access between the residential areas to the north and industrial/commercial area to the south
- This project will ensure high productivity and quality of life through higher levels of equity and social inclusions during all aspect of the projects development and during operation phase of the project
- The project will consolidate and grow the primary economic area by diversifying the economy of the region from primarily residential and industrial to more commercial value thus allowing the primary residential area to function as an urban area in its own right (SDF 2040, 2017)

10. CULTURAL/HISTORICAL FEATURES

Please be advised that if section 38 of the National Heritage Resources Act 25 of 1999 is applicable to your proposal or alternatives, then you are requested to furnish this Department with written comment from the South African Heritage Resource Agency (SAHRA) – Attach comment in appropriate annexure

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- (b) the construction of a bridge or similar structure exceeding 50m in length;
- (c) any development or other activity which will change the character of a site-
 - (i) exceeding 5 000 m2 in extent; or
 - (ii) involving three or more existing erven or subdivisions thereof; or
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- (d) the re-zoning of a site exceeding 10 000 m2 in extent; or
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

Are there any signs of culturally (aesthetic, social, spiritual, environmental) 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:

YES	NO X
-----	-----------------

SAHRA requested that a Phase 1 Heritage Impact Assessment be undertaken.
 The *Phase 1 Heritage Impact Assessment* concluded that there are no visible restrictions or negative impacts in terms of heritage associated with the site.
Refer Appendix E7.

If uncertain, the Department may request that specialist input be provided to establish whether there is such a feature(s) present on or close to the site.

Briefly explain the findings of the specialist if one was already appointed:

The *Phase 1 Heritage Impact Assessment* concluded that no there are no visible restrictions or negative impacts in terms of heritage associated with the site and that the project can proceed. If sub-surface archaeological and/or historical materials as well as graves are discovered work must stop and a heritage practitioner contacted to assess the find/s and make recommendations. The report was submitted to the Provincial Heritage Resources Authority of Gauteng (PHRAG) for comment/approval.

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

YES	NO X
YES	NO X

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

If yes, please attached the comments from SAHRA in the appropriate Appendix

SECTION C: PUBLIC PARTICIPATION (SECTION 41)

1. PUBLIC PARTICIPATION

The Environmental Assessment Practitioner must conduct public participation process in accordance with the requirement of the EIA Regulations, 2014.

In terms of the Guideline Document for Environmental Impact Assessment (EIA) Regulations promulgated in terms NEMA, stakeholders (I&APs) were notified of the Environmental Authorisation Process as follows:

- Site notices were erected (at prominent points on and around the study area) on 7 March 2017 (Refer Appendix D1);
- Land owners and occupiers were notified via hand delivered notices as well as email communication on 7 March 2017 (Refer Annexure D2);
- A list of all persons, organizations and organs of state identified as I&APs and who register as such are attached as Annexure D7;
- Comments received from I&APs regarding the proposed development are attached as Annexure D6.
- An advertisement was placed in the Randfontein Herald on 10 March 2017 (Refer Annexure D3);
- A Draft Basic Assessment Report was published for 30-day review to all Stakeholders from 28 June to 28 July 2017.
- SAHRA was informed of the proposed development in writing;
- The ward councillor of was informed of the applicant's intention to submit an application to the competent authority;
- The following institutions and organs of state were also identified as I&AP's and added to the register of the I&AP's:
 - Department of Agriculture Forestry and Fisheries;
 - Council for Geoscience;
 - GDARD;
 - West Rand District Municipality;
 - Rand West City Local Municipality;
 - Rand West City Ward 3 Councillor;
 - Randfontein Constituency Head;
 - SANRAL;
 - Gauteng Department of Roads and Transport (GDRT);
 - SANRAL;
 - Gauteng Department of Water & Sanitation (DWS);
 - Gauteng Department of Energy;
 - Eskom;
 - South African Heritage Resources Agency (SAHRA)
 - Provincial Heritage Resources Agency of Gauteng (PHRAG);
 - Department of Land Claims;
 - Transnet;
 - BirdLife South Africa; and
 - Rand Water.

2. LOCAL AUTHORITY PARTICIPATION

Local authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least thirty (30) calendar days before the submission of the application to the competent authority.

Was the draft report submitted to the local authority for comment?

YES X	NO
----------	----

-

If yes, has any comments been received from the local authority?

YES X	NO
----------	----

If "YES", briefly describe the comment below (also attach any correspondence to and from the local authority to this application):

The Department of Economic Development & Planning of the Rand West City Local Municipality stated in a letter dated 22 September 2016 that it supports the proposed solar farm in principle subject to conditions:

- No electricity available for operation of the solar farm;
- Clearing of large areas of land impacting on fauna and flora;
- Reflected light could interfere with aircraft;
- Concentrated Solar Power systems involves high temperature emissions; and
- Electric and magnetic fields produced by solar facilities.

The Municipality requested that the above impacts be addressed in the Environmental Impact Assessment and specialist reports and that thorough public participation be followed.

Refer to appendix F2.

West Rand District Municipality (RWDM) provided comments on Draft Basic Assessment Report (**Refer to appendix F3**) as summarised below:

- The development should comply with the Bio-regional Plan for the West Rand.
- If development is affected by dolomite a qualified geologist must conduct an assessment.
- A dolomite safety clearance certificate should be obtained from the Head of Disaster Management of the West Rand District Municipality.
- Development must comply with National Dust Control Regulations, 2013.
- Climate adaptation should be incorporated into development.
- Indicate if the proposed Solar PV Power Facility would affect the rainfall and the drainage of the region.
- Indicate if reflected light beams coming from the concentrated solar power system will interfere with aircraft operating pathways.
- Indicate if the solar farm would involve high temperature emissions in surroundings and what environmental risk this could pose.
- Indicate if the facility will produce electric and magnetic fields that will have an impact on the natural surroundings.
- Indicate what impact dust fallout will have on the Solar PV Power Facility. The developer should attempt to make use of alternative sources of energy in the development.
- Ensure that there is adequate capacity for the required services (electricity, water, sewage) and that these services are in place before development commence.
- In the case where dirt roads are used, a dust suppression plan should be included in the Environmental Management Plan.
- Water conservation must be actively promoted through water saving technologies.
- Cumulative environmental impacts over time should be taken into account in the report.
- The activities should be in line with the proposals as contained in the Integrated Development Plan, Spatial Development Framework and Environmental Management Framework of the Rand West City Local Municipality.
- In the event of actions that may result in significant environmental damage, an emergency response and contingency plan must be in place to limit the extent of environmental damage.

For a response to the points listed by RWDM refer to **Appendix D6**.

If "NO" briefly explain why no comments have been received or why the report was not submitted if that is the case.

3. CONSULTATION WITH OTHER STAKEHOLDERS

Any stakeholder that has a direct interest in the activity, site or property, such as servitude holders and service providers, should be informed of the application at least **thirty (30) calendar days** before the submission of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?

YES	NO
X	

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

One member of the Public requested to be registered as I&AP. **Refer to Appendix D7 for the Comments & Response Report.**

SAHRA requested a Phase 1 Heritage Impact Assessment to be conducted. **Refer to Appendix E7 for the Phase 1 Heritage Impact Assessment.**

GDARD acknowledged receipt of the application for environmental authorisation on 19 June 2017. **Refer to Appendix F4.**

GDARD supplied comments to the Draft Basic Assessment Report (**Refer to Appendix F5**) as follows:

- Application must be amended to reflect the correct land parcel.
- Detailed storm water management plan must be developed for the site.
- If bulk services are required, but will not be provided by government, alternatives must be supplied.
- Comments from Rand West District Municipality are required.
- Comments from Eskom regarding the electrical infrastructure upgrades must be included.
- A fauna and flora assessment must accompany the final BAR.
- The No-Go alternative must be assessed as part of the Final BAR.
- A map denoting layout overlain by sensitive environmental areas must be included in the final BAR.
- The EMPr must comply with the content of Appendix 4 of the NEMA EIA Regulations 2014.
- Proof of communication with Stakeholders must be included in the final BAR.

For a response to the points listed by GDARD refer to **Appendix D6.**

If "NO" briefly explain why no comments have been received

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4. GENERAL PUBLIC PARTICIPATION REQUIREMENTS

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

The EAP must record all comments and respond to each comment of the public / interested and affected party before the application report is submitted. The comments and responses must be captured in a Comments and Responses Report as prescribed in the regulations and be attached to this application.

5. *APPENDICES FOR PUBLIC PARTICIPATION*

All public participation information is to be attached in the appropriate Appendix. The information in this Appendix is to be ordered as detailed below

Appendix 1 – Proof of site notice

Appendix 2 – Written notices issued as required in terms of the regulations

Appendix 3 – Proof of newspaper advertisements

Appendix 4 – Communications to and from interested and affected parties

Appendix 5 – Minutes of any public and/or stakeholder meetings

Appendix 6 - Comments and Responses Report

Appendix 7 –Comments from I&APs on Basic Assessment (BA) Report

Appendix 8 –Comments from I&APs on amendments to the BA Report

Appendix 9 – Copy of the register of I&APs

Appendix 10 – Comments from I&APs on the application

Appendix 11 - Other

Refer to **Appendix D1 to D7** for information pertaining to Public Participation.

SECTION D: RESOURCE USE AND PROCESS DETAILS

Note: Section D is to be completed for the proposal and alternative(s) (if necessary)

Instructions for completion of Section D for alternatives

- 1) For each alternative under investigation, where such alternatives will have different resource and process details (e.g. technology alternative), the entire Section D needs to be completed
- 4) Each alternative needs to be clearly indicated in the box below
- 5) Attach the above documents in a chronological order

Section D has been duplicated for alternatives times (complete only when appropriate)

Section D Alternative No. (complete only when appropriate for above)

1. WASTE, EFFLUENT, AND EMISSION MANAGEMENT

Solid waste management

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

YES X	NO
1,000m ³	

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

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

An *Outline Services Scheme Report* was compiled for the proposed solar farm. **Refer to Appendix E8.**

During construction the disposal of solid waste will be the responsibility of the main contractor appointed by the developer. An area on the proposed development site situated to the east i.e. away from the watercourse situated to the west of the site, will serve as dedicated refuse yard for temporary storage of solid waste to be disposed of during the construction phase. The dedicated refuse yard must be easily accessible for trucks to collect waste. **The waste, especially plastic and polystyrene waste must be stored in sealed containers to prevent it from becoming airborne.** Waste should be recycled or reused where possible. Waste not recycled or reused will be removed to the Randfontein Landfill Site.

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

Solid waste which is not recycled shall be disposed of at the Randfontein Landfill Site. Rand West District Municipality confirmed telephonically that the Randfontein Landfill Site has spare capacity to receive waste.

Will the activity produce solid waste during its operational phase?

YES X	NO
Approximately 25m ³	

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

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

The type of waste generate during construction phase is general, domestic and construction waste. Each construction company will be responsible for their own generated solid waste and the disposal thereof. Proof of disposal (landfill site receipt) is to be kept on site by the Environmental Site Officer.

The type of waste during operational phase is only domestic waste and will be minimal. Proof of disposal (landfill site receipt) is to be kept on site by the Environmental Site Officer.

A **Waste Management Programme** must be compiled and implemented applicable to all phases of the Proposed Development.

Has the municipality or relevant service provider confirmed that sufficient air space exists for treating/disposing of the solid waste to be generated by this activity?

YES X	NO
----------	----

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

All solid waste resulting from construction activities will be disposed at the Randfontein Landfill Site, if not recycled. No solid waste will be dumped on open or adjacent properties. Proof of disposal (landfill site receipt) is to be kept on site by the Environmental Site Officer.
Rand West District Municipality confirmed telephonically that the Randfontein Landfill Site has spare capacity to receive waste.

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

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

YES	NO X
-----	---------

If yes, inform the competent authority and request a change to an application for scoping and EIA.

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

YES	NO X
-----	---------

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.

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

It is proposed that all construction waste materials be sorted into recyclable and non-recyclable materials. The recyclable materials should be recycled or re-used wherever possible or disposed of by a reputable recycling company.

Liquid effluent (other than domestic sewage)

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

YES	NO X
-----	---------

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

If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the liquid effluent to be generated by this activity(ies)?

	m ³
YES	NO

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

Yes	NO X
-----	---------

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

	m ³
--	----------------

If yes describe the nature of the effluent and how it will be disposed.

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Note that if effluent is to be treated or disposed on site 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?

YES	NO
-----	----

	X
--	----------

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:

--

Liquid effluent (domestic sewage)

Will the activity produce domestic effluent that will be disposed of in a municipal sewage system?

YES X	NO
------------------------	-----------

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

--	--

If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the domestic effluent to be generated by this activity(ies)?

YES	NO X
-----	-----------------------

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

YES	NO X
-----	-----------------------

If yes describe how it will be treated and disposed off.

An *Outline Services Scheme Report* was compiled for the proposed solar farm. **Refer to Appendix E8.**

Sewage

Construction Phase

Sufficient chemical toilets will be provided on site based on the maximum number of contractors available at any point in time during the construction phase. For every 20 labourers it is proposed to have a minimum of 1 chemical toilet. Sewage will be removed from chemical toilets at least once per week by a registered contractor to a registered Sewage Treatment Works which has spare capacity.

Operational Phase

During the operational phase, a conservancy tank of approximately 5000l will be utilized to service the site. The developer will arrange with a Septic Tank Cleaners company to empty the conservancy tank on a regular basis by means of a honey sucker during the operational phase.

Sewage removed from the Septic tank will be treated at the Hannes Van Niekerk Sewer treatment works located in Westonaria which currently has a capacity of 64Ml/d.

Stormwater

A *Stormwater Management Report* was compiled for implementation during construction and operational phase in order to address runoff from site with the purpose of protecting the wetland occurring within 500m from the proposed site, to the west. **Refer to Appendix E9.**

Construction Phase

It is proposed to install two rows of hale bales along the western boundary of the site during the construction phase. This will act as a barrier to prevent silt and debris from washing off the site.

Operational phase

The following SUDS are proposed to be used on site:

- Grassed lined swales are proposed over the site to run along the PV panels to capture all runoff from the panels.
- Infiltration trench along the western boundary to collect any additional runoff.
- Install water tanks to collect the water from O&M building rooftops in order to re-use the water for irrigation.
- Both swales and infiltration trenches will allow for sedimentation and vegetation to be established.

Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

YES	NO X
YES	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 emissions in terms of type and concentration:

Dust

The proposed development will not generate any emissions, except for nuisance dust caused vehicle entrainment and vehicle exhaust emissions. The developer should comply with the National Dust Control Regulations that were promulgated on 1 November 2013 during the construction phase of the project.

During the construction phase it will be necessary to provide dust suppression measures on the internal gravel roads constructed. It is proposed to have water tankers wet the roads on a regular basis in order to reduce the dust.

Road 6 which is a gravel road that will be utilised to access the proposed development site. Dust suppression via chemical stabilisation or wetting via a bowser tank will be used to stabilise the site access gravel road and internal gravel roads. The dust suppressant is environmentally friendly and biodegradable. It has no long-term adverse impact on the environment and is safe to handle.

Glint and glare

Due to the location of the site outside the urban edge, and to the small number of potential receptors, The conventional PV solar technology with tilt panel structure is preferred as the PV panel type will generate less potential for glint and glare than the Concentrated PV type which uses a reflective mirror to concentrate the sun. The panels are developed to absorb as much reflection as possible and thus will have no glare or glint on the surrounding environment.

An application has been submitted to the Civil Aviation Authority for the Proposed Development.

Electromagnetic fields

No Electromagnetic fields are generated by the Proposed Development and thus there will be no electromagnetic impact.

Degradation of the panels

Module performance degrades by < 3% in year 1, thereafter 0.68% for year 2 to 25, ending with more than 80% of the module performance at the end of the Warranty Start Date. The module degradation has been factored in the plant Financial Model and yield.

There will be no impact on the environment and the solar PV modules are completely vacuum sealed with absolutely zero penetration of external air. There are therefore zero emissions from the solar installation throughout the lifespan of the plant.

2. WATER USE

Indicate the source(s) of water that will be used for the activity

Municipal X	Directly from water board	Groundwater	river, stream, dam or lake	Other	the activity will not use water
------------------------	---------------------------	-------------	----------------------------	-------	---------------------------------

An *Outline Services Scheme Report* was compiled for the proposed solar farm.

Refer to Appendix E8.

Currently there are no Municipal bulk water services available in close proximity to the proposed development site. The Finsbury Reservoir is the closest reservoir to the site. It is proposed that an elevated modular storage tank with a capacity of 15m³ be installed on site.

Construction Phase

It is anticipated that the water demand during the construction phase will be approximately 10m³ of water per day for the purpose of civil construction as well as dust suppression on roads.

The contractor will have to arrange with the Municipality for a metered water connection on a water line from the Finsbury Reservoir to supply water during construction phase to fill up water trucks and water bowsers.

Operational Phase

The proposed PV plant will require approximately 1 000 m³ of water per annum during the operational phase of the project. Water during this phase will be required for the following:

- PV panel cleaning;
- service water for maintenance;
- potable use and ablutions;
- dust suppression (mostly during construction);
- irrigation during rehabilitation; and
- fire protection water.

The developer will have to arrange with the Municipality for a metered water connection at the Finsbury Reservoir site to top up the modular water storage tanks as and when required during the operational phase.

No external water upgrades are required to cater or the Proposed Development and no servitudes are required for the water services proposed.

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:

If Yes, please attach proof of assurance of water supply, e.g. yield of borehole, in the appropriate Appendix
Does the activity require a water use permit from the Department of Water Affairs?

YES X	NO
----------	----

If yes, list the permits required

The proposed development site falls within the Upper Vaal Water Management Area and Mooiriver Quaternary Catchment C23D.

In terms of General Authorisation (GA) 509 dated 26 August 2016, *General Authorisation in terms of Section 39 of the National Water Act, 1998 (Act no. 36 of 1998) for Water Uses defined in Section 21(c) and 21(i) - The proposed development resorts under a Section 21 (c) and (i) GA, due to its proximity within a regulated area of a watercourse i.e. 500m radius from a delineated wetland boundary and pans.* A Risk Assessment conducted as part of the *Wetland Report*, having concluded that the risk posed by the Proposed Development to the wetland and pans, is low. **Refer to Appendix E6.**

If yes, have you applied for the water use permit(s)?

YES	In progress
-----	----------------

If yes, have you received approval(s)? (attached in appropriate appendix)

YES	NO X
-----	---------

3. POWER SUPPLY

Please indicate the source of power supply e.g. Municipality / Eskom / Renewable energy source

The plant is deemed as energy efficient as the plant is a self-sustaining facility as it draws power from itself during the day. It only relies on the municipal grid for power during the night, which is limited to security and basic operations.

An *Electrical Engineering Services Report* was compiled for the proposed solar farm. **Refer to Appendix E10.**

According to the specialist report a meeting was held with the relevant representative from Randfontein Local Municipality and information regarding the Master Plan was requested from the relevant consultant.

The Proposed Development requires a three phase 60kVA bulk connection point. According to Randfontein Local Municipality existing capacity for this connection exists from the 6.6kV network situated in Road 6 of the Wheatlands Agricultural Holdings. Thoroughfare between Small holding 132 and 133 provides access to the connection point.

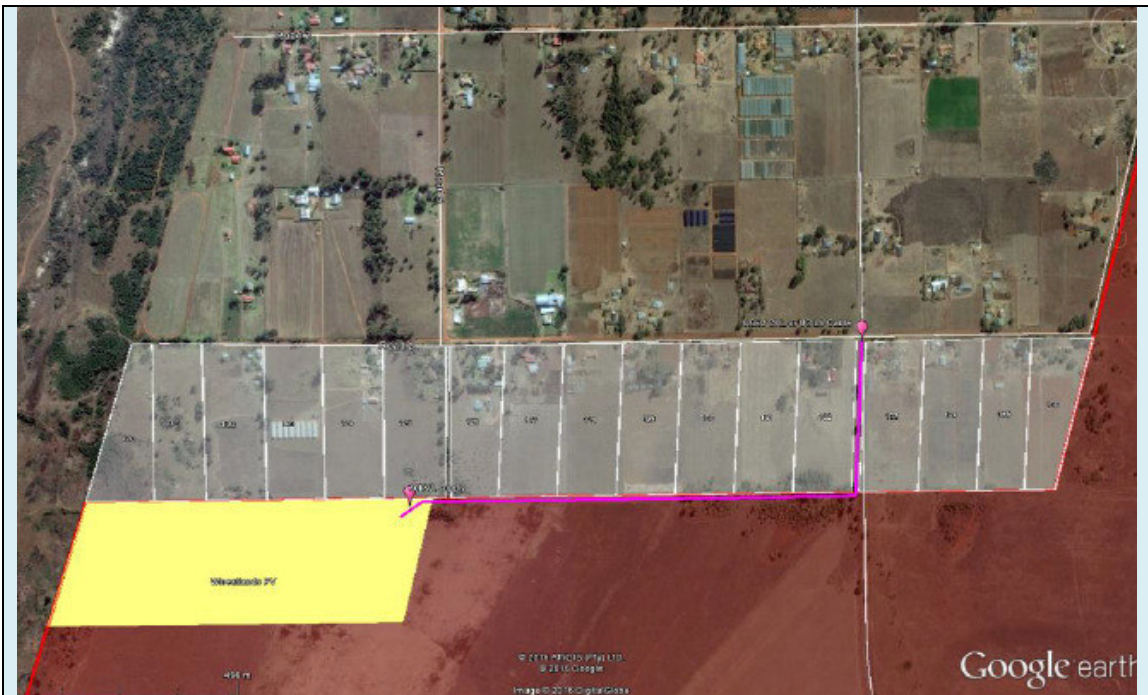


Figure 10: Proposed Electrical Connection Point [Source: Cintro Consulting Engineers]

A dual 11kV overhead powerline is proposed to connect the 9.3MW power to be generated by the Proposed Development to the Drowell Substation situated 7km to the north-east of the proposed development site.

The following Electrical Infrastructure upgrades are required to cater for the proposed development:

- Drowell substation to be upgraded as follows:
 - Install two incomer panels;
 - Install one bus coupler panel; and
 - Install telemetry.
- A new 11kV overhead powerline to be constructed from the Proposed Development substation to the Drowell Substation.

Two options were proposed for the dual 11kV powerline route. Based on findings made earlier in this report pertaining to ecological and watercourse sensitivity, Option 1 is regarded as the preferred option, as it will have the least impact on the environment.

The excavation of the holes for the concrete poles will be completed by using a TLB with a small bucket (600mm wide) to minimise the impact on the environment. Holes will be 2.0m deep and 1m x 1m wide. If the area does not allow for TLB access, then excavations will be done using manual labour. All the sides of the excavated holes will be protected from falling in by shoring. The backfilling of the holes will be augmented with the addition of concrete to ensure that the poles stay upright after installation. The line route through the wetland will be approximately 900 meters, based on 60m spacing between poles, it is estimated that 15 poles will be installed through the wetland ($\pm 30\text{m}^3$ of excavations).

Wayleaves

The following wayleaves will be required and will be applied for before construction commences:

- Where the proposed overhead line route/s cross the R41 road reserve;
- Where the proposed overhead line route/s cross the existing 132kV Eskom line and line servitude;
- For all existing townships and road reserves where the proposed overhead lines will be installed;
- Wayleaves will be requested from all relevant supply authorities and service providers.

The Developer to engage the Randfontein Local Municipality regarding possible a Wheeling Agreement.

A formal application for the connection point and approval of the proposed upgrades to the Drowell Substation must be obtained from Randfontein Local Municipality prior to construction commencing.

A Generation License application will be submitted to NERSA.

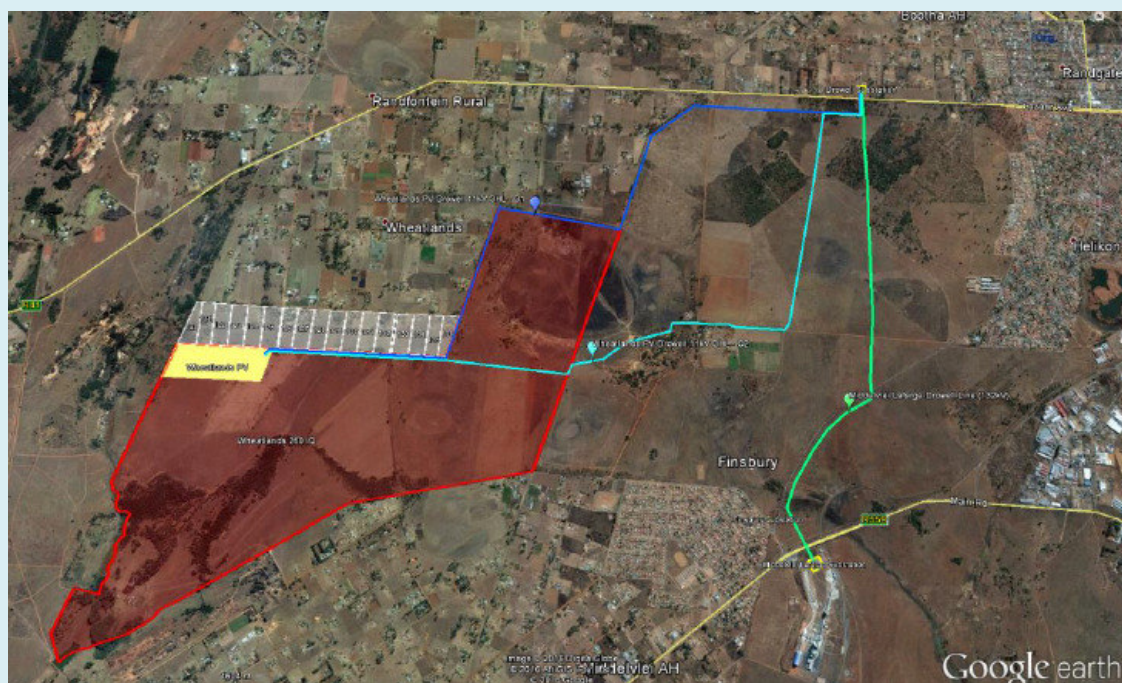


Figure 11: Proposed 11kV overhead line route [Source: Cintro Consulting Engineers]

If power supply is not available, where will power be sourced from?

4. ENERGY EFFICIENCY

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

The Proposed Development is in line with the Gauteng Integrated Energy Strategy by ensuring the scaling up of renewable energy options and ensuring energy access to the poor.

According to the SDF the East Rand region has been earmarked for renewable energy development focusing on solar energy. Municipal and household energy costs can be reduced by the introduction of renewable energy.

The Proposed Development could potentially provide electricity to the already approved Wheatlands Mixed Use Residential Development situated on the Remainder of the Farm Wheatlands, for which there is no surplus electricity available to facilitate the development.

The plant is deemed as energy efficient as the plant is a self-sustaining facility as it draws power from itself during the day. It only relies on the municipal grid for power during the night, which is limited to security and basic operations

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

Solar Energy is an alternative energy source. Considering the countries current electricity crises, the Proposed Development and is regarded as urgently required.

SECTION E: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014, 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 as well as the impacts of not implementing the activity (Section 24(4)(b)(i)).

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summarise the issues raised by interested and affected parties.

No complaints were received from surrounding landowners regarding the Proposed Development (**Refer to Appendix D6**).

SAHRA requested that a Phase 1 Heritage Impact Assessment be undertaken.

Refer to Section C2 and C3 of this report for detail pertaining to issues raised by I&APs.

Summary of response from the practitioner to the issues raised by the interested and affected parties (including the manner in which the public comments are incorporated or why they were not included)

(A full response must be provided in the Comments and Response Report that must be attached to this report):

All comments received on the application have been incorporated into the Comments & Response Report (**Refer to Appendix D6**).

2. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION AND OPERATIONAL PHASE

Briefly describe the methodology utilised in the rating of significance of impacts

significance Description Methodology

The significance of Environmental Impacts was assessed in accordance with the following method:

Significance is the product of probability and severity. Probability describes the likelihood of the impact actually occurring, and is rated as follows:

Likelihood	Description	Rating
Improbable	Low possibility of impact to occur either because of design or historic experience	2
Probable	Distinct possibility that impact will occur	3
Highly probable	Most likely that impact will occur	4
Definite	Impact will occur, in the case of adverse impacts regardless of any prevention measures	5

The severity factor is calculated from the factors given to "intensity" and "duration". Intensity and duration factors are awarded to each impact, as described below.

The Intensity factor is awarded to each impact according to the following method:

Intensity	Description	Rating
Low intensity	Natural and man-made functions not affected.	1
Medium intensity	Environment affected but natural and man-made functions and processes continue.	2
High intensity	Environment affected to the extent that natural or man-made functions are altered to the extent that it will temporarily or permanently cease or become dysfunctional.	4

Duration is assessed and a factor awarded in accordance with the following:

Duration	Description	Rating
Short term	<1 to 5 years - Factor 2	2
Medium term	5 to 15 years - Factor 3	3
Long term	Impact will only cease after the operational life of the activity, either because of natural process or by human intervention.	4
Permanent	Mitigation, either by natural process or by human intervention, will not way or in such a time span that the impact can be considered transient.	4

The severity rating is obtained from calculating a severity factor, and comparing the severity factor to the rating in the table below. For example:

$$\begin{aligned}
 \text{The Severity factor} &= \text{Intensity factor} \times \text{Duration factor} \\
 &= 2 \times 3 \\
 &= 6
 \end{aligned}$$

A Severity factor of six (6) equals a Severity Rating of Medium severity (Rating 3) as per table below:

Severity Factor	Severity	Rating
Calculated values 2 to 4	Low Severity	2
Calculated values 5 to 8	Medium Severity	3
Calculated values 9 to 12	High Severity	4
Calculated values 13 to 16	Very High severity	5

A Significance Rating is calculated by multiplying the Severity Rating with the Probability Rating.

Significance	Rating	Influence
Low significance	Rating 4 to 6	Positive impact and negative impacts of low significance should have no influence on the proposed development project.
Medium significance	Rating >6 to 15	Positive impact: Should weigh towards a decision to continue Negative impact: Should be mitigated to a level where the impact would be of medium significance before project can be approved.
High significance	Rating 16 and more	Positive impact: Should weigh towards a decision to continue, should be enhanced in final design. Negative impact: Should weigh towards a decision to terminate proposal, or mitigation should be performed to reduce significance to at least medium significance rating.

Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the construction phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

Proposal

Potential impacts	Significance rating of impacts	Proposed mitigation	Significance rating of impacts after mitigation	Risk of the impact and mitigation not being implemented
PLANNING PHASE				
Adverse Impacts				
Cultural/Historical				
Potential for destroying archaeological finds.	Moderate	SAHRA requested Phase 1 Heritage Impact assessment to be conducted.	Low	Study underway
Geology and Soils				
Agricultural potential of land	High	According to the Gauteng Agricultural Potential Atlas the site occurs within one of the seven agricultural hubs. An Agricultural Potential Assessment conducted established the Agricultural potential to be low due to shallow soils.	Low	Low Agricultural potential
Hydrology & Wetland				
Increased surface runoff could impact the wetland functionality	Moderate	The proposed development occurs within 500m from a wetland. A section 21 (c) and (i) GA is required prior to construction commencing due to Low risk as established by the Wetland Specialist. A Stormwater Management Plan to be compiled for implementation to protect the wetland.	Low	If mitigation is not implemented Wetland function could be impaired.
Ecological Sensitive areas				
Destruction of ecological sensitive areas identified on site	Moderate	During the site investigation it was confirmed that a third of the proposed development site has a moderate sensitivity due to the presence of Orange Listed Plant Species. GDARD to be consulted with regards to Search and Rescue for purpose of relocation of plants. Substation and hazardous substance storage to occur on the eastern side of the proposed development site i.e. furthers point from the wetland identified. All sensitive areas are to be denoted as NO-GO areas during construction.	Low	Rescue to be affected in accordance with Biodiversity permit

Wetland functioning				
Poor waste management and soil erosion due to increased run-off could potentially negatively impact on the wetland bordering the site.	Moderate	A wetland bordering the proposed development footprint must be protected by compiling a Stormwater Management Plan to be implemented during construction as well as operational phases of the Proposed Development, with the intent of protecting the wetland.	Low	Stormwater Management Report to be compiled
Habitat				
Destruction of vulnerable grassland	Low	The study area is located in the Soweto Highveld Grassland, which is regarded as Vulnerable (Mucina and Rutherford, 2006). The study site has suitable habitat for one Red List species and two Orange List species, of which one Orange List species was recorded during the survey. GDARD to be contacted regarding relocation. More than half of the study site has been transformed to agricultural land and increased alien species. The grassland is about a third of the study site which supports the Orange List species as well as other graminoids and herbaceous species. A third of the study site has a moderate sensitivity while the rest of the site is considered to have a low sensitivity. Due to the limited footprint of the plinths and the solar panels being raised above ground, it is not necessary to remove natural vegetation underneath the panels. Survival of vegetation underneath the panels to be monitored to ensure growth. If the vegetation dies, it should be replaced with grass specie requiring limited sunlight, in order to prevent erosion of open areas.	Low	If Orange Listed Species are relocated, low risk
Water & Sewage				
Non-availability of bulk services	Low	Developer to confirm supply of bulk water and sewage to the Proposed Development considering no Municipal bulk services exist within the Wheatlands Agricultural Holdings.	Low	Urban Solar Farm cannot proceed without water or sewage
Waste management				
Solid waste pollution of Agricultural holdings	Moderate	It is anticipated that the Proposed Development will generate significant amounts of plastic and polystyrene which must be stored in a closed container to prevent waste from becoming airborne. The Developer to budget for closed containers for the storage and separation of waste on site for possible recycling or reuse.	Low	Possible windblown pollution if waste not stored correctly.
Servitudes				
Servitudes affecting development	Moderate	Eskom servitude transecting site from east to west as well as PWV1 servitude passing along the western boundary of the site to be included in the proposed site layout. Wayleave and servitudes to be applied for where necessary.	Low	Servitudes honoured
Noise pollution				
The noise created by earthmoving machinery will result in an increase in ambient noise levels. This will be short term, being generated only during the day.	Low	All construction activities must be planned for normal working hours from 8:00 in the morning to no later than 18:00 in the afternoons. No construction may take place on Sundays and public holidays.	Low	If mitigation is not implemented residents could complain about nuisance noise.

Potential impacts	Significance rating of impacts	Proposed mitigation	Significance rating of impacts after mitigation	Risk of the impact and mitigation not being implemented
CONSTRUCTION PHASE				
Beneficial Impacts				
Institutional Environment				
The proposed development provides electricity to an area where there is an electricity shortage	High	The proposed development provides electricity to an area where there is an electricity shortage and complies with the Randfontein SDF in terms of renewable energy and Gauteng Integrated Energy Strategy related to renewables.	High	No risk due to positive impact
Social & Economic Environment				
Creation of Job opportunities during construction and operational phase of the project.	Moderate	The Proposed Development will create job opportunities during the construction phase for non-skilled and semi-skilled workers and skilled and semi-skilled employment during the Operational Phase.	Moderate	No risk due to positive impact
Electricity supply for housing project	High	The approved Mixed Use Development situated on the Remainder of the Farm Wheatlands requires energy (electricity) which is not currently available within Randfontein Local Municipality and the proposed Solar Farm can thus provide a third of the energy required for the approved Mixed Use Development.	High	No risk due to positive impact
Electrical Services				
Upgrading of services	High	The Proposed Development could positively contribute to the electricity shortage in Randfontein by generating 9.3MW power and upgrading Electrical Infrastructure.	High	No risk due to positive impact
Adverse Impacts				
Cultural/Historical				
Potential for destroying archaeological finds.	Low	If any archaeological finds are unearthed or buildings older than 60 years exist, an attempt at preserving the finds will be made in accordance with recommendations of the Phase 1 HIA.	Low	Recommendations implemented
Geology and Soils				
If not planned and managed correctly topsoil will be lost.	Moderate	<ul style="list-style-type: none"> Topsoil removed from the proposed route should be stored separately from all stockpiled materials and subsoil, according to the stockpiling methods as described below. The stockpiled topsoil should be used for rehabilitation and landscaping purposes after construction has been completed; The installation of services could leave soils exposed and susceptible to erosion. Soils should be stored adjacent to the excavated trenches that are excavated to install services, and this should be filled up with the in-situ material as the services are installed. All stones and rocks bigger than 80 mm should be removed from the top layer of soil and these disturbed areas should be re-vegetated immediately after works in a specific area are completed to prevent erosion; Excavations on site must be kept to minimum and done only one section at a time. Excavated soils must be stockpiled directly on the demarcated area on site. 	Low	Soil erosion could occur if mitigation is not implemented

Ecological Sensitive areas				
Destruction of ecological sensitive areas identified on site	Moderate	Search and Rescue of Orange Listed Plant Species conducted prior to construction commencing. Substation and hazardous substance storage to occur on the eastern side of the proposed development site i.e. furthers point from the wetland identified. Bunding to comply with legal requirements in terms of storage of hazardous substances. All sensitive areas are to be denoted as NO-GO areas during construction.	Low	Rescue plan implemented
Hydrology & Wetland functioning				
The proposed development could potentially negatively impact on the wetland bordering the site.	Moderate	A wetland bordering the proposed development footprint must be protected by implementing a Stormwater Management Plan during construction as well as operational phases of the Proposed Development, with the intent of protecting the wetland.	Low	Stormwater Management Plan to be implemented
Servitudes				
Servitudes affecting development	Moderate	Servitudes and Wayleaves granted to be honoured during construction phase.	Low	Servitudes honoured
Noise pollution				
The noise created by earthmoving machinery will result in an increase in ambient noise levels. This will be short term, being generated only during the day.	Low	All construction activities must be restricted to normal working hours from 8:00 in the morning to no later than 18:00 in the afternoons. No construction may take place on Sundays and public holidays.	Low	If mitigation is not implemented residents could complain about nuisance noise.

Hydrology & Wetland				
Proximity of development could result in pollution or siltation of wetland	Moderate	Conditions associated with the GA as well as Stormwater Management Plan to be implementation to protect the wetland.	Low	If mitigation is not implemented Wetland function could be impaired.
Increased stormwater run-off volumes and velocity could result in erosion and siltation of wetland	Low	Due to the clearing of vegetation the volume of stormwater run-off will increase as well as velocity. The area to be cleared is however small (200,000m ²). Proper stormwater infrastructure will have to be constructed and maintained in accordance with a Stormwater Management plan.	Low	If stormwater management is inadequate, erosion could occur.
Excavated topsoil that is stockpiled in wrong areas can wash into wetland.	Low	An area must be allocated for stockpiling of topsoil before any construction take place on the application site. The stockpiles must be situated away from any water source or drainage channel. A sediment fence or barrier must be constructed around the stockpile, to prevent soil from washing away by rain or any water.	Low	If mitigation is not implemented, topsoil could be lost.
Construction during the rainy season can cause delays and damage to the environment.	Low	It is recommended that the construction phase be scheduled for the winter months; It is also recommended that the precautionary measures be taken in order to prevent the extensive loss of soil during rainstorms. Large exposed areas should adequately be protected against erosion by matting or cladding; Measures should be implemented during the rainy season to channel stormwater away from open excavations and foundations e.g. at Substation.	Low	If mitigation is not implemented, erosion could occur.
Waste management				
Solid waste pollution	Moderate	It is anticipated that the Proposed Development will generate significant amounts of plastic and polystyrene which must be stored in a closed container to prevent waste from becoming airborne. The Developer to budget for closed containers for the storage and separation of waste on site for possible recycling or reuse.	Low	Possible windblown pollution if waste not stored correctly.
Site office, camp and associated waste could potentially cause visual, air and soil pollution	Moderate	The site camp should not be located in a highly visual area on the study area, or a screen or barrier should be erected as not have a negative impact on the sense of place. The site camp and the rest of the study area should appear neat at all times; A temporary waste storage point shall be determined and established on site by means of demarcation. This storage points shall be accessible by waste removal vehicles. The temporary storage site may not be highly visible from the properties of the surrounding residents. Waste materials should be removed from the site on a regular basis (at least weekly), to a registered landfill site.	Low	If mitigation is not implemented, community complaints could be received.
Poor waste management could pollute environment	Moderate	All the waste generated must be temporarily stored at a preselected area on site to be carted to a registered landfill site allowed to take building rubble; Waste storage should occur in areas that have already been disturbed. Small general waste containers should be provided along the length of roads to be upgraded to prevent windblown waste; These small waste receptacles must be emptied at the temporary waste storage area on a weekly basis for removal. All waste must be removed to a registered landfill site on a weekly basis. No waste materials may be disposed of on or adjacent to the site; The storage of solid waste on site, until such time that it may be disposed of, must be in the manner acceptable to the local authority; and Records of waste reused, recycled, and disposed must be kept for future reference or inspection by authorities.	Low	If mitigation is not implemented, pollution might occur.

Safety and Security

<p>During the construction phase safety and security problems (especially surrounding residents) are likely to occur.</p>	<p align="center">Moderate</p>	<ul style="list-style-type: none"> • Construction must be completed in as short time as possible. • No construction worker or relative may reside on the construction site during the construction phase. All construction workers must leave the site at the end of a day's work. • A security guard should be appointed on site to prevent any loss of materials and damage to construction equipment. 	<p align="center">Low</p>	<p>If mitigation is not implemented, residents and construction companies could be affected by crime.</p>
<p>The excavations associated with proposed development could pose a safety risk to workers.</p>	<p align="center">Moderate</p>	<p>The necessary safety precautions must be in place i.e. excavations must be fenced off with barrier tape; signage must be in place to identify excavations.</p>	<p align="center">Low</p>	<p>If mitigation is not implemented, pedestrians' safety could be at risk.</p>

Potential impacts	Significance rating of impacts	Proposed mitigation	Significance rating of impacts after mitigation	Risk of the impact and mitigation not being implemented
OPERATIONAL PHASE				
Beneficial Impacts				
Institutional Environment				
The proposed development provides electricity to an area where there is an electricity shortage	High	The proposed development provides electricity to an area where there is an electricity shortage and complies with the Randfontein SDF in terms of renewable energy and Gauteng Integrated Energy Strategy related to renewables.	High	No risk due to positive impact
Social & Economic Environment				
Electricity supply for housing project	High	The approved Mixed Use Development situated on the Remainder of the Farm Wheatlands requires energy (electricity) which is not currently available within Randfontein Local Municipality and the proposed Solar Farm can thus provide a third of the energy required for the approved Mixed Use Development during its operational phase.	High	No risk due to positive impact
Adverse Impacts				
Hydrology & Wetland				
Increased stormwater run-off volumes and velocity	Low	Due to the impermeable surfaces the volume of stormwater run-off will increase as well as velocity. The area to be surfaced is 200,000m ² . Storm water will have to be effectively channelled and stormwater infrastructure will have to be maintained during the operational phase in accordance with the stormwater management plan.	Low	If mitigation is not implemented, erosion could occur.
Impacting wetland	Moderate	The storage of hazardous substances underground and within 500m from a wetland poses potential for water pollution. Conditions associated with GA and Stormwater Management Plan must be adhered to during the operational phase. Frequent inspection of hazardous substance storage facility to be conducted in accordance with applicable legislation is required.	Low	If mitigation is not implemented, wetland could be polluted.
Fire				
Potential of fire and explosion due to storing bulk hazardous substances	Moderate	Hazardous substance storage facilities and the use thereof to comply with national legislation as well as national standards.	Low	Risk of fire and/or explosion exists.
Waste management				
Potential for pollution	Moderate	Waste generated during operational phase to be disposed of responsibly at registered landfill site by Owner.	Low	Risk of pollution

Habitat				
Destruction of vulnerable grassland	Low	Due to the limited footprint of the plinths and the solar panels being raised above ground, it is not necessary to remove natural vegetation underneath the panels. Survival of vegetation underneath the panels to be monitored to ensure growth. If the vegetation dies, it should be replaced with grass specie requiring limited sunlight, in order to prevent erosion of open areas.	Low	

‘NO-GO’ Alternative

Potential impacts	Significance rating of impacts	Proposed mitigation	Significance rating of impacts after mitigation	Risk of the impact and mitigation not being implemented
<p>The ‘NO-GO’ alternative will result in no development and thus the shortage of energy (electricity) with the Rand West City Local Municipality cannot be addressed. No positive impacts are foreseen for the ‘NO-GO’ alternative, as it would result in the application site remaining in its current state. The present state of the study site is associated with vacant land open to dumping and illegal settlement. The area is also encroached by exotic trees.</p> <p>Electrical Infrastructure in the area will be left in its current state and no upgrades/ further provision of electrical infrastructure will occur. The approved Wheatlands Mixed Use Development situated next to the Proposed Development might not be able to proceed due to shortage of electricity within Randfontein Local Municipality.</p> <p>The social and economic benefits associated with the potential development will not be realized if the development does not go ahead.</p>				

List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix.

<p><i>Technical Description</i> – Refer Appendix E1</p> <p><i>Soil and Agricultural Potential Survey</i> – Refer Appendix E2</p> <p><i>Vegetation Survey</i> – Refer Appendix E3</p> <p><i>Fauna Habitat Assessment</i> – Refer Appendix E4</p> <p><i>Avifaunal Review</i> – Refer Appendix E5</p> <p><i>Wetland Report</i> – Refer Appendix E6</p> <p><i>Phase 1 Heritage Impact Assessment</i> – Refer Appendix E7</p> <p><i>Outline Service Scheme Report</i> – Refer Appendix E8</p> <p><i>Stormwater Management Report</i> - Refer Appendix E9</p>
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Electrical Engineering Services Report – Refer **Appendix E10.**

Describe any gaps in knowledge or assumptions made in the assessment of the environment and the impacts associated with the proposed development.

Not applicable

3. IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING AND CLOSURE PHASE

Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the decommissioning and closure phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

Proposal

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
Geology & Soils				
Soil erosion, siltation, and gully formation.	Low	Compaction of fill material following construction should take place. Topsoil stockpiled should be returned and used for rehabilitation of disturbed areas.	Low	If no mitigation measures are implemented, erosion of fill material could occur.
Loss of topsoil due to poor rehabilitation.	Low	Rehabilitation works must be done immediately after the involved works in an area is completed in order to prevent loss of topsoil and possible erosion.	Low	If no mitigation measures are implemented, loss of topsoil could occur.
Hydrology & Wetland				
Impacting wetland functionality	Moderate	Conditions associated with GA and Stormwater Management Plan must be adhered to during the operational phase.	Low	If no mitigation measures are implemented, wetland could be negatively impacted.
Demolition works during the rainy season can cause unnecessary delays and damage to the environment, especially damage to existing roads in the area.	Low	Should decommissioning take place in the wetter months, frequent rain could cause very wet conditions, which makes it extremely difficult to do the necessary rehabilitation works of disturbed areas. Wet soils are vulnerable to compaction. Wet conditions often causes delays and the draining of water away from the works (in the case of high water tables) into the water bodies of the adjacent properties, could (if not planned and managed correctly) have an impact on the water quality of these water bodies. Rehabilitation should be planned to take place prior to the onset on the rainy season i.e. prior to Spring, if possible.	Low	If no mitigation measures are implemented, the environment could be damaged.
Safety & Security				
Decommissioning activities could cause danger to workers and visitors	Moderate	The necessary safety precautions must remain in place until decommissioning phase is concluded i.e. signage must be in place to identify activities in progress.	Low	Injuries
Waste Management				
Site office, camp and associated waste (visual, air and soil pollution)	Moderate	Temporary site camp and waste storage areas are to be decommissioned. Disturbed areas are to be rehabilitated and returned to its former state (prior to construction commencing).	Low	If no mitigation measures are implemented, sense of place will be negatively affected.
Disposal of construction waste and waste materials.	Moderate	All waste generated during the construction phase of the project is to be collected and disposed of at a registered landfill site. Records must be kept of waste reused, recycled, and disposed for inspection by authorities.	Low	If no mitigation measures are implemented, the environment will be polluted.
Habitat				
Destruction of vulnerable grassland	Low	Natural Grassland to be reinstated during decommissioning phase and monitored unit 80% of the surface area has revegetated with Highveld Grassland.	Low	

List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix.

Technical Description – Refer **Appendix E1**
Soil and Agricultural Potential Survey – Refer **Appendix E2**
Vegetation Survey – Refer **Appendix E3**
Fauna Habitat Assessment – Refer **Appendix E4**
Avifaunal Review – Refer **Appendix E5**
Wetland Report – Refer **Appendix E6**
Phase 1 Heritage Impact Assessment – Refer **Appendix E7**
Outline Service Scheme Report – Refer **Appendix E8**
Stormwater Management Report - Refer **Appendix E9**
Electrical Engineering Services Report – Refer **Appendix E10.**

Where applicable indicate the detailed financial provisions for rehabilitation, closure and ongoing post decommissioning management for the negative environmental impacts.

Refer to **Appendix G.**

4. CUMULATIVE IMPACTS

Describe potential impacts that, on their own may not be significant, but is significant when added to the impact of other activities or existing impacts in the environment. Substantiate response:

The most significant environmental issues associated with the Proposed Development are listed below and presented in **Figure 11**:

- The Grassland has moderate sensitivity due to providing potential habitat for Red Listed fauna species;
- The Grassland has moderate sensitivity due to presence of Orange Listed species *Boophane Disticha*;
- The valley bottom wetland and pans have a low environmental sensitivity.

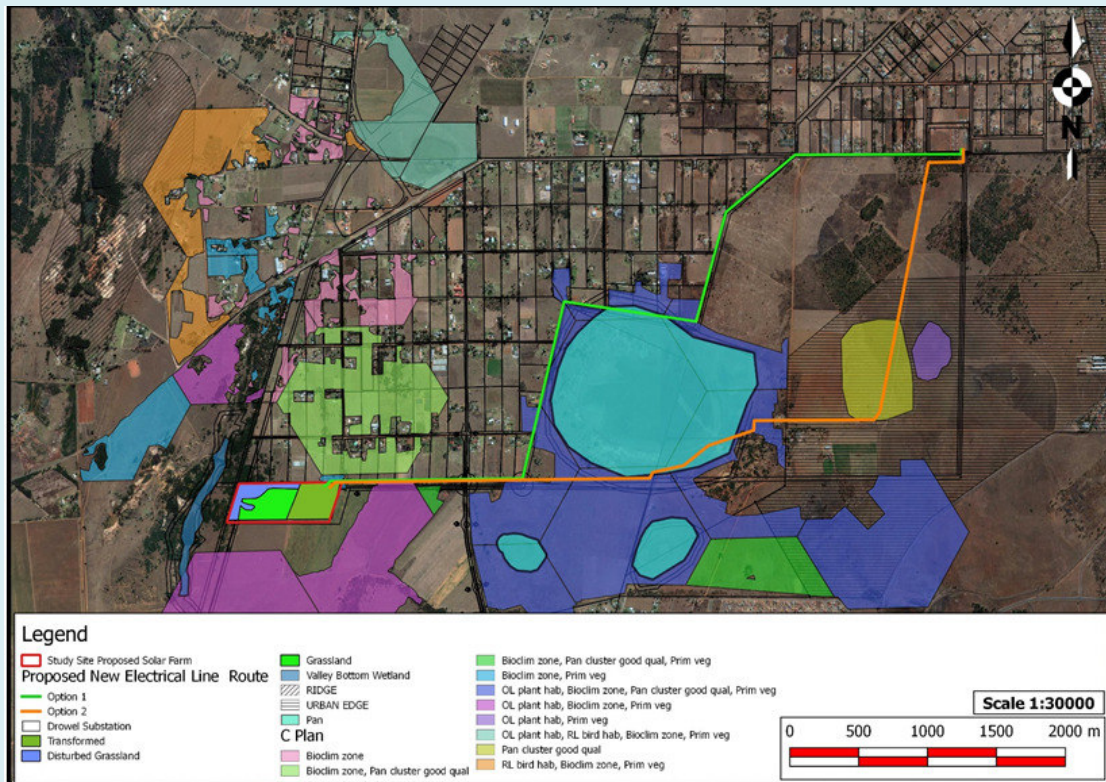


Figure 12: Sensitivity map and layout overlay

The majority of cumulative impacts associated with the proposed solar farm relates to the construction phase.

- Potential cumulative impact on the **wetland system** situated within 500m from the proposed development site. **Poor solid waste management** of plastic and polystyrene could result in pollution of the adjacent wetland, which could be aggravated by **poor stockpiling of topsoil** washing away and silting up the wetland. **Increased stormwater run-off** due to cleared areas, could lead to erosion and siltation of the wetland. Spilling of **hazardous substances** used during installation or during operational phase could potentially end up in the wetland which will negatively affect its functionality. Recommendations made in the EMPr and *Stormwater Management Report* to be adhered to.
- Cumulative negative impacts on the **Flora Habitat** could be posed by the

Proposed Development considering the moderate sensitivity of the Grassland vegetation unit, if **Orange Listed plant species positively identified within this unit, are not rescued prior to construction commencing.** Due to the limited footprint of the plinths and the solar panels being raised above ground, it is not necessary to remove natural vegetation underneath the panels. Survival of vegetation underneath the panels to be monitored to ensure growth. If the vegetation dies, it should be replaced with endemic grass specie requiring limited sunlight, in order to prevent erosion of open areas.

- Background noise associated with agricultural activities could be aggravated by noise associated with construction activities. **It is thus proposed that construction only take place during hours of daylight, unless otherwise permitted.**
- Nuisance dust due to the clearing of areas for purpose of internal road construction and camp site development, could be aggravated by windy conditions if construction is affected during the dry months as recommended. **Regular damping of roads and open areas should be conducted and the main access road to site will be covered with a dust suppression solution to prevent entrainment of dust by vehicles.**
- Environmental risk associated with storage of bulk **hazardous substances**, which could potentially pollute the wetland is sufficient storage and bunding is not provided for.
- **If the proposed development does not go ahead, electricity shortage in the Randfontein area cannot be addressed.**

As illustrated, these cumulative impacts can be mitigated if activities are correctly planned and measures are implemented to manage activities which could cause any negative cumulative impacts, in accordance with EMPr.

Cumulative impacts associated with the operational phase include:

- Fire risk and environmental risk associated with storage of bulk hazardous substances.

5. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that sums up the impact that the proposal 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.

Proposal

The major impacts that is likely to occur during the construction and operational phase, after management, include:

NATURAL ENVIRONMENT

- Vulnerable grassland rated as having a moderate sensitivity will be lost as part of the development, but Orange Listed Plant Species can be rescued

prior to development commencing.

- Functionality of the wetland bordering the proposed development site will not be affected by the construction activities considering stockpiling methods and construction during dry periods, which will prevent loss of topsoil. Stormwater management measures shall be implemented in accordance with a *Stormwater Management Report* as to prevent impact on the adjacent wetland.
- Waste to be stored in closed containers as to prevent windblown distribution and pollution of the environment by plastic and polystyrene and records as proof of disposal to be kept on site.
- Hazardous substances to be stored and banded in accordance with legal requirements as to prevent spillages from reaching the adjacent wetland.

SOCIAL ENVIRONMENT

- The Proposed Development could potentially supply 9.3MW of electricity to the Rand West City Local Municipality.
- The proposed renewable project supports the Randfontein SDF in terms of renewables as well as the Gauteng Integrated Renewable Strategy.

ECONOMIC ENVIRONMENT

- The proposed development will contribute to the economy of the area by creating jobs during the construction and the operational phases for skilled and unskilled workers.
- The proposed renewable energy project shall address the shortage of electricity in the Rand West City Municipal area.

Alternative 1

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Alternative 2

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No-go (compulsory)

The 'NO-GO' alternative will result in no development and thus the shortage of energy (electricity) with the Rand West City Local Municipality cannot be addressed. No positive impacts are foreseen for the 'NO-GO' alternative, as it would result in the application site remaining in its current state. The present state of the study site is associated with vacant land open to dumping and illegal settlement. The area is also encroached by exotic trees.

Electrical Infrastructure in the area will be left in its current state and no upgrades/ further provision of electrical infrastructure will occur.

The approved Wheatlands Mixed Use Development situated next to the Proposed Development might not be able to proceed due to shortage of electricity within Rand West City Local Municipality.

The social and economic benefits associated with the potential development will not be realized if the development does not go ahead.

6. IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE

For proposal:

Considering the proposed development occurs on vacant land previously cultivated, open to illegal dumping and settlement, where alien plant species occur, the proposed development will not have a major negative impact on the ecological surroundings. Considering the shortage of electricity within Rand West City Local Municipality other land use alternatives were not considered. Considering the low agricultural potential of the site due to shallow soils, agriculture is not considered as feasible land use.

Bio-Physical

- Despite a wetland bordering the proposed development site and the proposed 11kV powerline Option 1 occurring within 500m from two pans, it is not anticipated that the development will have any effect on the wetland or pans due to the level topography as well as recommendations made in the EMPr pertaining to compiling and implementing mitigation measures proposed in the *Stormwater Management Report*.
- Large volumes of plastic and polystyrene waste generated during the construction phase could be managed by separating waste and storing waste in enclosed containers to prevent waste from becoming airborne.
- Hazardous substances to be stored and banded in accordance with legal requirements as to prevent spillages from reaching the adjacent wetland. The Substation and hazardous substance storage area will be located at point furthest away from the wetland. i.e. the north-east corner of the site.

Ecological

- Orange Listed plant species occurring on site shall be rescued prior to development commencing and relocated in accordance with GDARD recommendations.
- Alien plant species occurring on site shall be removed as part of the proposed development.

Institutional

- The proposed renewable project supports the Randfontein SDF in terms of renewables as well as the Gauteng Integrated Renewable Strategy.

Economical

- The Proposed Development could potentially supply 9.3MW of electricity to the Randfontein Local Municipality, thus addressing the shortage of electricity within the Rand West City Local Municipal area.
- The proposed development will contribute to the economy of the area by creating jobs during the construction and the operational phases for skilled and unskilled workers.

Social

- The proposed development will contribute to the economy of the area by creating jobs during the construction and the operational phases for skilled and unskilled workers.
- Currently development within Randfontein is hampered by a shortage of electricity. The proposed development will facilitate development in the area by feeding 9.3MW power into the Eskom grid.

Based on the biophysical, institutional, social, and economical characteristics of the Proposed Development, it is evident that the site is suitable for the proposed development.

The development will address the shortage of electricity within Rand West City Local Municipality which is currently hampering development within the Municipal area. The construction of the urban solar farm shall create numerous job opportunities during the construction and operational phases and will benefit the community, Local Authority and the Gauteng Province in terms of renewable energy.

Orange Listed plant species occurring on site can be rescued prior to construction commencing. The Implementation of stormwater mitigation measures as well as proper waste management during the construction phase, and legal compliance in terms of hazardous substance storage shall result in little to no impact on the adjacent wetland and watercourse.

As a result of the above mentioned information, Bokamoso is of the opinion that the proposed development if planned, implemented, and managed in accordance with the EMP, will promote sustainable development and it will have a significant positive socio-economic impact on the Rand West City Local Municipality.

It is therefore requested that the development be allowed to proceed, and that the implementation of the Environmental Management Programme (**Appendix G**) be a condition of such an approval.

For alternative:

The Mixed Use Development alternative was not considered due to the shortage of electricity in the Rand West City Local Municipal area which currently hampers development.

Agriculture as alternative was not considered due to an *Agricultural Potential Survey* having established the agricultural potential of the property to be low due to shallow soils.

Having assessed the significance of impacts of the proposal and alternative(s), please provide an overall summary and reasons for selecting the proposal or preferred alternative.

The Proposed Development and associated infrastructure will address the shortage of electricity within Rand West City Local Municipality which is currently hampering development within the Municipal area. The construction of the urban solar farm shall create numerous job opportunities during the construction and operational phases and will benefit the community, Local Authority and the Gauteng Province in terms of renewable energy.

7. SPATIAL DEVELOPMENT TOOLS

Indicate the application of any spatial development tool protocols on the proposed development and the outcome thereof.

A Special Consent application was submitted to the local authority in terms of SPLUMA.

The Randfontein SDF was consulted to establish whether renewable energy is planned for spatially within Rand West City Local n Municipality.

8. RECOMMENDATION OF THE 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 as bound by professional ethical standards and the code of conduct of EAPASA).

YES X	NO
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If "NO", indicate the aspects that require further assessment before a decision can be made (list the aspects that require further assessment):

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:

Bokamoso is of the opinion that both beneficial and adverse impacts were thoroughly assessed, and the needs and benefits for this project have been assessed so as to give the proposed **Wheatlands Urban Solar Farm and associated electrical infrastructure** the go-ahead. As a result, Bokamoso is of the opinion that the proposed **Wheatlands Urban Solar Farm** will have a significant long-term socio-

economic beneficial impact on the subject property and its immediate surroundings. Considering all the above mentioned information it is requested that this Basic Assessment be approved **subject to the implementation of the mitigation measures** contained in the Environmental Management Programme (**Appendix G**) and the **other mitigation measures and recommendations** mentioned below to achieve maximum advantage from beneficial impacts, and sufficient mitigation of adverse impacts. Should all the recommendations be adhered to it is foreseen that there would be no reason for this application not to be approved.

It is recommended that, based on the findings of this Final BAR and supplemental specialist information that:

- Should the proposed **Wheatlands Urban Solar Farm** obtain the necessary environmental authorization, an Environmental Management Programme (EMPr) must be implemented for the construction and operational phases of the development. **The EMPr, as attached to this document, should be made part of the contractual documents of the contractors;**
- **Orange Listed plant species occurring on site must be rescued prior to construction commencing in accordance with Biodiversity permit conditions;**
- **A full Avifauna study must be conducted prior to construction commencing to confirm that no Red Listed bird species occur within the proposed development footprint and along the powerline route, as per the recommendation provided by WildSkies;**
- Stormwater must be managed in accordance with the **Stormwater Management Report mitigation measures** in order to protect the adjacent wetland and pans;
- **Hazardous substances (vanadium sulphide / chloride electrolyte) to be stored in accordance with legal requirements to prevent spillage into the wetland;**
- **Strict waste management** is required of waste generated during the construction phase of the proposed development as it will comprise of significant volumes of plastic and polystyrene which must be stored in enclosed containers and recycled and reused where possible, and disposed of at the Randfontein landfill site;
- **The following authorisations are to be obtained in order to give effect to the proposed development:**
 - **NERSA Generation License;**
 - **Special Consent for land use from Local Authority;**
 - **General Authorisation in terms of the National Water Act for proximity of Proposed Development to wetland and proximity of 11kV powerline to two pans;**
 - **Wayleaves must be obtained and servitudes register as applicable;**
 - **Authorisation from local authority for connection point and upgrading of electrical infrastructure; and**
 - **Obtain approval from local authority for water consumption from and**

metering at the Finsbury Reservoir.

- All recommendations made by the specialists in reports compiled for this development should be adhered to at all times.

9. THE NEEDS AND DESIRABILITY OF THE PROPOSED DEVELOPMENT (AS PER NOTICE 792 OF 2012, OR THE UPDATED VERSION OF THIS GUIDELINE)

Needs and Desirability

The bulk of South Africa's power is generated by coal fired power stations with a number under construction to meet the ever increasing demand for power. This makes coal South Africa's primary energy resource. Beyond the fact that coal is not a renewable resource the burning of coal for the generation of electricity also has a very negative impact on the environment from the point of view that vast amounts of CO₂ and SO₂ is being released into the atmosphere. The main contributing sources of SO₂ in the province include the industrial, commercial and institutional sources (31%), electricity generation (30%), vehicle emissions (21%) and domestic fuel burning (18%) (EMF 2014, 33). This is contributing to the ever growing concern of the greenhouse effect and global warming. Currently Gauteng is facing issues of environmental decay. The proposed PV facility can decrease the reliance of wood and coal burning as a form of energy to meet requirements of households that do not have access to electricity should the municipality act as an off-taker of the electricity.

According to the Intergovernmental Panel on Climate Change (IPCC), who has predicted that by 2050, "climate change in Southern Africa could result in a 1°C to 3°C increase in mean temperatures and a 5-10% decrease in rainfall over the summer rainfall region. Furthermore these changes will have a wide array of impacts on the social, economic and natural environment in Gauteng. South Africa is a signatory to the United Nations Framework Convention on Climate Change committing to the stabilization of atmospheric greenhouse gas concentrations at a level that would prevent dangerous anthropogenic interference with the climate system. With this commitment in place and the ever growing need for power, South Africa is urged to expand its generation capacity through the development and utilisation of alternative resources, which are renewable and more environmentally sustainable (SolarReserve, 2014). South Africa's climate is ideal with regards to solar resources, with a broad time band of sunlight and a high level of energy delivered by area of land. Utilising this solar resource in combination with the proposed USF (with storage) makes it an ideal system in the generation of renewable energy. The proposed PV facility can contribute to the decrease in the release of such emissions as a clean form of energy while electrifying surrounding areas.

The Proposed USF Project is designed to meet the increasing demand for clean, renewable electrical power in South Africa – not only on a National scale but also for the smaller off-takers. The multiple benefits associated with developing renewable energy infrastructure have been recognized by both local regional and National policy-makers. "Renewable energy can potentially improve energy security by reducing the reliance on imported fuels and they help diversify the power mix, they are also critical technologies to help provide access to remote

communities." (DOE's Annual Performance Plan 2016/2017, Page 15). Development of solar resources reduces reliance on foreign sources of fuel, promotes national energy security, diversifies energy portfolios and contributes to the reduction of greenhouse gas emissions at the same time creating a large number of jobs within a new industry while at the same time raising the core knowledge bases of the country (SolarReserve, 2014). As stated in DOE's Annual Performance Plan 2016/2017 (Page 17), "Solar PV is much more competitive in off-grid or mini-grid applications, where the main alternative at present is generation fueled by diesel or gasoline".

Benefits to society in general

- Contribute towards the R20 billion investment to be facilitated within the province.
 - This project will approximate R4 billion investment into the Municipality over a five year period will foster social, socio-economic and economic upliftment as well as increase the city's GDP.
- Contribute towards the 10 000 additional SMMEs supported in the Province
 - This project will allow for procurement from local manufacturers and suppliers will promote the development of secondary industries.
- Enhance service delivery by contributing towards meeting the current energy demand in Gauteng.
- Contributes towards the expansion of renewable energy sector in the country – aiding in the reduction of emissions
- The project will allow for spatial connectivity and integration by establishing the ability for the area to support a wide range of urban users and operators, through the distribution of clean energy around the local Municipality.
- Improve infrastructure through the development of cleaner energy.

As part of the DoE Integrated Resource Plan for Electricity 2010-2030 this project will increase energy efficient infrastructure which will contribute towards the expansion of renewable energy sector in the country by aiding in the reduction of GHG emissions and control the use of valuable water resources for energy production (GEIP 2015-2020, 52).

Benefits to service provider:

- Mitigates the risk of Rand West City Local Municipality Power revenue loss from "behind the meter" off grid connections through an agreed wheeling (or use of system) tariff payable.
- Will reduce maximum demand charges and penalties payable since battery power will be exported onto the distribution network during peak energy demand times when Eskom time of use (TOU) tariffs are at their highest.
- Reductions in reactive power charges (R/kVArh) since battery storage inverters can operate in SVC mode and export reactive power when required, thus reducing Rand West City Local Municipality power factor (pf)

at key load points. This project will ensure high productivity and quality of life through higher levels of equity and social inclusions during all aspect of the projects development and during operation phase of the project

**10. THE PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED
(consider when the ACTIVITY is expected to be concluded)**

20 years

11. ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) (must include post construction monitoring requirements and when these will be concluded.)

If the EAP answers "Yes" to Point 7 above then an EMP is to be attached to this report as an Appendix

EMPr attached

**YES
X**

SECTION F: APPENDIXES

The following appendixes must be attached as appropriate (this list is inclusive, but not exhaustive):

It is required that if more than one item is enclosed that a table of contents is included in the appendix

Appendix A: Site plan(s) – *(must include a scaled layout plan of the proposed activities overlain on the site sensitivities indicating areas to be avoided including buffers)*

Appendix B: Photographs

Appendix C: Facility illustration(s)/Conceptual Layout

Appendix D: Public participation information

Appendix E: Specialist reports

Appendix F: Correspondence with government departments

Appendix G: EMPr

Appendix H: Details of EAP and expertise

CHECKLIST

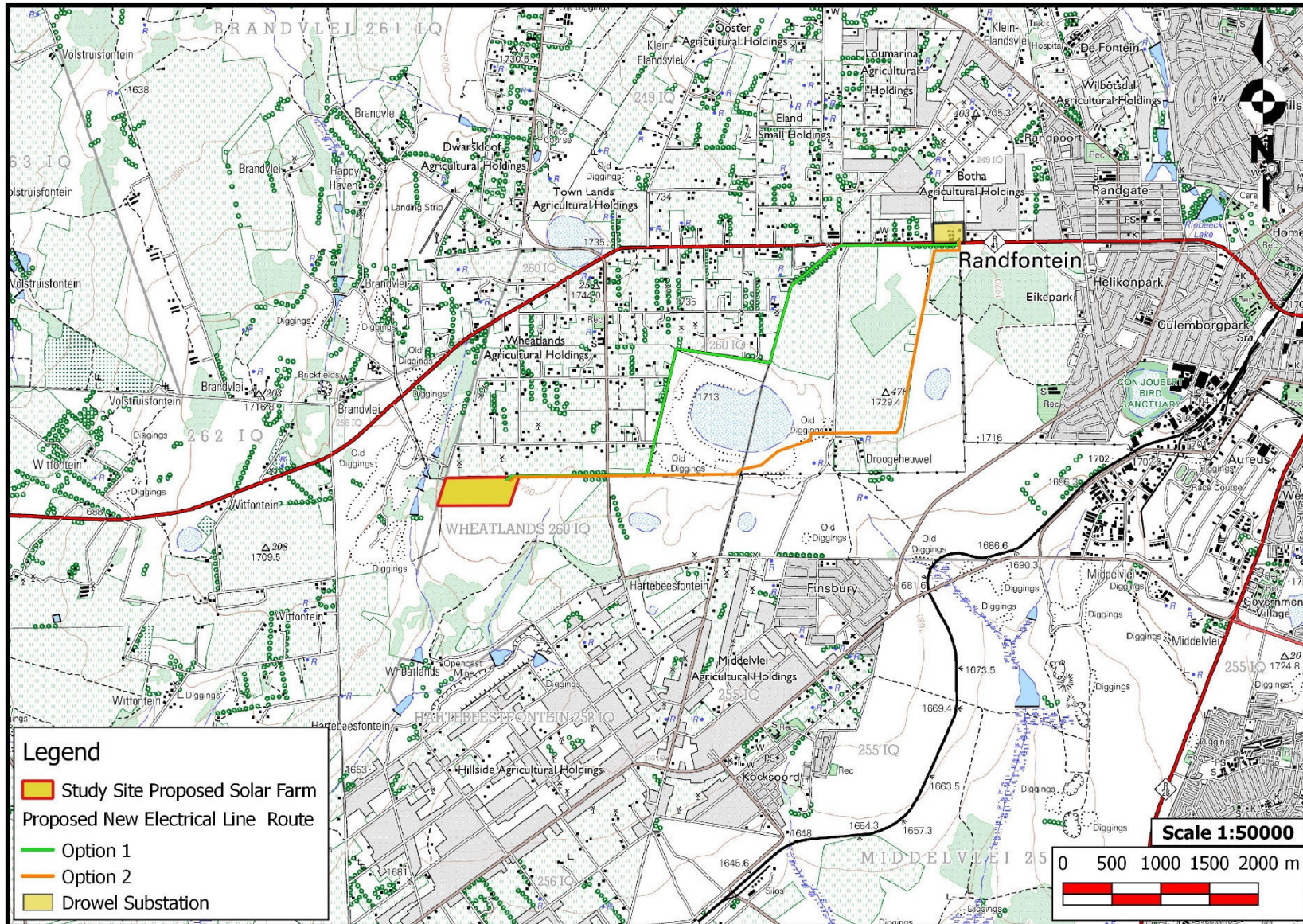
To ensure that all information that the Department needs to be able to process this application, please check that:

- Where requested, supporting documentation has been attached;
- All relevant sections of the form have been completed.

APPENDIX A

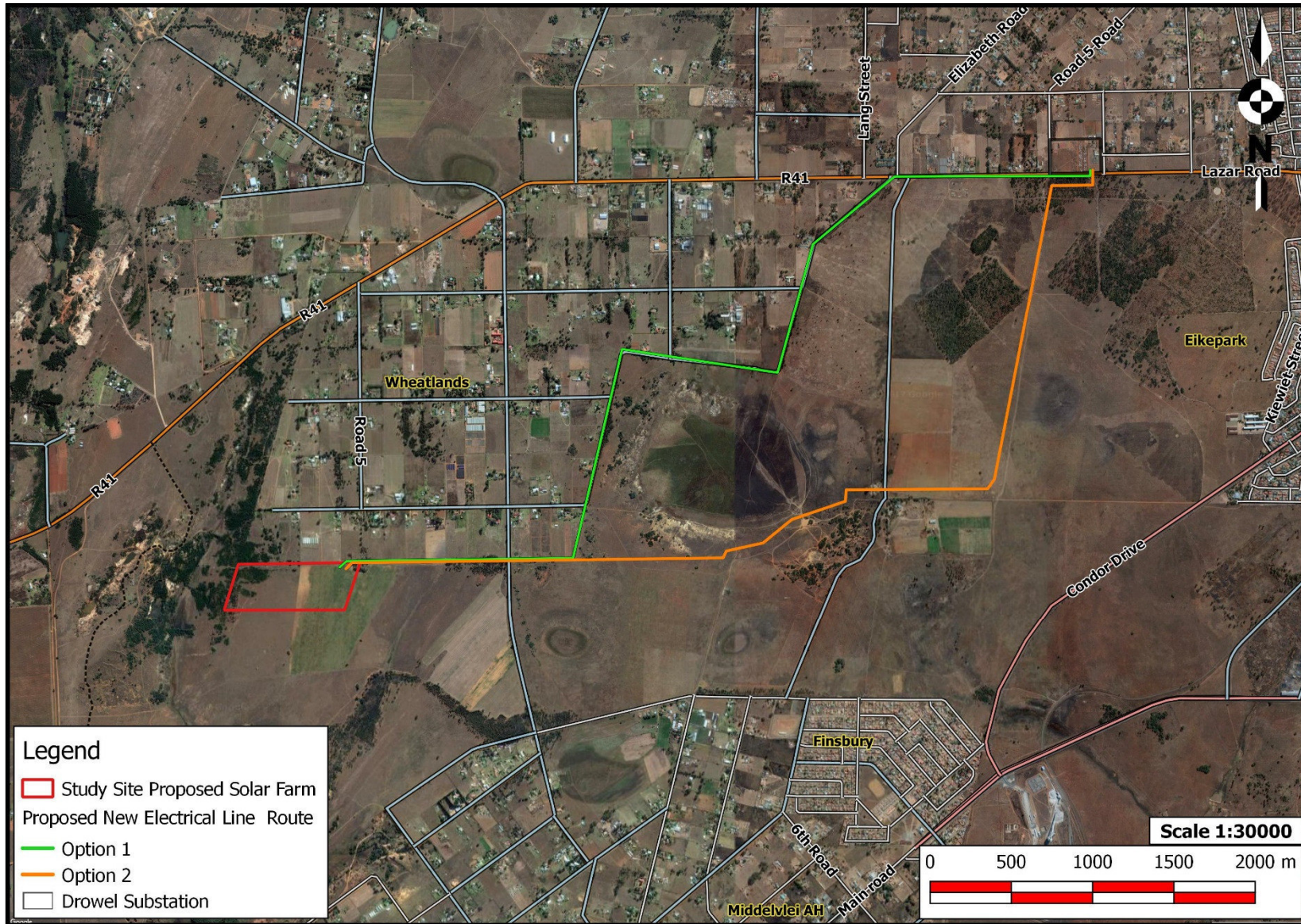
SITE MAPS

Wheatland Proposed Solar Farm Locality Map



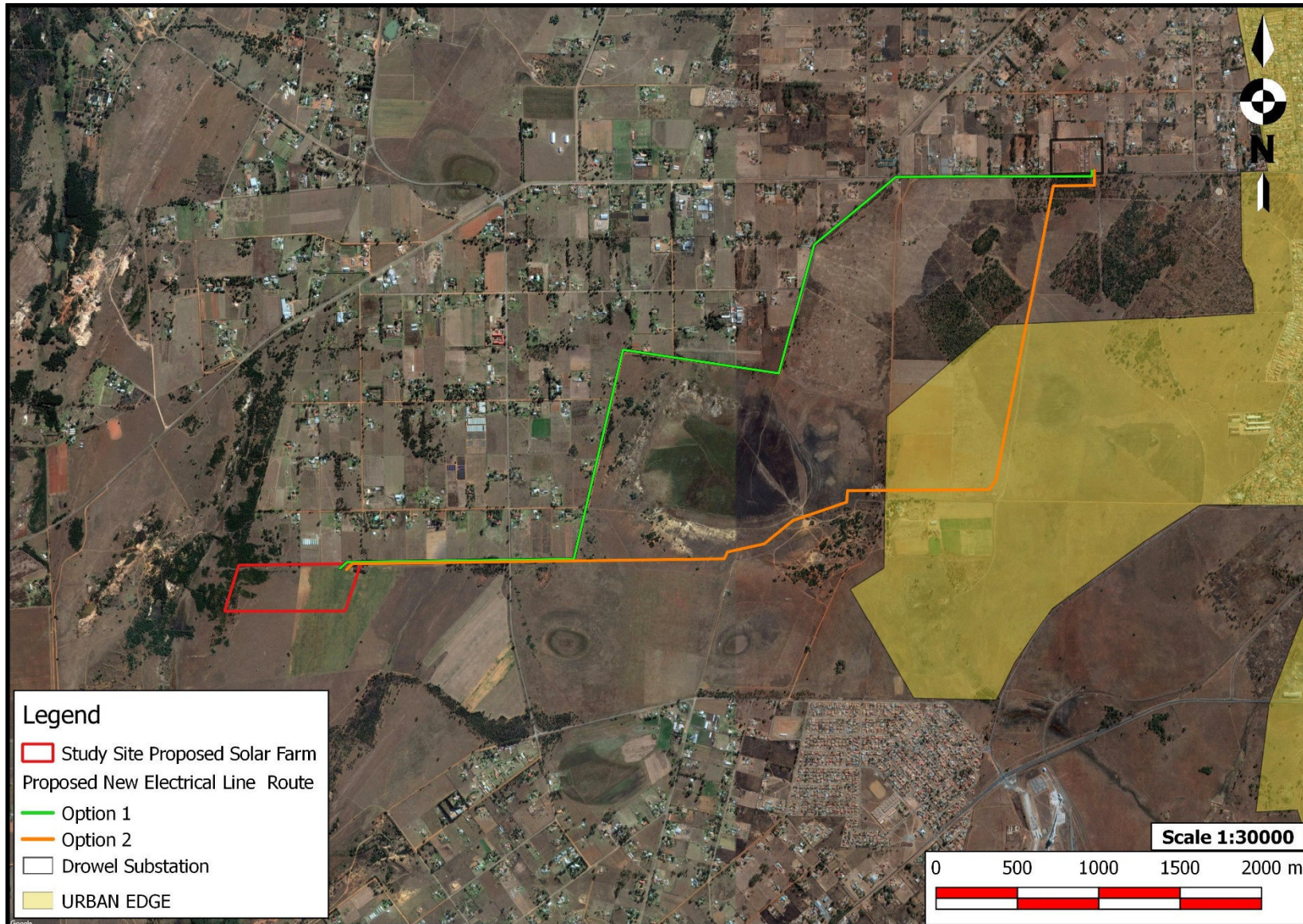
Projection – Transverse Mercator
Datum - Hartebeeshoek 1994
Reference Ellipsoid – WGS 1984
Central Meridian -29

Wheatland Proposed Solar Farm Aerial Map



Wheatland Proposed Solar Farm

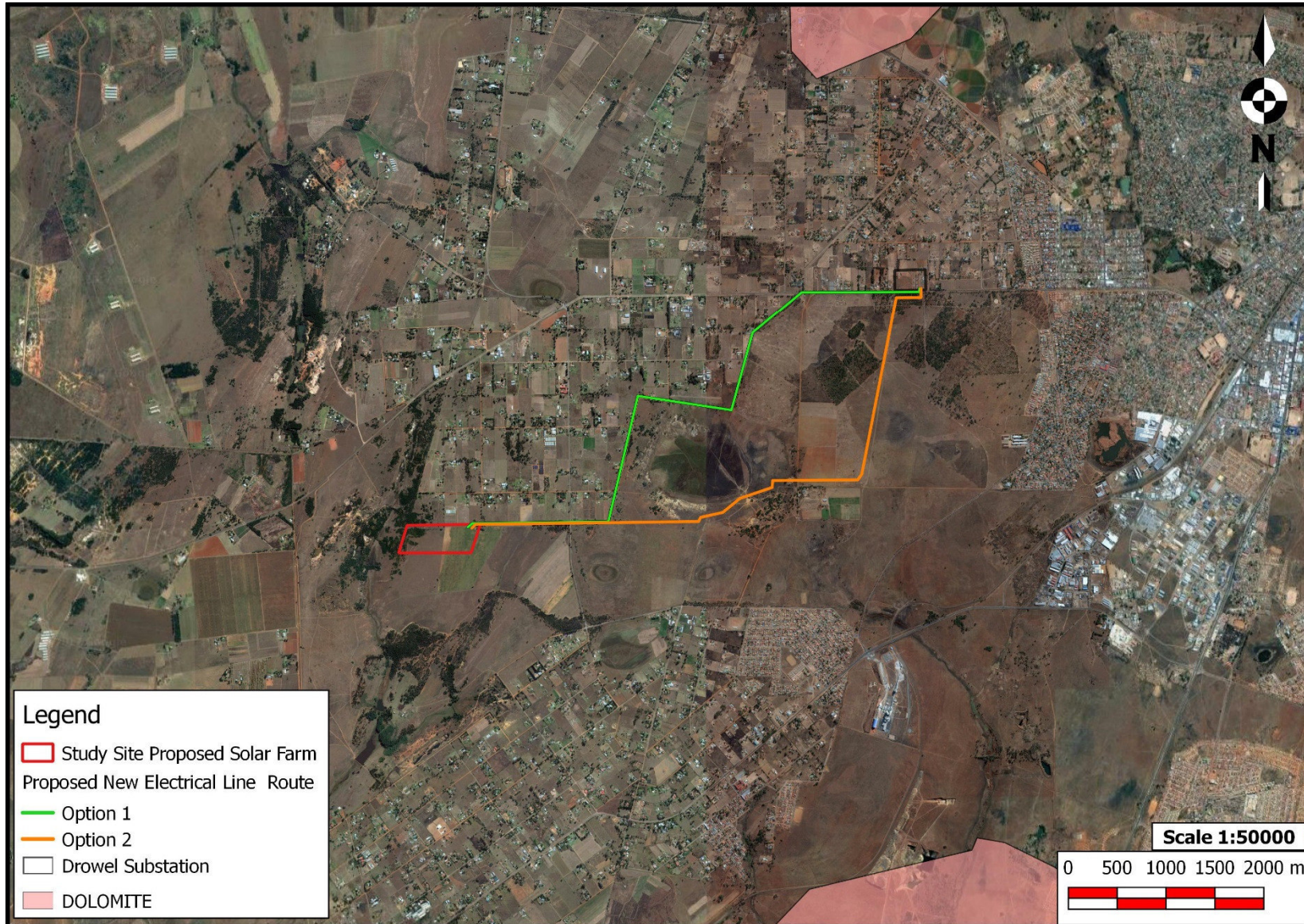
Urban Edge



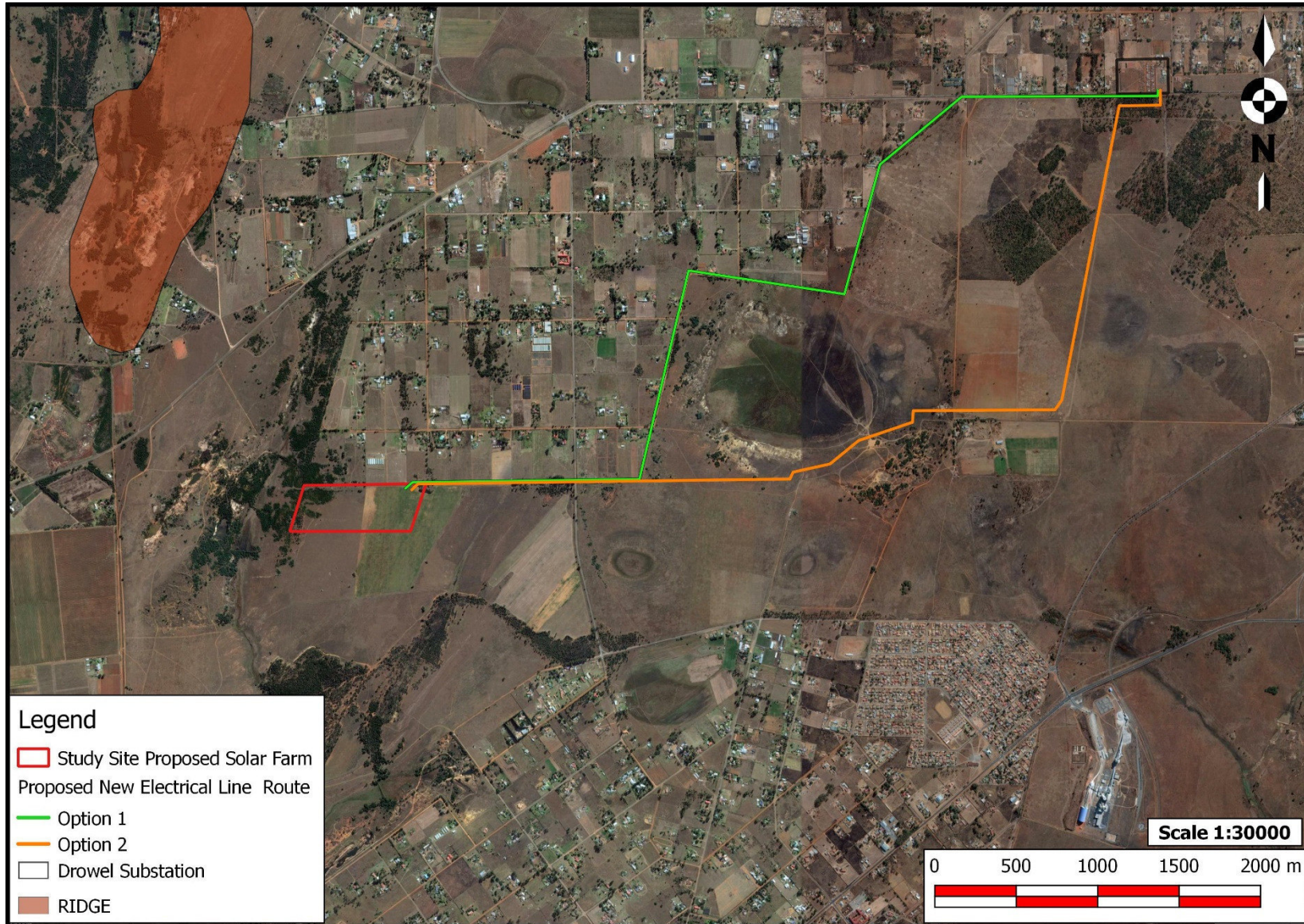
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Reference Ellipsoid –WGS 1984
Central Meridian -29

Wheatland Proposed Solar Farm

Dolomite

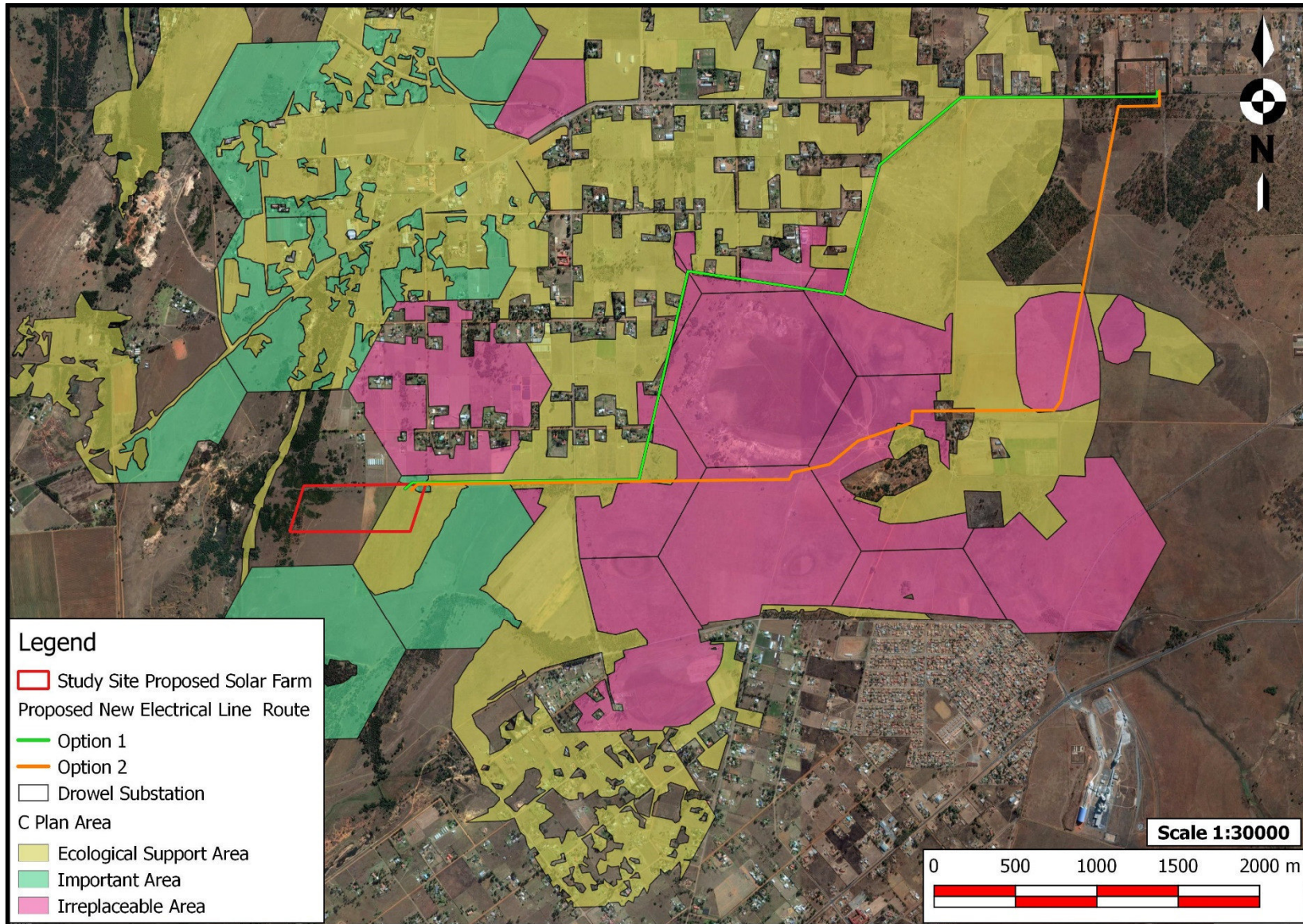


Wheatland Proposed Solar Farm Ridges



Projection – Transverse Mercator
Datum - Hartebeeshoek 1994
Reference Ellipsoid – WGS 1984
Central Meridian -29

Wheatland Proposed Solar Farm C Plan Area Map



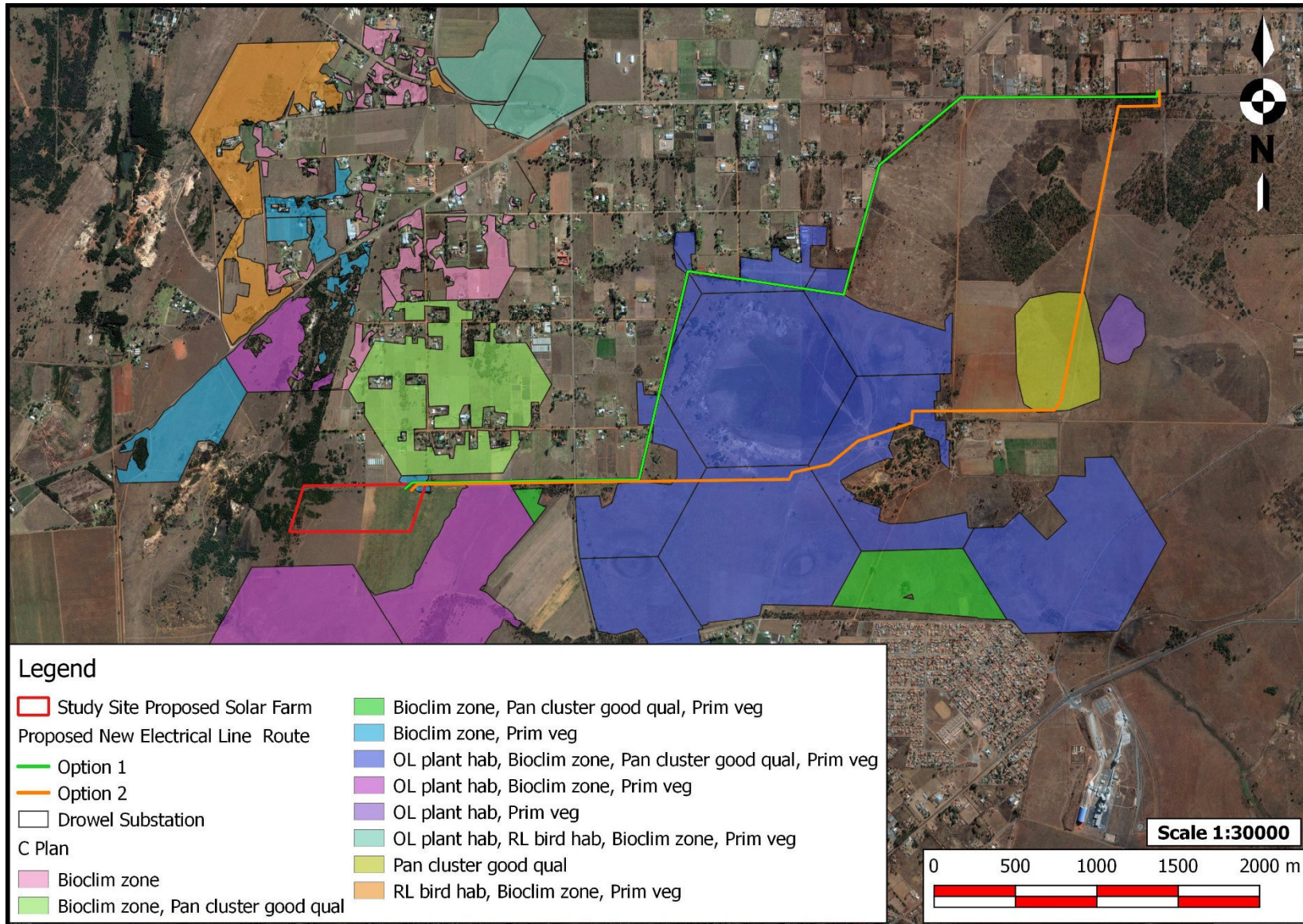
Legend

- Study Site Proposed Solar Farm
- Proposed New Electrical Line Route
- Option 1
- Option 2
- Drowel Substation
- C Plan Area
 - Ecological Support Area
 - Important Area
 - Irreplaceable Area

Projection – Transverse Mercator
Datum - Hartebeeshoek 1994
Reference Ellipsoid – WGS 1984
Central Meridian -29

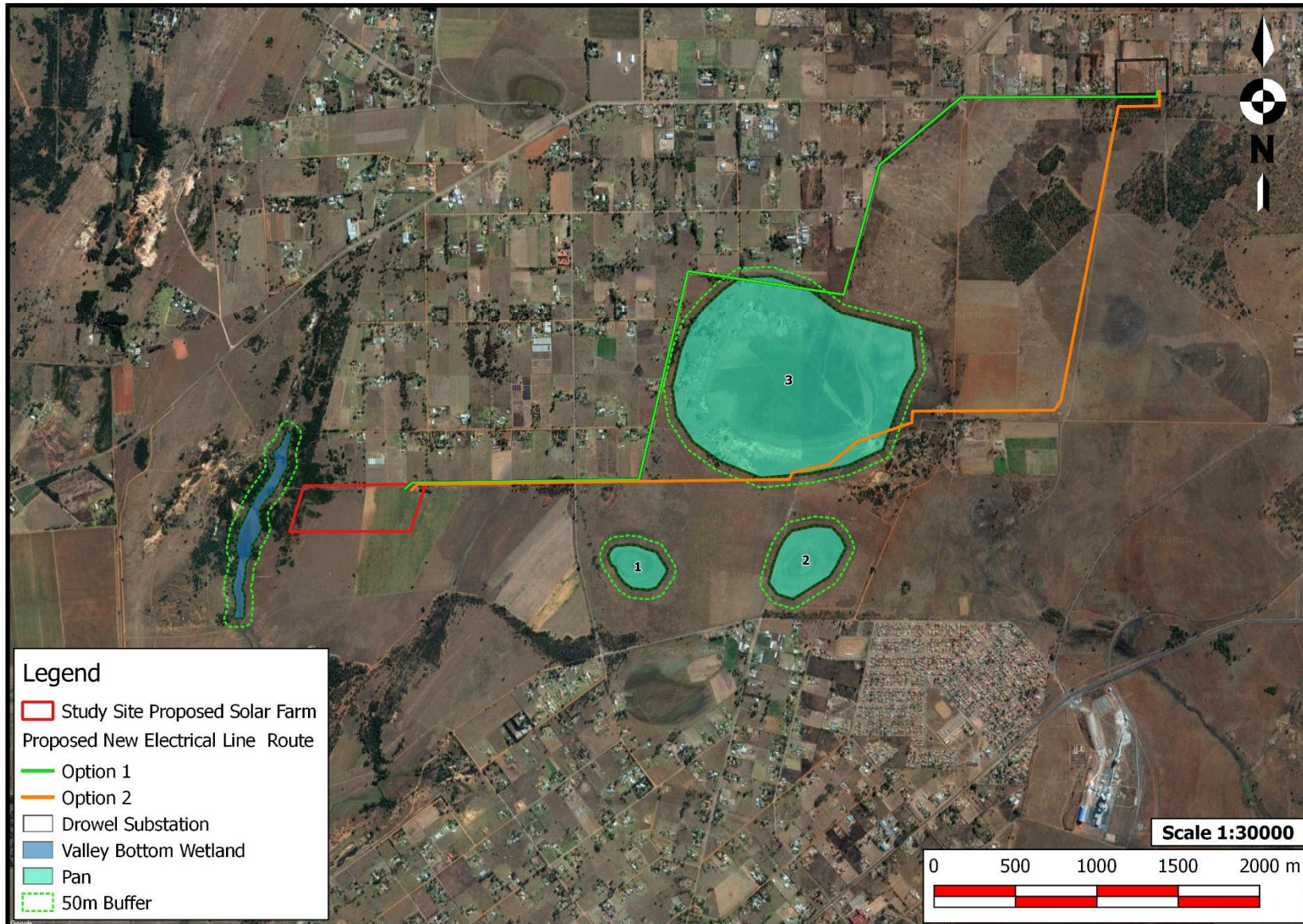
Wheatland Proposed Solar Farm

C Plan Map



Wheatland Proposed Solar Farm

Rivers and Wetlands



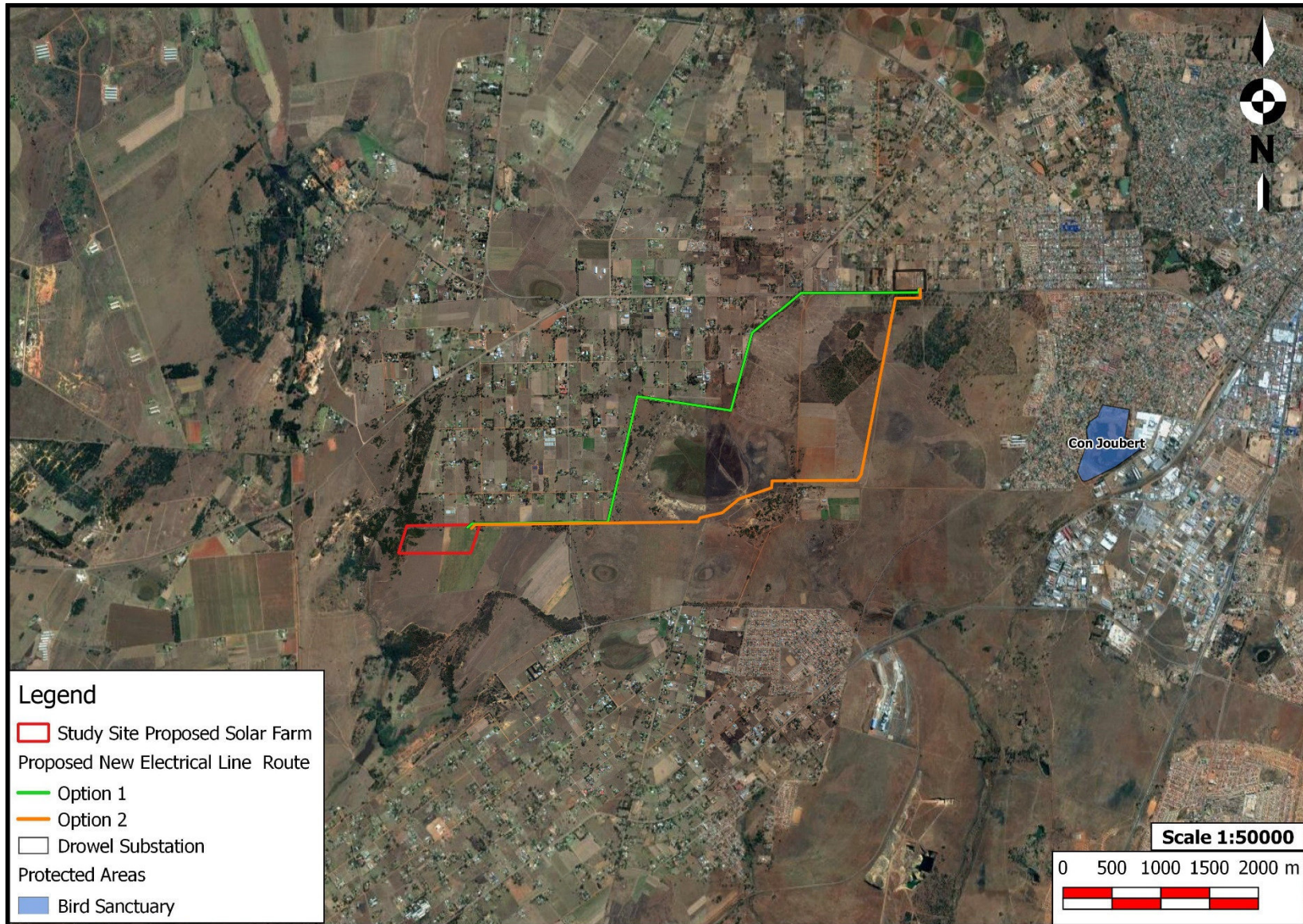
Legend

- Study Site Proposed Solar Farm
- Proposed New Electrical Line Route
- Option 1
- Option 2
- Drowel Substation
- Valley Bottom Wetland
- Pan
- 50m Buffer








Projection – Transverse Mercator
Datum- Hartbeeshoek 1994
Reference Ellipsoid –WGS 1984
Central Meridian -29

Wheatland Proposed Solar Farm

Protected Areas

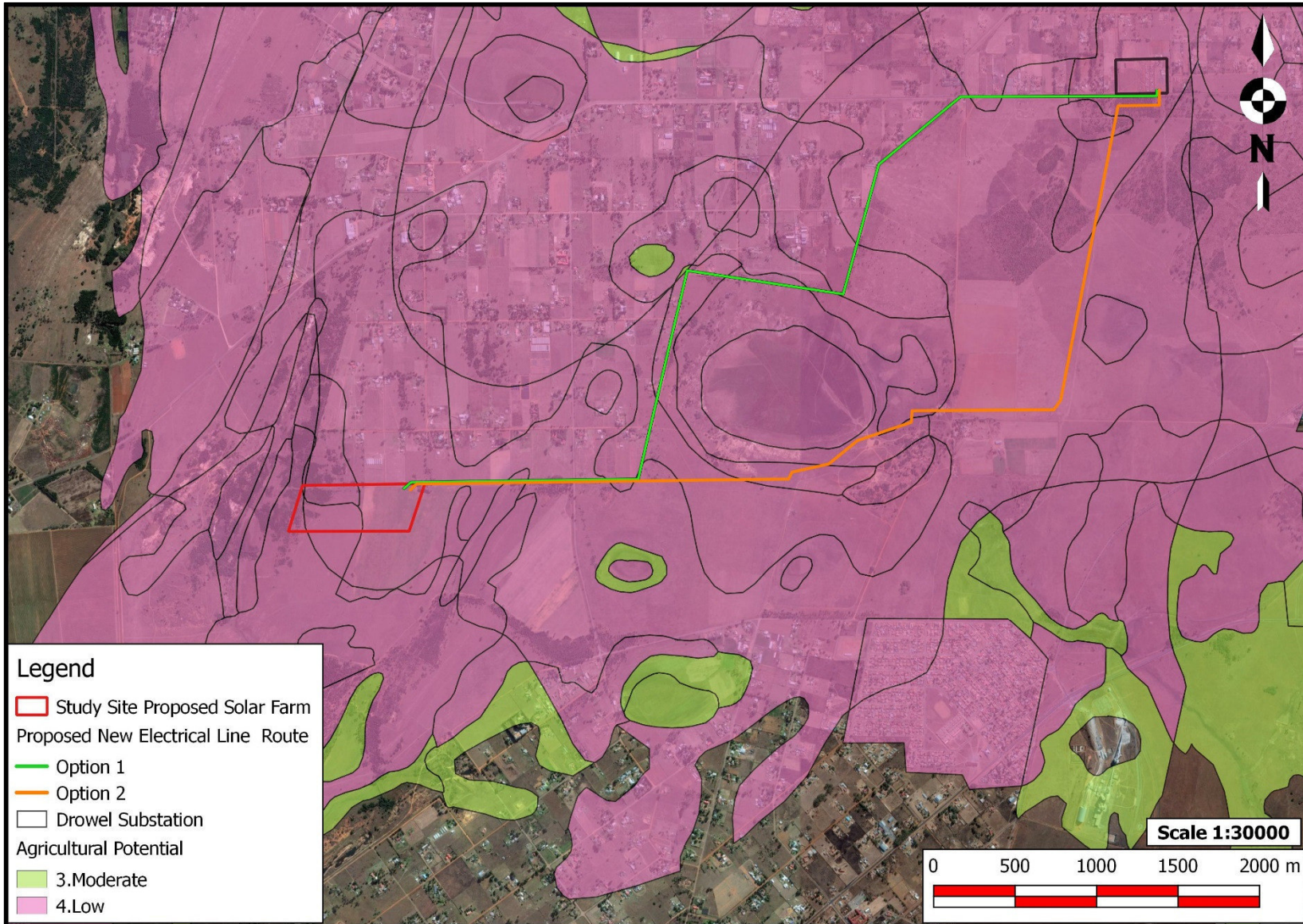


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

-  Study Site Proposed Solar Farm
-  Proposed New Electrical Line Route
-  Option 1
-  Option 2
-  Drowel Substation
-  Protected Areas
-  Bird Sanctuary

Projection – Transverse Mercator
Datum - Hartebeeshoek 1994
Reference Ellipsoid – WGS 1984
Central Meridian -29

Wheatland Proposed Solar Farm Agricultural



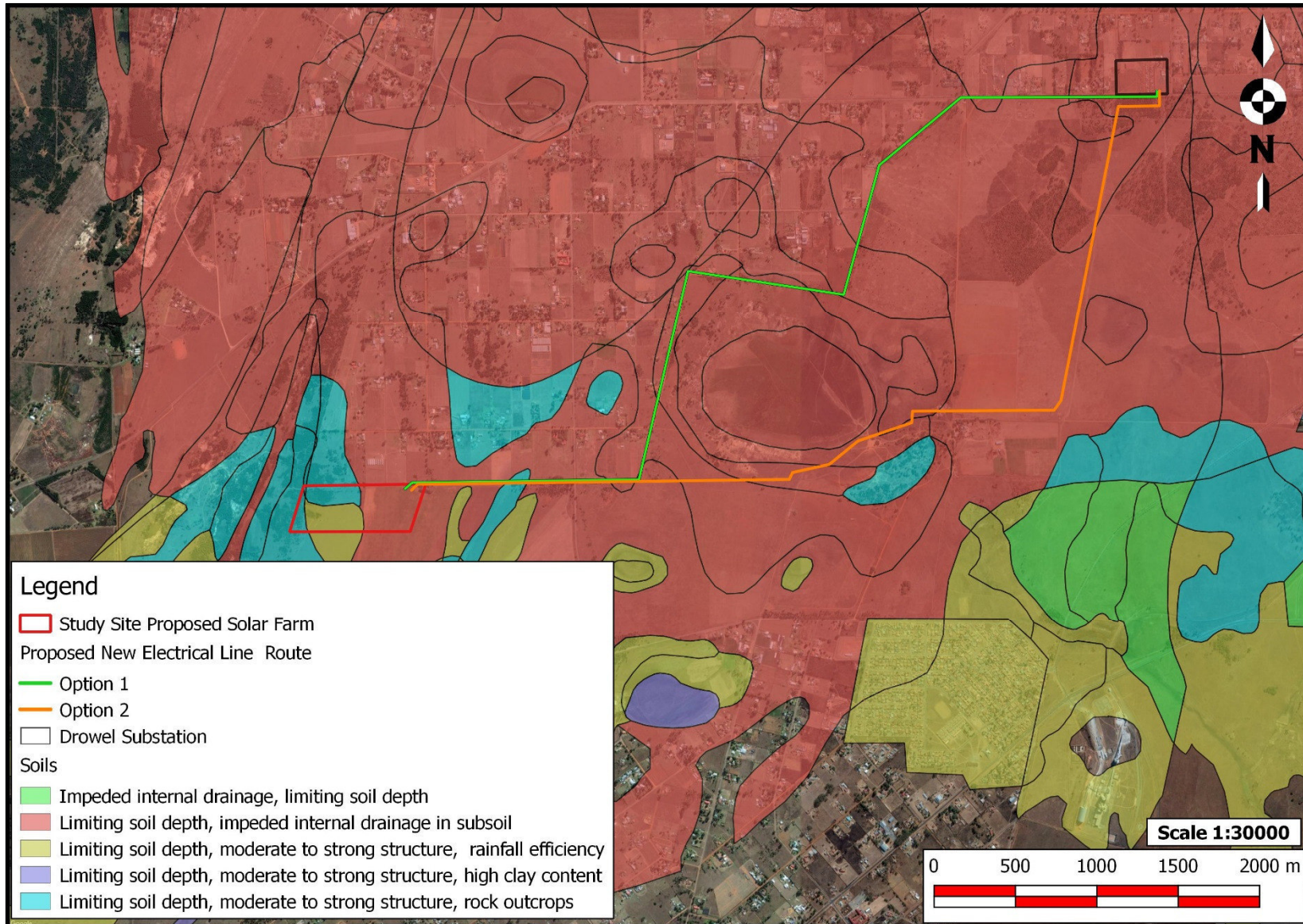
Legend

-  Study Site Proposed Solar Farm
-  Proposed New Electrical Line Route
-  Option 1
-  Option 2
-  Drowel Substation
- Agricultural Potential**
-  3.Moderate
-  4.Low

Projection – Transverse Mercator
Datum- Hartebeeshoek 1994
Reference Ellipsoid –WGS 1984
Central Meridian -29

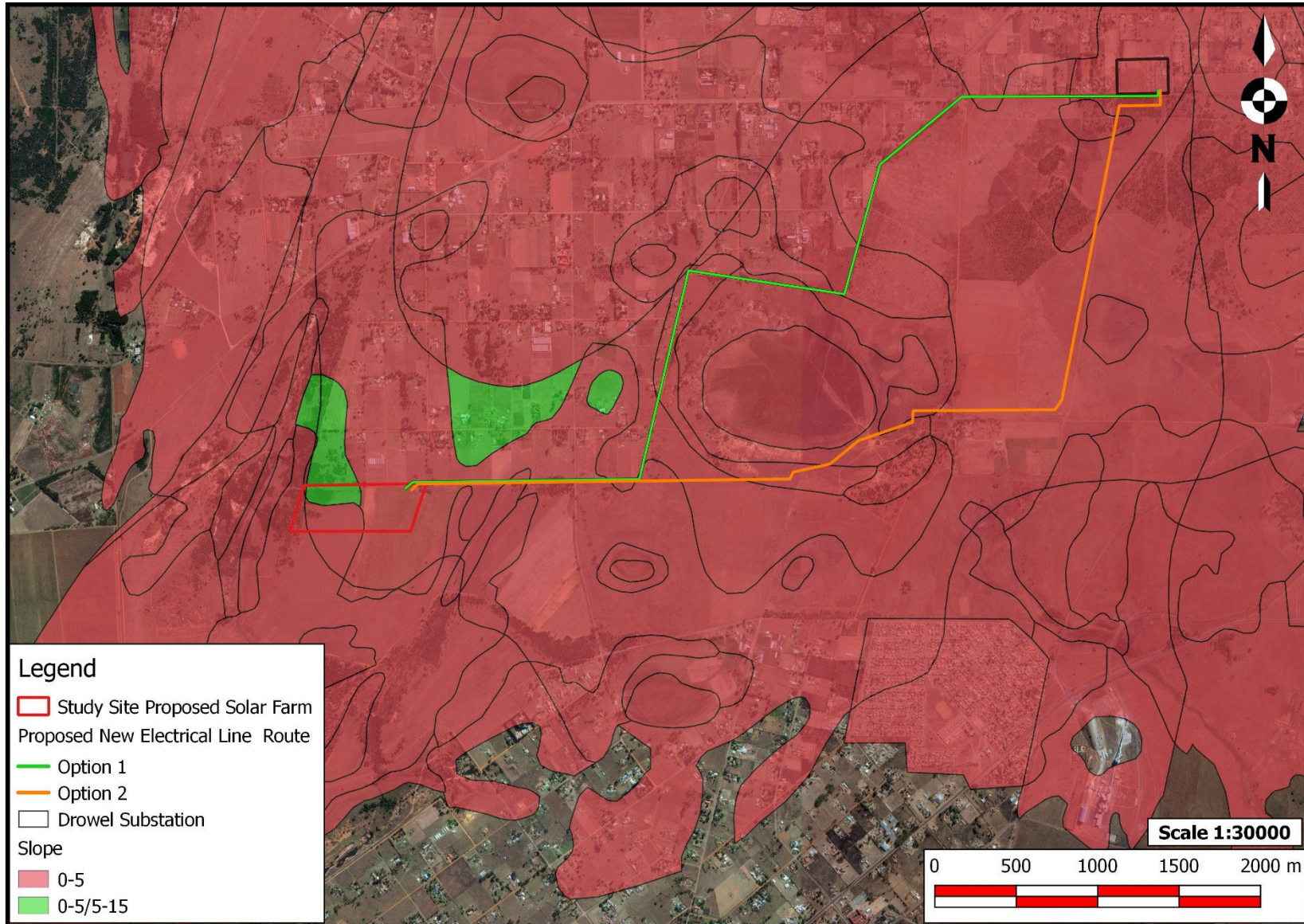
Wheatland Proposed Solar Farm

Soils



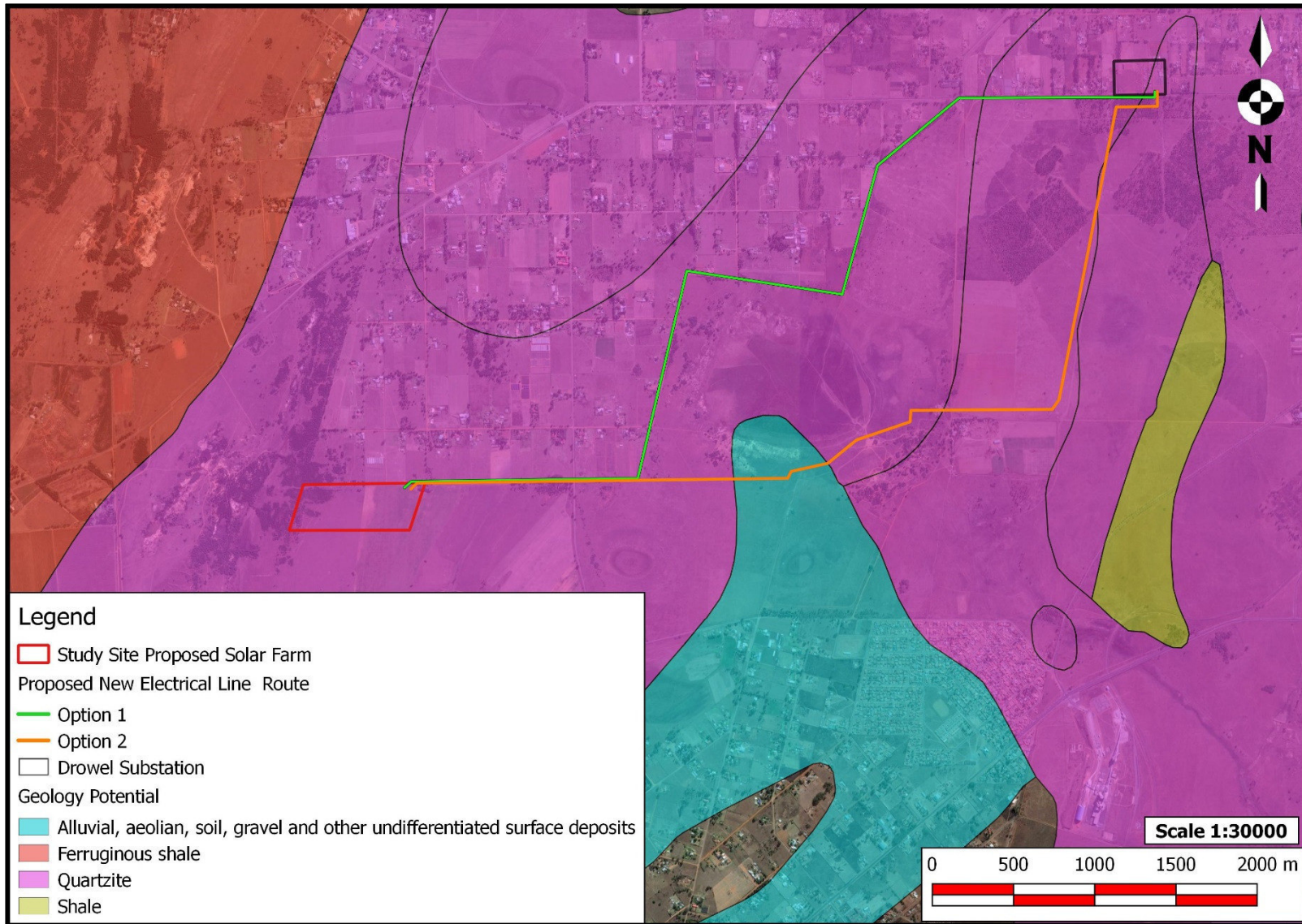
Wheatland Proposed Solar Farm

Slope



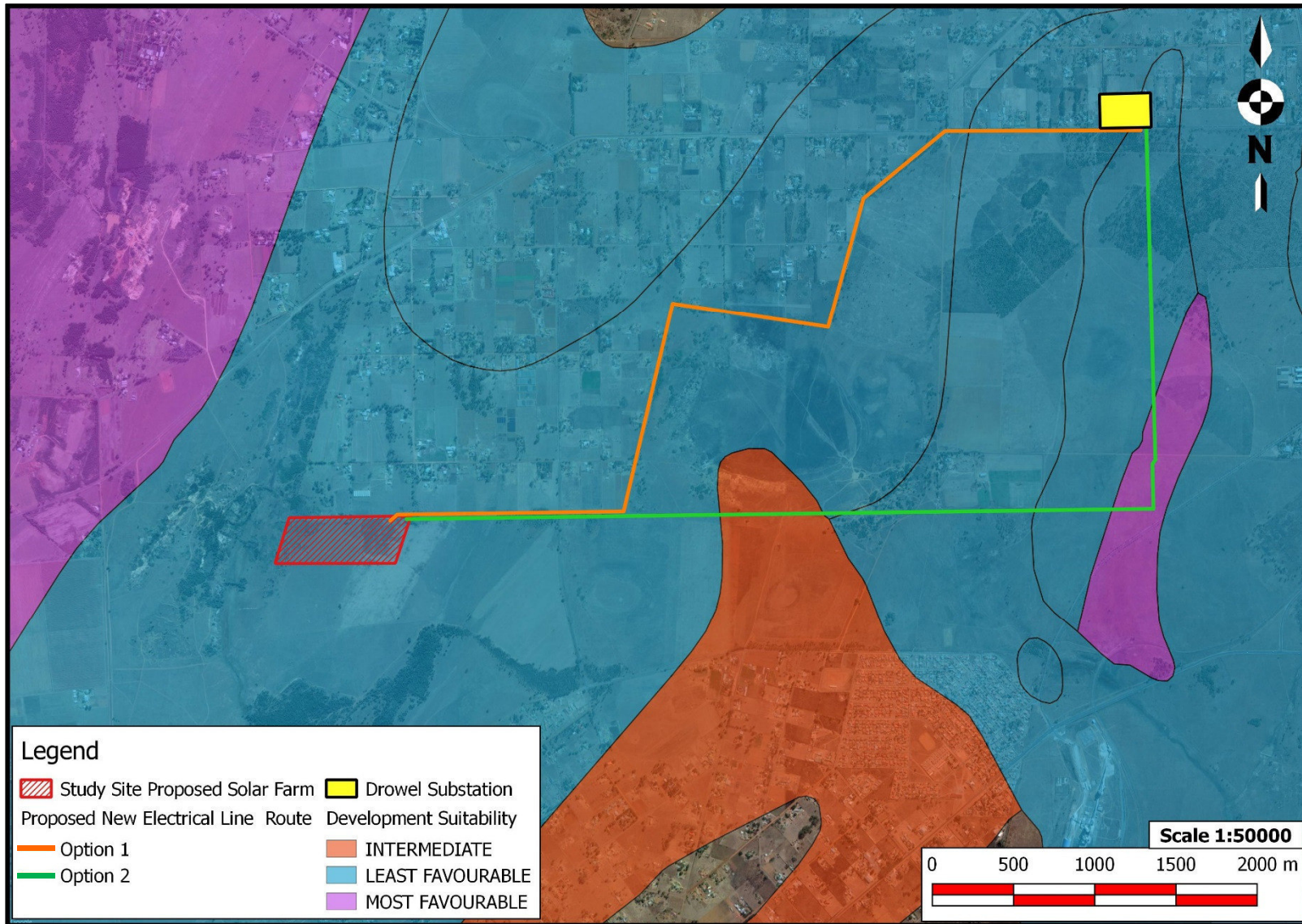
Wheatland Proposed Solar Farm

Geology



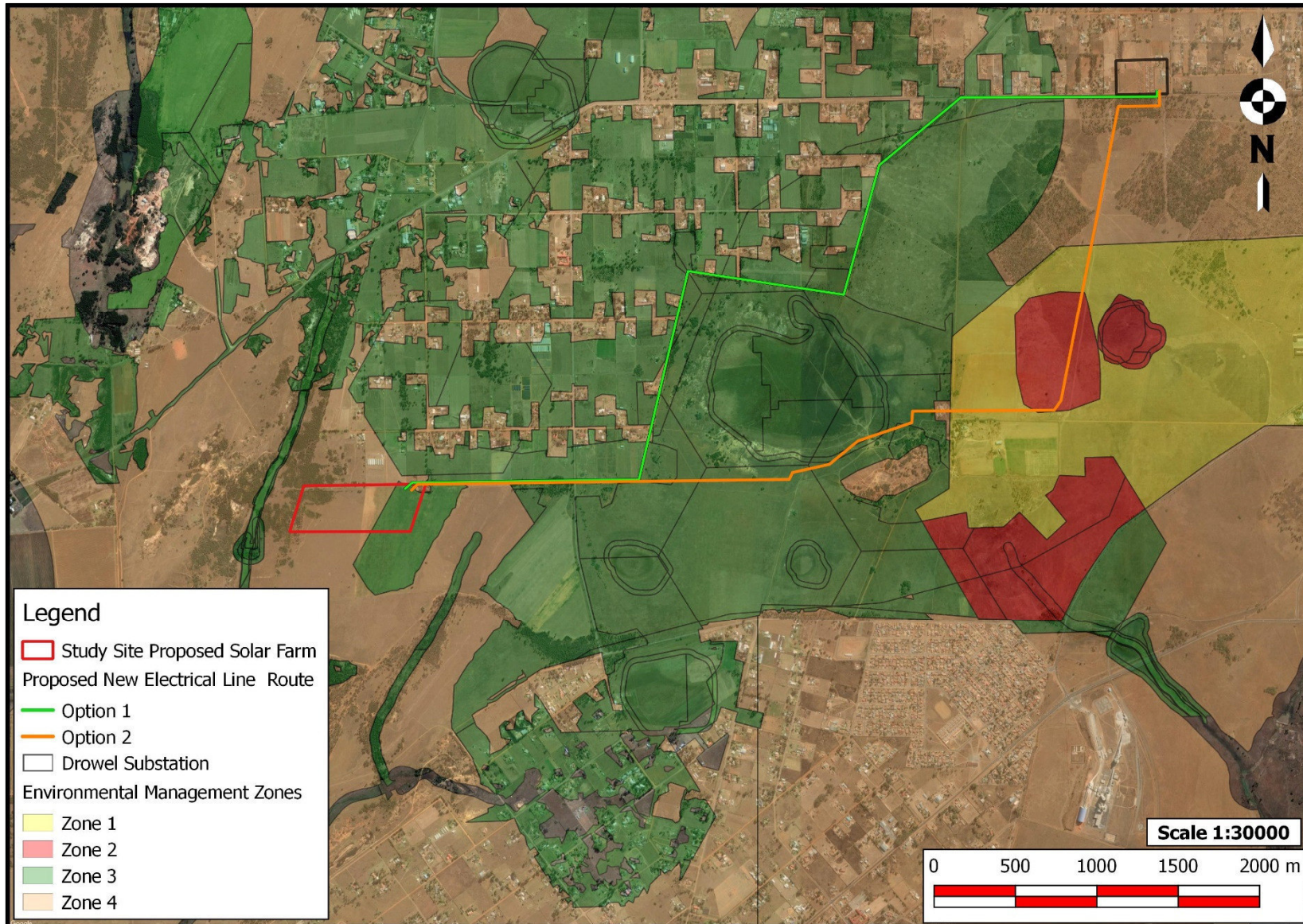
Wheatland Proposed Solar Farm

Development Suitability



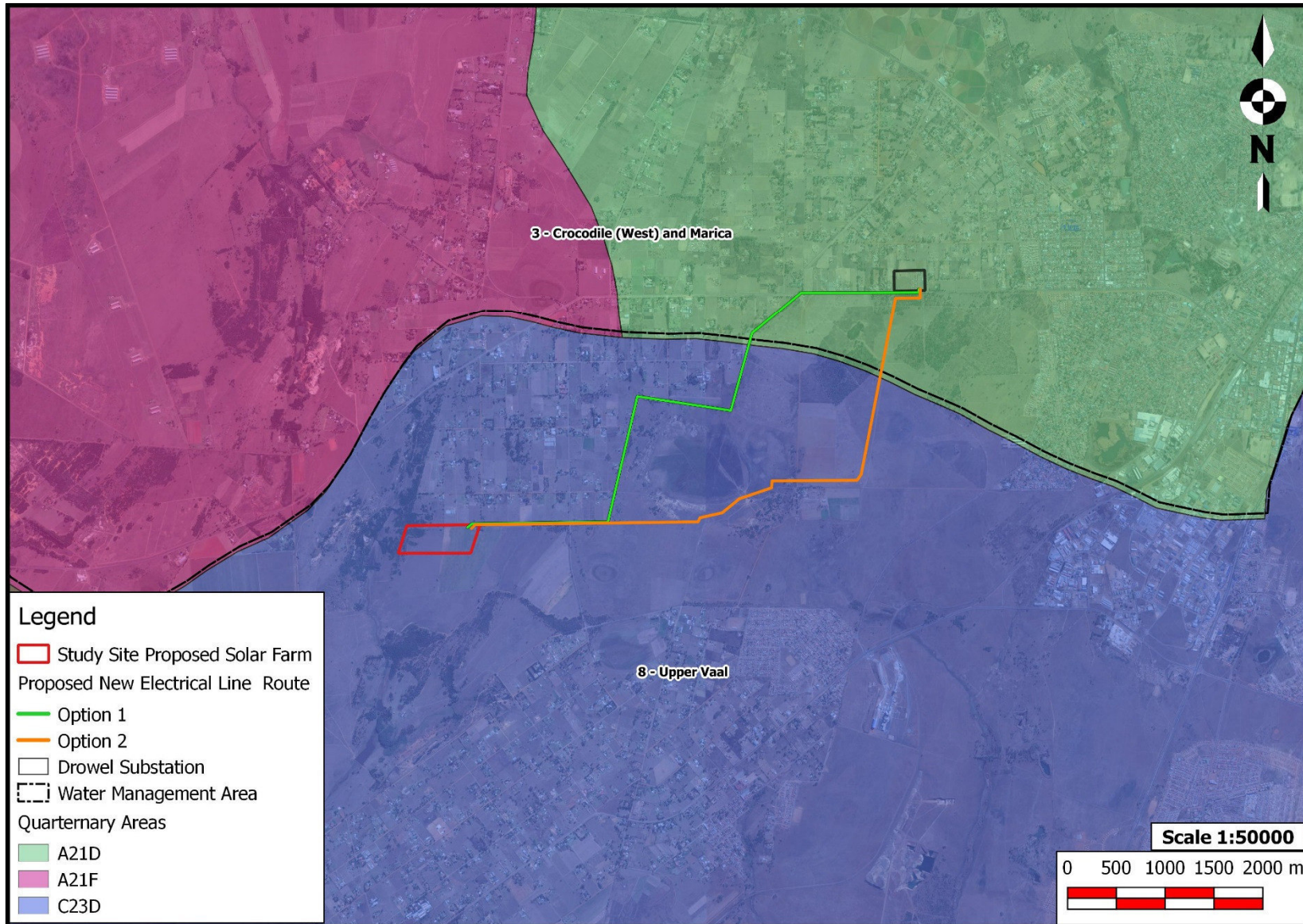
Wheatland Proposed Solar Farm

Environmental Management Zones



Wheatland Proposed Solar Farm

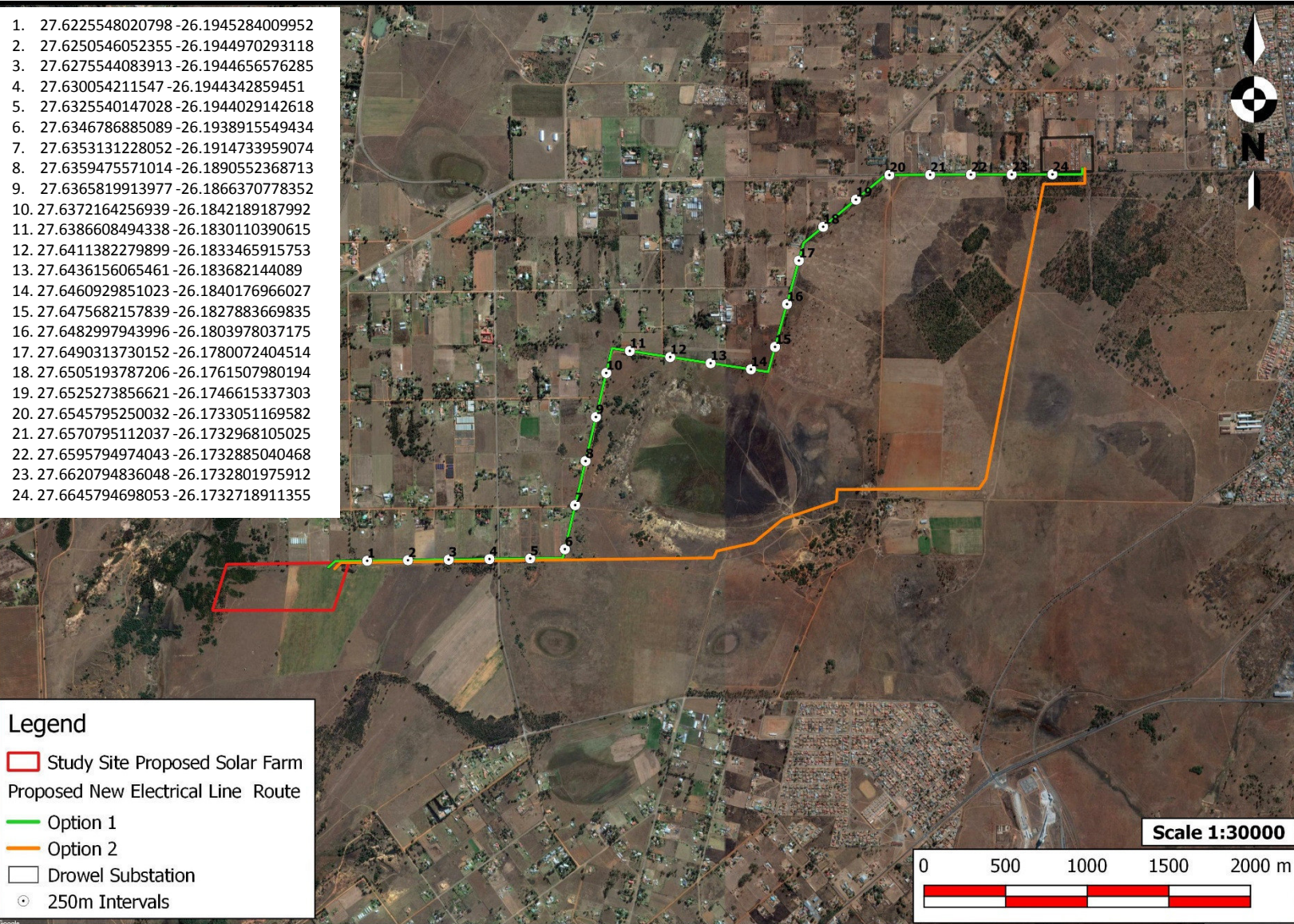
Water Management Areas



Wheatland Proposed Solar Farm



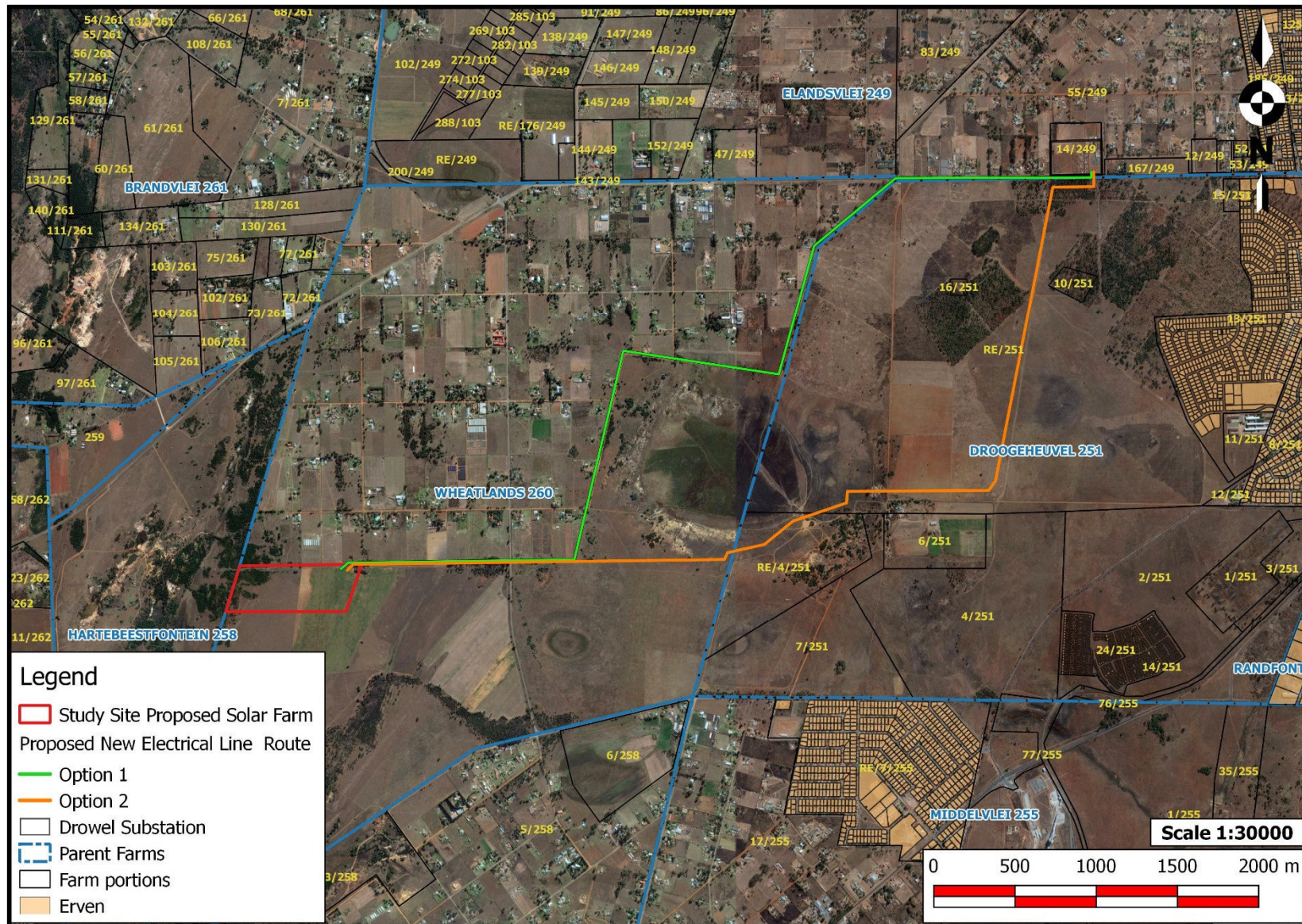
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2. 27.6250546052355 -26.1944970293118
3. 27.6275544083913 -26.1944656576285
4. 27.630054211547 -26.1944342859451
5. 27.6325540147028 -26.1944029142618
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24. 27.6645794698053 -26.1732718911355



Projection – Transverse Mercator
Datum - Hartbeeshoek 1994
Reference Ellipsoid –WGS 1984
Central Meridian -29

Wheatland Proposed Solar Farm

Affected Areas

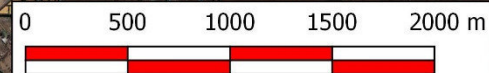


Legend

- Study Site Proposed Solar Farm
- Proposed New Electrical Line Route
- Option 1
- Option 2
- Drowel Substation
- Parent Farms
- Farm portions
- Erven

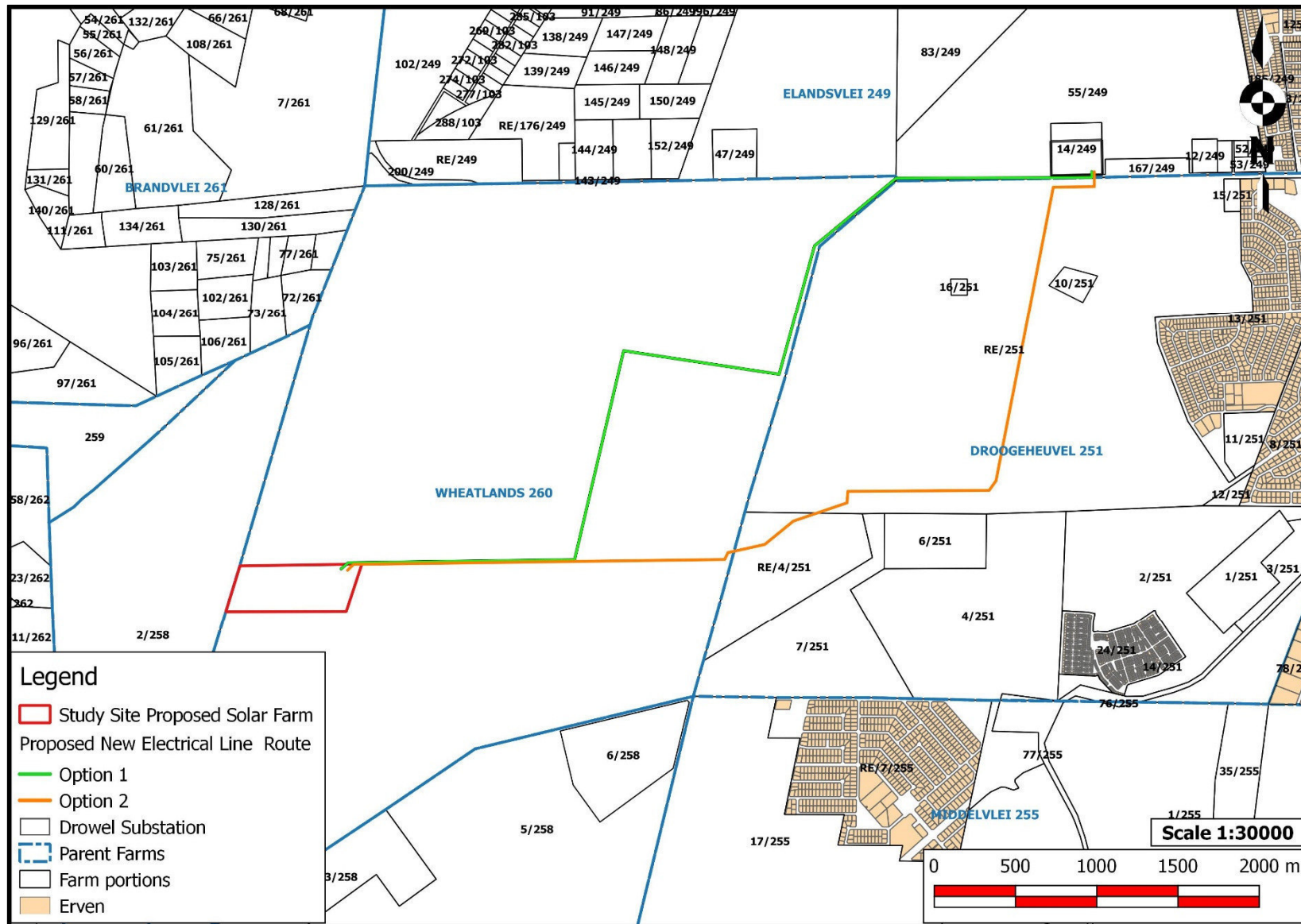
Projection – Transverse Mercator
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 Reference Ellipsoid – WGS 1984
 Central Meridian -29

Scale 1:30000



Wheatland Proposed Solar Farm

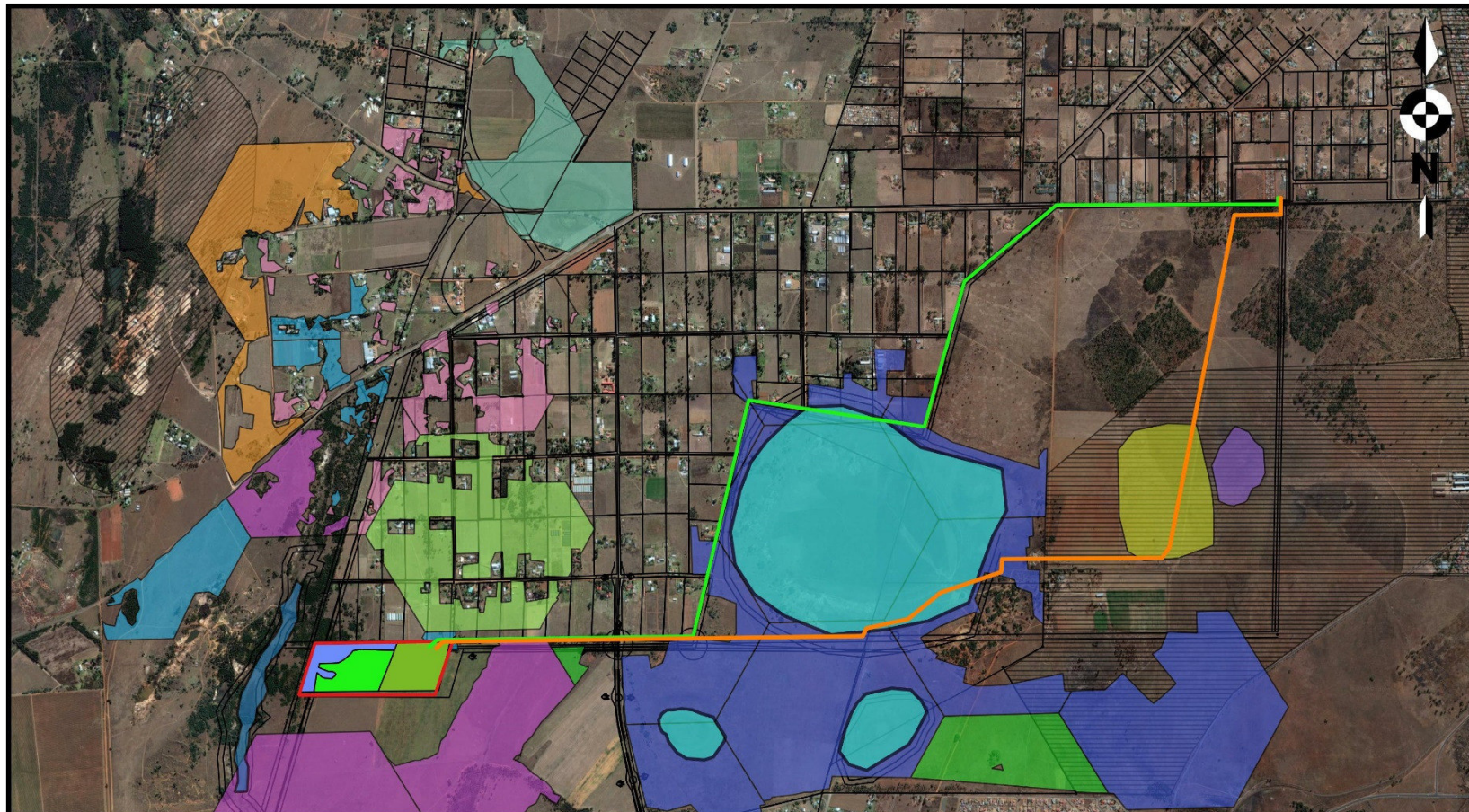
Affected Areas



Projection - Transverse Mercator
 Datum - Hartbeeshoek 1994
 Reference Ellipsoid - WGS 1984
 Central Meridian -29

Wheatland Proposed Solar Farm

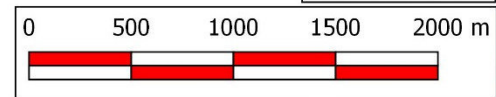
Sensitivity



Legend

- | | | |
|---|-------------------------------------|---|
| Study Site Proposed Solar Farm | Grassland | Bioclim zone, Pan cluster good qual, Prim veg |
| Proposed New Electrical Line Route | Valley Bottom Wetland | Bioclim zone, Prim veg |
| Option 1 | RIDGE | OL plant hab, Bioclim zone, Pan cluster good qual, Prim veg |
| Option 2 | URBAN EDGE | OL plant hab, Bioclim zone, Prim veg |
| Drowel Substation | Pan | OL plant hab, Prim veg |
| Transformed | C Plan | OL plant hab, RL bird hab, Bioclim zone, Prim veg |
| Disturbed Grassland | Bioclim zone | Pan cluster good qual |
| | Bioclim zone, Pan cluster good qual | RL bird hab, Bioclim zone, Prim veg |

Scale 1:30000



Projection – Transverse Mercator
 Datum- Hartebeeshoek 1994
 Reference Ellipsoid –WGS 1984
 Central Meridian -29

APPENDIX B

PHOTOGRAPHS

NOT AVAILABLE

APPENDIX C

CONCEPTUAL LAYOUT

APPENDIX C1

MOTIVATING MEMORANDUM

MOTIVATING MEMORANDUM

APPLICATION IN TERMS OF SECTION 35 OF THE RAND WEST CITY LOCAL MUNICIPALITY SPATIAL PLANNING AND LAND USE MANAGEMENT BY-LAW, 2017, READ IN CONJUNCTION WITH CLAUSE 7 OF THE PERI-URBAN AREAS TOWN PLANNING SCHEME, 1975:

TO OBTAIN COUNCIL'S SPECIAL CONSENT TO UTILIZE PART OF THE REMAINDER OF THE FARM WHEATLANDS 260 I.Q. FOR AN URBAN SOLAR FARM.

PREPARED BY : **HUNTER THERON INCORPORATED**
DATE : AUGUST 2017
REFERENCE : T1710-REP
CLIENT : SOLARRESERVE SA MANAGEMENT (PTY) LTD



Hunter Theron Inc
TOWNPLANNERS

Contact Person:
Lourens Toerien
Tel: (011) 472-1613
Fax: (011) 472 3454
E-mail: lourens@huntertheron.co.za

Address:
53 Conrad Street
Florida Hills, 1709
Johannesburg, Gauteng

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- ANNEXURE B** : Proposed Layout Plan - USF
- ANNEXURE C** : Electrical Services Outline Scheme Report
– Cintro Consulting Engineers
- ANNEXURE D** : Civil Services Outline Scheme Report
Kantey & Templer Consulting Engineers Pty
Ltd
- ANNEXURE E** : Special Power of Attorney & Company
Resolution – Solarreserve SA Management
(Pty) Ltd
- ANNEXURE F** : Title Deed T26802/1970
- ANNEXURE G** : Council Support letter dated 22 September
2016
- ANNEXURE H** : S.G. Diagrams (SG. No. A1369/1922,
A7625/1994 & A3099 / 1978
- ANNEXURE I** : Draft Lease Area Diagram - subject to
final Survey
- ANNEXURE J** : Electrical Route Alignment T1710 / 1
Servitude
- ANNEXURE K** : BAR – Bokamoso Environmental
Consultants
- ANNEXURE L** : Eskom Servitude A7625 / 1994
- ANNEXURE M** : Technical write up – USF Wheatlands
- ANNEXURE N** : Soil and Agricultural Potential Survey

1 INTRODUCTION

- 1.1 Application is herewith made in terms of Section 35 of the Rand West City Local Municipality Spatial Planning and Land Use Management By-laws, 2017, read in conjunction with Clause 7 of the Peri-Urban Areas Town Planning Scheme, 1975:
- To obtain Council's Special Consent to utilize Part of the Remainder of the farm Wheatlands 260 I.Q. (the site) for an Urban Solar Farm (USF);
 - Measuring approximately 20ha in extent.
- 1.2 The site falls within the jurisdiction of the Rand West City Local Municipality (RWCLM) and is zoned "Undetermined" in terms of the Peri-Urban Areas Town Planning Scheme, 1975.
- 1.3 Hunter Theron Inc. has been appointed by SOLARRESERVE SA MANAGEMENT (PTY) LTD, to apply for Council's Special Consent to utilize Part of the Remainder of the farm Wheatlands 260 I.Q. for an Urban Solar Farm.

2 BACKGROUND:

- 2.1 In August 2016 our firm submitted an enquiry to the RWCLM for in principle support for the USF project situated on a Part of the Remainder of the farm Wheatland 260 I.Q.
- 2.2 In September 2016 Council provided in principle support for the proposed USF subject to conditions, one being Environmental authorisation.
- 2.3 In line with the in principle support requirements the following technical studies / reports were conducted:
- Civil Engineering OSR;
 - Electrical OSR
 - Environmental reports / studies / requirements (in progress)
- 2.4 In addition to this application, the above-mentioned reports / studies / requirements are discussed in this report and are attached for ease of reference.
- 2.5 Application to the RWCLM **aims to comply with the requirements as mentioned in the "in principle support" dated September 2016**, in order to obtain Council's Special Consent for the proposed USF.
- 2.6 Therefore, upon submission of the application to the RWCLM the application will be circulated to the following parties for comments:
- All relevant interested and affected parties.
 - All internal and external departments
 - Relevant provincial and national departments.

- 2.7 Comments received from the above will have to be complied with and will be accommodated in the approval.

3 PURPOSE OF THE PROPOSED USF:

- 3.1 The purpose of the proposed USF is to provide additional electrical capacity to the Randfontein area in general.
- 3.2 The proposed USF will also provide electrical capacity to the approved mixed land use development Wheatlands, situated to the east (Wheatlands Extension 1 – 4) and future extensions.
- 3.3 Wheatlands Townships being part of the Gauteng Mega Projects, driven by the Department of Human Settlements.
- 3.4 The need for electrical capacity created by the Mega Project drives the need for alternative power sources – the proposed USF aims to supplement the supply of electrical capacity.
- 3.5 The proposed USF will connect to the most suitable substation, at the moment the identified substation is:
- Drowell substation – to the north east.
- 3.6 The USF is a private sector IPP renewables initiative that aims at unlocking development in municipalities constrained by electricity infrastructure.

4 GENERAL INFORMATION

4.1 Locality

- 4.1.1 The Remainder of the farm Wheatlands 260 I.Q. is situated south of the R41 Road (also known as Lazar Avenue), west of Main Reef Road and north of Main Road.
- 4.1.2 Furthermore, the Remainder of the farm Wheatlands 260 I.Q. is located south of Road No 3 and north and adjacent to King Road in the Wheatlands area.
- 4.1.3 The proposed USF is situated in the most north-western extent of the Remainder of the Farm Wheatlands 260 I.Q. west of Road 6 / D2309 and east and adjacent to the proposed PWV 1 Road delineation, within the Wheatland's area.

➤ *See Annexure A – Locality plan*

4.2 Property Description

4.2.1 According to the Deed of Transfer No. T26802/1970, the property is described as:

- Remainder of the farm Wheatlands 260 I.Q.

➤ *See Annexure F – Title Deed No. T26802/1970*

4.3 Ownership

4.3.1 The property is registered in the name of INLAND PRODUCE & MARKETING COMPANY PTY LTD.

- Maximum One Property Group entered into a Sale Agreement with Inland Produce & Marketing Company Pty Ltd– as part of the greater Wheatlands mixed land use development situated on the Remainder of the farm Wheatlands 260 I.Q.;
- Subsequently, Maximum One Property Group, by virtue of the abovementioned sales agreement, entered into a long-term lease agreement with Solarreserve SA Management (Pty) Ltd;
- Hunter Theron Inc. was subsequently appointed by Solarreserve SA Management Pty Ltd for the submission of the Special Consent Application to the RWCLM.

➤ *See Annexure F – Title Deed No. T26802/1970*

➤ *See Annexure E – Special Power of Attorney & Company Resolution*

4.4 Size

4.4.1 The Remainder of the farm Wheatlands 260 IQ measures 529.6622 ha in extent.

4.4.2 The proposed size for the USF measures 19, 9773 ha in extent.

➤ *See Annexure H – S.G. Diagram A1369/1922 & A7625/1994*

➤ *See Annexure I – Draft Lease Agreement Diagram*

4.5 Existing Zoning

4.5.1 In terms of the Peri-Urban Areas Town Planning Scheme, 1975, the site is currently zoned:

Use Zone	:	“Undetermined”
Primary Uses	:	As per Scheme
Secondary Uses	:	As per Scheme
Height	:	As per Scheme
Parking	:	As per Scheme

4.5.2 The above mentioned has been confirmed by the RWCLM.

➤ *See Annexure G – Council support letter dated 22 September 2016*

4.6 Condition of Title and Bond Details

4.6.1 There are no restrictive conditions contained in the relevant Deed of Transfer prohibiting the proposed Special Consent for an USF on the site.

4.6.2 The site is not subject to a bond.

➤ See Annexure F – Deed of Transfer No. T26802/1970

4.7 Existing Land Use

4.7.1 The Remainder of the farm Wheatlands is undeveloped farm land.

4.7.2 The proposed USF site – located in the north-western corner of the Remainder of the farm Wheatlands 260 I.Q. - is as such also vacant.

➤ See Annexure A - Locality plan

5 POLICY GUIDELINES:

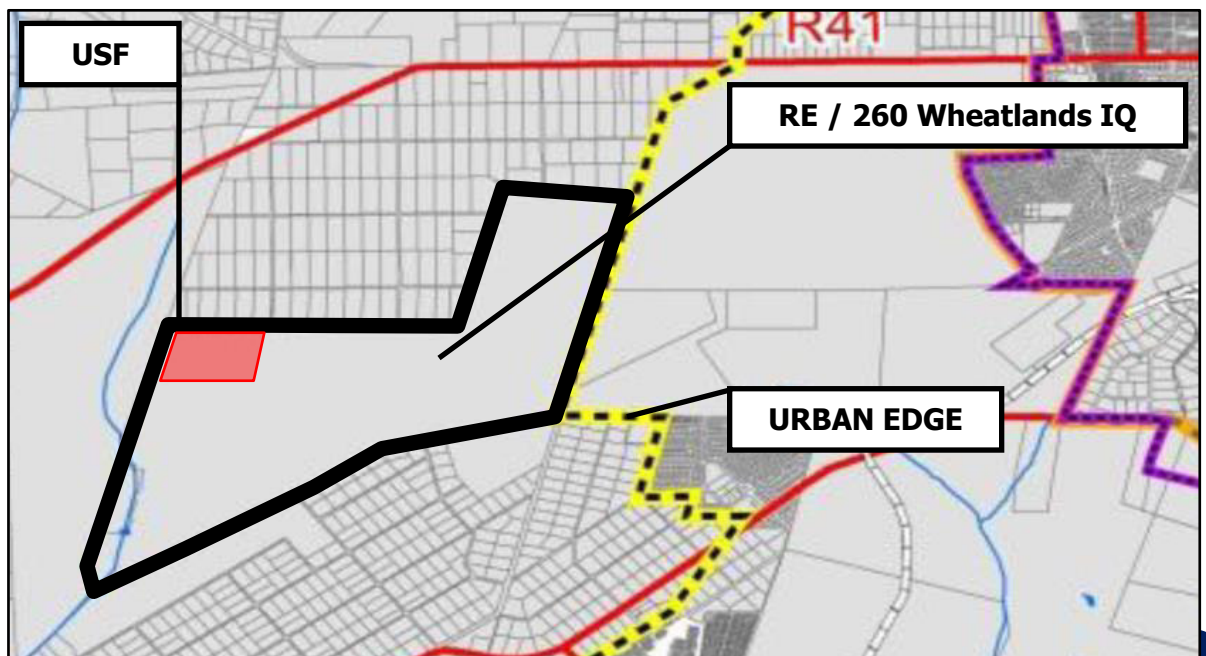
5.1 The Remainder of the farm Wheatlands 260 I.Q. and as a result the proposed location for the USF falls within the jurisdiction of the RWCLM.

5.2 In terms of the RWCLM the approved Randfontein SDF 2013, the Remainder of Wheatlands 260 I.Q. falls outside of the Urban Edge.

5.3 The area is earmarked for "Prime Agricultural Purposes".

5.4 Figure 1 below indicates the Remainder of the farm Wheatlands 260 I.Q. location in relation to the urban edge.

Figure 1: Urban Edge.



- 5.5 Although the proposed USF falls outside the Urban Edge and is earmarked for "Agricultural" land, Council has provided in principle support for the USF.
- 5.6 Provided that we comply with the requirements as stipulated in the "in principle support" obtained for the USF, Council will support the proposed land use, outside of the Urban Edge.
- 5.7 The proposed activity is thus, per implication, in line with Council Policy.
- *See Annexure G – Council support letter dated 22 September 2016*

6 PRIME AGRICULTURAL LAND:

- 6.1 Although the Remainder of the farm Wheatlands 260 and the proposed location of the USF is indicated and earmarked for "Agricultural purposes, the following must be pointed out:
- The Soil and Agricultural Potential Survey conducted by Terrasoil found that area has low agricultural potential and that only be increased by irrigation;
 - Alternative land uses (such as an USF) will be more beneficial.
- 6.2 Furthermore, our firm is attending to the application in terms Section 3 (f) of the Subdivision of Agricultural Land Act, 1970 (Act 70 of 1970) for consent for development of the Remainder of the farm Wheatlands 260 IQ – seeing that the land forms part of the Mega Project backed by the Department of Human Settlements.
- *See Annexure N Soil and Agricultural Potential Survey*

7 THE APPLICATION

- 7.1 Application is herewith made in terms of Section 35 of the Rand West City Local Municipality Spatial Planning and Land Use Management By-laws, 2017, read in conjunction with Clause 7 of the Peri-Urban Areas Town Planning Scheme, 1975:
- To obtain Council's Special Consent to utilize Part of the Remainder of the farm Wheatlands 260 I.Q. (the site) for an Urban Solar Farm (USF).
- 7.2 Notification of the application will be given in the following manner:
- Advertised in the Star once in English;
 - Circulation to the surrounding land owners and consent from the surrounding land owners;
 - On site notification for a period of not less than 14 days;
 - Site notice to be displayed from the date of publication in the Star.
 - Proof of same will be submitted to council.

8 PROPOSED DEVELOPMENT CONTROLS:

8.1 The proposed development controls for the USF are as follows:

Zoning	:	"Undetermined"
FAR	:	As permitted by Council upon submission of a Site Development Plan
Coverage	:	As permitted by Council upon submission of a Site Development Plan
Height	:	As permitted by Council upon submission of a Site Development Plan
Parking	:	As permitted by Council upon submission of a Site Development Plan
Building lines	:	20m along the proposed PWV 1 Road All other boundaries – As permitted by Council upon submission of a Site Development Plan
Parking	:	As permitted by Council upon submission of a Site Development Plan.

General Conditions:

1. A Site Development Plan will be submitted to the RWCLM for approval.

9 ACCESS:

- 9.1 Access to the farm Wheatlands is currently from Road 6 / D2309 which traverses the site in a north south direction and King Road situated along the southern boundary of the site.
- 9.2 The proposed USF site has no direct access.
- 9.3 Road 5, to the north of the site, has been permanently closed, as shown on SG Diagram No. A3099 / 1978.
- 9.4 The proposed USF is inter alia surrounded by the following roads:
 - Road 6 / D2309 – to the east;
 - PWV 1 Road Delineation – the west.
- 9.5 Access to the USF site is proposed via Road 6 / D2309, located to the east of the site by way of:

- A temporary entitlement / R.O.W. in favour of Solarreserve SA Management (Pty) Ltd to be registered over the Remainder of the farm Wheatlands 260 I.Q.;
- Permanent access to be obtained via internal streets in the future Wheatlands Townships – as and when proclaimed;

9.6 Preliminary road alignments obtained from Mariteng Engineering Consultants indicate that the proposed PWV 1 route is situated along the western boundary of the farm same encroaches the site by approximately 60 metres:

- Same will be excluded from the development;
- A 20m building line will be applicable;
- A line of no access will be applicable along the boundary of the PWV 1 route (north to south direction).

9.7 Due to the preliminary PWV 1 Road alignment, this application will be circulated to Gautrans for comments, as per the requirements.

- See Annexure J – Electrical Route Alignment T1701 / 1 / Servitude
- See Annexure L – Eskom Servitude A7625 / 1994
- See Annexure H – S.G. Diagrams (SG. No. A1369/1922, A7625/1994 & A3099 / 1978

10 DRAFT USF DESIGN AND LAYOUT

10.1 Figure 1 below illustrated the proposed layout of the USF – subject to submission of a Site Development Plan to Council.

Figure 1: Proposed / typical USF layout.



11 LEASE AGREEMENT:

11.1 Solarreserve SA Management (Pty) Ltd entered into a long term notarial deed of lease with Maximum One Property Group.

- Same was concluded by virtue of a sales agreement entered into between, the registered owner of the Remainder of the farm Wheatlands 260 I.Q, Inland Produce & Marketing Company Pty Ltd and Maximum One Property Group.

11.2 In accordance with the lease agreements, the Draft Lease Area was surveyed, measuring **19,9973 ha** in extent:

- Same will be registered in the Surveyor Generals Office;
- Notarial lease to be registered in the Deeds Office.

➤ *See Annexure I – Draft Lease Agreement Area.*

12 THE URBAN SOLAR FARM DEVELOPMENT PROPOSAL:

12.1 The proposed USF includes:

- Several arrays photovoltaic solar panels with a generating capacity of approximately 10MW, appropriate mounting structures, cabling between the projects components (to be laid underground where practical).
- A new on-site sub-station, inverter blocks, internal access roads (gravel) and fencing.

12.2 The generated capacity of renewable energy will service the proposed future Wheatlands residential development and the larger Randfontein area.

12.3 The developer of the Township Wheatlands and the developer of the USF are also currently in negotiations with the RWCLM regarding same.

13 POLICY DOCUMENTS:

13.1 IDP 2016:

- In terms of the IDP, the RWCLM has identified the following key factors:
 - Integrating District Governance to achieve a better life for all;
 - To provide an integrated and excellent developmental district governance system in the West Rand;
 - High unemployment rates needs to be addressed – possibly through public / private partnerships;
 - Develop local economies;
 - Provide an inclusive society – who can partake in the economy.

13.2 The SDF:

- Objectives of the SDF include:
 - A policy for the overall spatial distribution of development;
 - A framework for more detailed land use planning;
 - A spatial development framework, which includes an overview of current realities, spatial plans, as well as spatial development;
 - Policy used for the prioritization and roll out of infrastructure, future projects and development of the Randfontein Local Municipality;
 - Consideration of the impact of the provincial, district and neighbouring municipal SDF's;
 - Integration with the recommendations of the IDP process;
 - Public and stakeholder consultation and participation;
 - Clear implementation and follow up systems in place;
 - Determine the expansion and direction of the Randfontein urban edge;
 - Be based on vacant land analysis and land use budget to allocate sufficient land for housing, industry business and social development.

13.3 In light of the above mentioned the need and desirability for the proposed USF must be discussed.

14 NEED & DESIRABILITY:

14.1 Need and Desirability relate to:

- Background:
 - The bulk of South Africa's power is generated by coal fired power stations with a number under construction to meet the ever increasing demand for power;
 - This makes coal South Africa's primary energy resource. Beyond the fact that coal is not a renewable resource the burning of coal for the generation of electricity also has a very negative impact on the environment from the point of view that vast amounts of CO₂ and SO₂ is being released into the atmosphere;
 - The main contributing sources of SO₂ in the province include the industrial, commercial and institutional sources (31%), electricity generation (30%), vehicle emissions (21%) and domestic fuel burning (18%) (EMF 2014, 33);
 - This is contributing to the ever growing concern of the greenhouse effect and global warming;
 - The proposed PV facility can decrease the reliance of wood and coal burning as a form of energy to meet requirements of households that do not have access to electricity should the municipality act as an off-taker of the electricity (EMF 2014, page 55);

- According to the Intergovernmental Panel on Climate Change (IPCC), who has predicted that by 2050, "climate change in Southern Africa could result in a 1°C to 3°C increase in mean temperatures and a 5-10% decrease in rainfall over the summer rainfall region (EMF 2014, 22). Furthermore these changes will have a wide array of impacts on the social, economic and natural environment in Gauteng;
- South Africa is a signatory to the United Nations Framework Convention on Climate Change committing to the stabilization of atmospheric greenhouse gas concentrations at a level that would prevent dangerous anthropogenic interference with the climate system. With this commitment in place and the ever growing need for power, South Africa is urged to expand its generation capacity through the development and utilisation of alternative resources, which are renewable and more environmentally sustainable (Solarreserve , 2014);
- South Africa's climate is ideal with regards to solar resources, with a broad time band of sunlight and a high level of energy delivered by area of land. Utilising this solar resource in combination with the proposed USF (with storage) makes it an ideal system in the generation of renewable energy. The proposed PV facility can contribute to the decrease in the release of such emissions as a clean form of energy while electrifying surrounding areas. (EMF 2014, page 22);
- The Proposed USF Project is designed to meet the increasing demand for clean, renewable electrical power in South Africa – not only on a National scale but also for the smaller off-takers. The multiple benefits associated with developing renewable energy infrastructure have been recognized by both local regional and National policy-makers. "Renewable energy can potentially improve energy security by reducing the reliance on imported fuels and they help diversify the power mix, they are also critical technologies to help provide access to remote communities." (DOE's Annual Performance Plan 2016/2017, Page 15);
- Development of solar resources reduces reliance on foreign sources of fuel, promotes national energy security, diversifies energy portfolios and contributes to the reduction of greenhouse gas emissions at the same time creating a large number of jobs within a new industry while at the same time raising the core knowledge bases of the country (Solarreserve , 2014);
- As stated in DOE's Annual Performance Plan 2016/2017 (Page 17), "Solar PV is much more competitive in off-grid or mini-grid applications, where the main alternative at present is generation fuelled by diesel or gasoline";
- In addition, Priority 1 of the IDP aims to "promote economic development and attract investment towards achieving 5% economic growth in COJ" (IDP, 2017), which can be accomplished by this project, through investment in infrastructure, more specifically strategic infrastructure. Electricity is key to attracting investment, as well as to foster and stimulate a climate where investment can grow. This plays reference to

Priority 7 and Priority 9 of the IDP, 2017, which aims to “enhance our financial sustainability” and “preserve our resources for future generations” respectively;

- Social benefits:
 - Contribute towards the R20 billion investment to be facilitated within the Gauteng region (IDP 2017);
 - Enhance service delivery by contributing towards meeting the current energy demand by contributing towards alleviating the 18% electricity losses in Gauteng (IDP 2017);
 - The project will allow for spatial connectivity and integration by establishing the ability for the area to support a wide range of urban users and operators, through the distribution of clean energy;
 - Improve infrastructure through the development of cleaner energy;
 - This green project will contribute towards transforming and re-industrialising Gauteng’s economy by ensuring there is a shared agenda for the public and private sector through the reduction of societies dependence on unsustainable energy sources (GEIP 2015-2020);
 - The project will contribute towards developing a Generative City which will focus on investment towards achieving positive social, economic and environmental returns on investment, spurring economic growth and job creation by enhancing the public space and promoting sustainability;
 - As part of the DoE Integrated Resource Plan for Electricity 2010-2030 this project will increase energy efficient infrastructure which will contribute towards the expansion of renewable energy sector in the country by aiding in the reduction of GHG emissions and control the use of valuable water resources for energy production (GEIP 2015-2020, 52.

- Local community benefits:
 - In line with the IDP KPI’s 2017 this project will allow the RWCLM to achieve its goals of creating a culture of enhanced service delivery as well as creating a city that responds to the needs of its residents. This project will benefit the local community by:
 - Providing cleaning renewable energy to the surrounding residential and industrial / commercial community
 - Procurement from local manufacturers and suppliers will promote the development of secondary industries;
 - Retaining local businesses that seek access to affordable sustainable electricity;
 - Creating employment opportunities (temporary and permanent) and skills development of those employed during the life of the project, both directly and peripheral;
 - Community upliftment with improved health and safety in the near vicinity;

- This project will ensure high productivity and quality of life through higher levels of equity and social inclusions during all aspect of the projects development and during operation phase of the project;
- Economics:
 - Economic growth depends to a large extent on the availability of electricity, in modern times the need for renewable energy has increase dramatically as local and international trends are moving away from non-renewable / harmful energy sources;
 - Furthermore, due to generating issues Eskom cannot keep up with current or future demands for electricity;
 - South Africa has also seen price increases over the last few years, these price increases are also forested to continue, to keep up with demand and maintenance.

14.2 In addition to Eskom being the main provider of electricity, the supply of electricity must be supplemented by other means, renewable energy and especially solar energy in South Africa can be seen as a pre-requisite for future economic growth.

- Solar farming (

- It does not require any capital investments from the Munic or any commitments from Randfontein municipality to buy electricity from the IPP.
- It will be located in an area where the municipal grid infrastructure is constrained and therefore a privately funded USF in such location will effectively mean a capex deferral for the municipality.
- It could help the Municipality to retain business within its municipal boundaries by providing clients with an alternative power supply with known tariff increases which will enhance investor confidence and encourage business growth.
- It could unlock development, provide for the gentrification of unusable land and promote influx of investment within municipal boundaries.
- The USF initiative promotes a green economy that is in line with the Integrated Development Plan of larger municipalities, e.g. COJ as well as the Gauteng Vision 2055 Economic Development white paper.

- Renewable energy source (

but through the development and utilisation of alternative resources, which are renewable and more environmentally sustainable (Solarreserve , 2014);

- South Africa's climate is ideal with regards to solar resources, with a broad time band of sunlight and a high level of energy delivered by area of land. Utilising this solar resource in combination with photovoltaic technology makes it an ideal system in the generation of renewable energy. Further to its environmental attributes, the project will contribute much needed on-peak power to the electrical grid serving the region. The additional demand for power continues to grow in other regions as older technology fossil fuel plants reach the end of their shelf lives (Solarreserve , 2014).

14.3 The need and desirability for additional electrical supply has been indicated above.

14.4 The Special Consent Application aims to obtain the land use rights required to construct the USF and in doing so will contribute to the alleviation of the demand for electricity for the area in general and is generally in line with the relevant policy documents.

15 ELECTRICAL ROUTE ALIGNMENT:

15.1 Electrical connections identified:

- Drowell substation located to the north east of the site has been identified as the most suitable station;

15.2 Electrical Route Alignment:

15.2.1 The proposed Electrical Route Alignment measures approximately 6,34km – connecting to the Drowell substation.

15.2.2 The proposed route affects the following properties and roads:

- Running over parts of the Remainder of the farm Wheatlands 260 I.Q.;
- Alongside existing Powerline Servitudes;
- Within Road Reserves 7, 8 & R41.

15.2.3 Required servitudes / wayleaves to be undertaken:

- Servitudes will be required over RE of the farm Wheatlands as indicated in Annexure J;
- Wayleaves will be required at the crossing of the proposed servitude of:
 - Road D2309 / Road 6;
 - And existing Powerline servitudes as indicated on Annexure J;

➤ *See Annexure J – Electrical Route Alignment T1701 / 1 / Servitude*

➤ See Annexure L – Eskom Servitude A7625 / 1994

Table 1: Technical detail of the proposed Urban Solar Farm

Component	Description/Dimensions
Extent of the proposed development footprint	19, 9773 ha
Extent of site available for development	529.6622 ha (Remainder of the farm Wheatlands 260 I.Q) The proposed USF will be located on a part of the Remainder of the farm Wheatlands 260 IQ – measuring 19,9973 ha
Site access	Site has no direct access. Access arrangements to be made to provide access via Road 6 / D2309.
Generating capacity	9.32MWp AC, 9.98MWp DC
Proposed technology	The proposed PV Power plant utilises technology which produces energy by directly converting solar irradiation into electricity. Power is generated by the solar cells (PV elements) as long as they are exposed to sunlight. PV plant will consist of ground-mounted photovoltaic panels utilising static or tracking technology.
Cabling	Cabling between the projects components is to be laid underground between 2 – 4 meters deep where practical. May also make use of overhead powerlines.
Panel Spec (installed capacity)	320Wp
Panel Dimensions	1m x 2m x 45mm
Number of Panels	Circa 31200
Number of inverters	In this regard, approximately 10 × 500kW central inverters, two (2) per power block, may be required. The inverters may be installed outdoors on concrete pads and under sunshades, or the inverters may be placed in a prefabricated container that will keep the inverter in a climate controlled environment.
Main Transformer capacity	Varies according to detailed design and client requirement, 2 x 10MVA transformation capacity is typical.
Final Height of installed panels	The panels will be mounted on metal frames, the panels will

from ground level	reach a height of approximately 2.36m above ground, supported by rammed, concrete or screw pile foundations and will face north in order to capture the optimum amount of sunlight.
Width and length of internal roads	Width: 4,5m Length: ± 2000m
Construction camp & laydown area	A temporary contractor's site office facility is proposed for the duration of the PV plant construction period. It is proposed that temporary/portable office, ablution and portable toilet be procured from external service providers.
Substation	The construction of a new project substation may be required to facilitate the network integration and the control systems. In this regard, the new substation is expected to require an area of 250m ² and would typically consist of a 40ft specialised container which would house the control room, electrical operations and maintenance facility, external 11 kV transformers and electrical switchgear and would be fenced for security and safety. The final design of the electrical substation will be conducted once the power generation capacity is firmed up. This will influence the number and size of the transformers to be used. Medium and low voltage reticulation may be installed to power the PV plant, equipment and facilities.
Power line connection	Grid connection application with RWCLM in progress. Application to connect to the Drowel substation has been proposed and application submitted.
Mounting Structure	The panels will be mounted on metal frames with a height of approximately 2.36m above ground, supported by rammed, concrete or screw pile foundations and will face north in order to capture the optimum amount of sunlight.
Services required	Sewage and Refuse removal – All sewage and refuse material generated during the establishment of the proposed site will be collected by a contractor and is to be disposed of at a licensed waste disposal site. Sewage to be dealt with via a septic tank. Water and Electricity – Approximately 60KVA of power may be required during the construction phase of the project. The power will be provided by generators as part of the contractor's conditions. The necessary application for connection to the grid will be submitted to Randfontein

	<p>Municipality for approval. Diesel generators may also be required during certain periods of the construction phase. Water will be required during the construction phase for general building activities, washing of equipment, dust suppression as well as staff use (portable water). Due to the location of the site the proposed project will utilize and develop its own water provision services based on the fact that these services do not reach the project site.</p>
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16 TECHNICAL STUDIES:

16.1 In line with the in principle support obtained from the council the following studies are required and / or is in process:

- Civil Engineering OSR;
- Environmental reports / studies / requirements;
- Electrical OSR.

16.1.1 **Kantey & Templer Consulting Engineers were appointed to complete the OSR.**

16.1.2 **WATER:**

- There is currently no municipal water available on the boundary of the site and it is not planned to provide municipal water to the site. Water will be stored on site in a water tank as and when required for the operation of the solar farm;
- No external water upgrades are required;

16.1.3 **SEWER:**

- There are no municipal sewer connection points in the vicinity of the site;
- It is proposed to utilise a small conservancy tank that will be emptied as and when required;
- No external sewer upgrades are required;
- In future sewer connections may form part of the Wheatlands Townships developments.

16.1.4 **SOLID WASTE REMOVAL:**

- On completion of construction waste generation will be minimal and a wheelie-bin will be provided which will be emptied by the operator of the solar farm as and when required;
- Solid waste to be disposed of to the Randfontein land fill located east of the site (approximalty 14 km from the site).

16.1.5 **STORMWATER:**

- As the site will remain largely undisturbed apart from a small area for offices and equipment the increase in stormwater runoff will be minimal;
- It is proposed to provide some swales and berms to reduce run off from the site. These swales and berms will be located at strategic points on the site on completion of the final site plan;
- Stormwater Management Plan being compiled.

16.1.6 **ROADS:**

- Access is proposed from Road 6 / D2309 – traversing the site in a north south direction - situated east of the site;
 - Temporary entitlement / ROW in favour of Solarreserve SA Pty Ltd to be registered over RE of the farm Wheatlands 260 IQ;
 - Permanent access to be obtained via internal streets in the future Wheatlands Townships – as and when proclaimed;
- The proposed PWV 1 route is located west and adjacent to the proposed USF, same will be excluded from the development:
- A line of no access to be applicable along the PWV 1 Road alignment.

16.1.7 **WATER DEMAND:**

- **Construction Phase:**
 - The largest demand for water will be during the construction phase of the solar farm. It is anticipated that water will be supplied to the site via water tankers and demand is not anticipated to exceed 5000 to 10000l per day during the construction phase.
- **Operational Phase:**
 - Once the solar farm is operational water demand will reduce significantly and will only be required to support a handful of staff (Max 10 persons) and will be used for the following purposes:
 - PV panel cleaning;
 - Service water for maintenance;;
 - potable use and ablutions;
 - Dust suppression (mostly during construction);
 - Irrigation during rehabilitation; and;
 - Fire protection water.

- The annual water demand for the development is not anticipated to exceed 1000 m3. The average daily demand is therefore not expected to exceed approximately 500l/day based on 10 persons at 50l per day and on occasion higher demand of up to 3000l/day when wash down of the solar panels occurs and general maintenance work is required.

16.1.8 **COST ESTIMATE: BULK CONTRIBUTIONS**

- As no municipal services will be provided to the site it is not expected that any bulk contributions in respects of water and sewer or roads and stormwater will be required.

16.2 **Environmental reports / studies / requirements:**

16.2.1 Bokomoso Environmental consultants are appointed to attend the environmental requirements, which consists of compiling a Basic Assessment Report and undergoing specialist studies – as part of the process of complying with the in principle support.

16.2.2

- *See Annexure K – BAR by Bokomoso Environmental Consultants*

16.2.3 In terms of the in principle support obtained from the council in September 2016 any possible environmental impact of the proposed USF must be investigated.

16.2.4 All environmental requirements in terms of the National Environmental Management Act, 1998 (Act 107 of 1998), as amended 2014.

16.2.5 The following reports have been submitted / are in progress:

- Basis Assessment Report;
- Environmental Screening Report;
- Specialist reports:
 - Vegetation survey;
 - Heritage Impact assessment;
 - Wetland report;
 - Avifauna Assessment;
 - Agricultural Potential Report.

16.2.6 The outcome of the Environmental processes will be submitted to the council in addition to the Special Consent Use Application – forming part of the approval.

16.3 **Electrical OSR:**

16.3.1 Cintro Consulting Engineers CC are appointed to complete the EOSR.

16.3.2 **SUPPLY AUTHORITY**

- The proposed development falls within the Licensed Area of Supply of Randfontein Local Municipality.

16.3.3 **PV SUPPLY CAPACITY:**

- The bulk supply capacity generated by the Wheatlands PV plant is 9.3MW AC at 11kV.

16.3.4 **EXISTING INFRASTRUCTURE:**

- Currently the Randfontein LM has a total of six intake substations from Eskom, namely Drowell, Industries, Middelvei / Lafarge, Mohlakeng, Randfontein Munic and Westergloor;
- The idea is to export the bulk supply capacity generated by the Wheatlands PV plant to one of these substations and from there the capacity can be used within that substations local distribution network;
- At this stage it is not anticipated that this capacity will be exported to Eskom as there is no such agreement between Randfontein LM and Eskom;
- Negotiations are underway in for electrical supply to one of the substations (Drowell identified).

16.3.5 **REQUIRED BULK CONNECTION POINT:**

- The bulk connection point required for the Wheatlands PV plant is 60kVA, three phase. This is for auxiliary power requirements at night;
- Based on the layout plans of the holdings to the North of the proposed Wheatlands PV site, there is as thoroughfare between Holding 132 and Holding 133;
- Proposed new infrastructure to be constructed to connect the proposed USF to a substation to be constructed once an agreement is made with the RWCLM.

16.3.6 **BULK CONTRIBUTIONS:**

- In terms of the current Rand In terms of the current Randfontein LM tariff policy, bulk contributions of R 2000.22/kVA (inclusive of VAT) is applicable to new customers;
- As the Wheatlands PV project will export electricity to the Randfontein LM, thus no bulk contributions will be payable.

16.3.7 RECOMMENDATION:

- That the Randfontein LM be formally approached in terms of a possible Wheeling Agreement i.e. use of system agreement as this has never been implemented and as such there is no current methodology or draft agreement that can be used;
- That a formal application for the connection point be forwarded to the Randfontein LM to firm up on the connection cost payable;
- Consent / wayleave to be obtained from Eskom where necessary.

17 THE SPATIAL PLANNING AND LAND USE MANAGEMENT ACT, 2013 (ACT 16 OF 2013) -SPLUMA

This application must be motivated and considered in terms of:

- Development principles; and
- Compliance with Spatial Development Frameworks.

17.1 Development principles:

17.1.1 The following development principles should be considered in terms of Chapter 2 of SPLUMA.

(a) THE PRINCIPLE OF SPATIAL JUSTICE, WHEREBY:

(i) Past spatial and other development imbalances must be redressed through improved access to and use of land:

- The development proposal for the USF should be seen in addition to the Wheatlands mixed used development approved by council;
- The need for electricity that will be created by the Wheatlands mixed land use development project necessitates provision of additional electrical capacity;
- Employment-(skilled, semi-skilled and unskilled) opportunities will be created during– and post construction.

(b) THE PRINCIPLE OF SPATIAL SUSTAINABILITY, WHEREBY SPATIAL PLANNING AND LAND USE MANAGEMENT SYSTEMS MUST:

(i) Promote land development that is within the fiscal, institutional and administrative means of the Republic:

- The application for council's Special Consent as discussed above complies with the fiscal, institutional and administrative means of the Republic and the Council.

(ii) Ensure that special consideration is given to the protection of prime and unique agricultural land:

- The site is zoned "Undetermined" and earmarked for agricultural purposes;
- Comments from the DAFF will be obtained as part of the process – seeing that the farm Wheatlands is subject to development in the near future.

(vi) Promote land development in locations that are sustainable and limit urban sprawl;

- The project, including the Wheatlands mixed land use development will be incorporated in the Randfontein Town Planning Scheme.

(vii) Result in communities that are viable:

- The development as envisaged, is a development to integrate into the greater area;
- The proposed development on the site will contribute to the mixed land use typology prevalent in Randfontein.

(c) THE PRINCIPLE OF EFFICIENCY, WHEREBY:

(i) Land development optimizes the use of existing resources and infrastructure;

- The proposed USF will contribute to the electrical capacity by making use of renewable energy;
- Existing infrastructure will be optimized without adding additional strain on the system.

(ii) Decision-making procedures are designed to minimize negative financial, social, economic or environmental impacts;

- All environmental requirements will be adhered to and will comply with all relevant Acts;
- Any possible negative impacts will be mitigated.

(e) THE PRINCIPLE OF GOOD ADMINISTRATION, WHEREBY:

(i) All spheres of government ensure an integrated approach to land use and land development that is guided by the spatial planning and land use management systems as embodied in SPLUMA;

- The application will be circulated to various government departments for comments.

(iv) The preparation and amendment of spatial plans, policies, land use schemes as well as procedures for development applications include transparent processes of public participation that afford all parties the opportunity to provide inputs on matters affecting them;

- The application will be advertised in a local newspaper as prescribed;
- A site notice will be placed on site, ensuring optimal public participation in line with all requirements.

The application is thus generally in line with the principles of SPLUMA.

17.2 Compliance with Spatial Development Frameworks:

17.2.1 In terms of Section 52 of SPLUMA any development must be considered with

regard to compliance with:

- National Spatial Development Frameworks;
- Provincial Spatial Development Frameworks; and
- Municipal Spatial Development Frameworks.

17.3 **National, Provincial and Municipal:**

17.3.1 The Gauteng Spatial Development Framework 2011 forms the basis around which the SDF is developed, therefore the SDF of the RWCLM gives effect to:

- The policies and principles as laid down in the:
 - National Spatial Development Perspective (NSDP), e.g.:
 - Principle 1 : Rapid, inclusive economic growth and poverty alleviation;
 - Principle 2 : Provision of basic services;
 - Principle 3 : Government spending to be fixed on localities of economic growth and/or economic potential;
 - Principle 4: Address past and current social inequalities;
 - Principle 5: Economic development should enhance activity corridors.
 - Gauteng Spatial Development Perspective (GSDP);
 - Gauteng Spatial Development Framework (GSDF); and
 - National Development Plan vision for 2030:
 - Economic growth and employment opportunities;
 - Environmental sustainability;
 - Transforming Human Settlements;
 - Social protection;
 - Building safer communities;
 - Building a capable and developmental state;
 - National building and social cohesion.

18 **SPATIAL DEVELOPMENT FRAMEWORK:**

- 18.1 The Remainder of the farm Wheatlands 260 I.Q. and as a result the proposed location for the USF falls within the jurisdiction of the RWCLM.
- 18.2 In terms of the RWCLM the approved Randfontein SDF 2013, the Remainder of Wheatlands 260 I.Q. falls outside of the Urban Edge and is earmarked for "Prime Agricultural Purposes".
- 18.3 Although the proposed USF falls outside the Urban Edge and is earmarked for "Agricultural" land, council has provided in principle support for the USF.
- 18.4 Provided that we comply with the requirements as stipulated in the "in principle support" obtained for the USF, council will support the proposed land use, outside of

the Urban Edge.

- 18.5 The proposed development is generally in line with town planning policies, i.e. SDF & SLUMA

19 SUMMARY AND CONCLUSION:

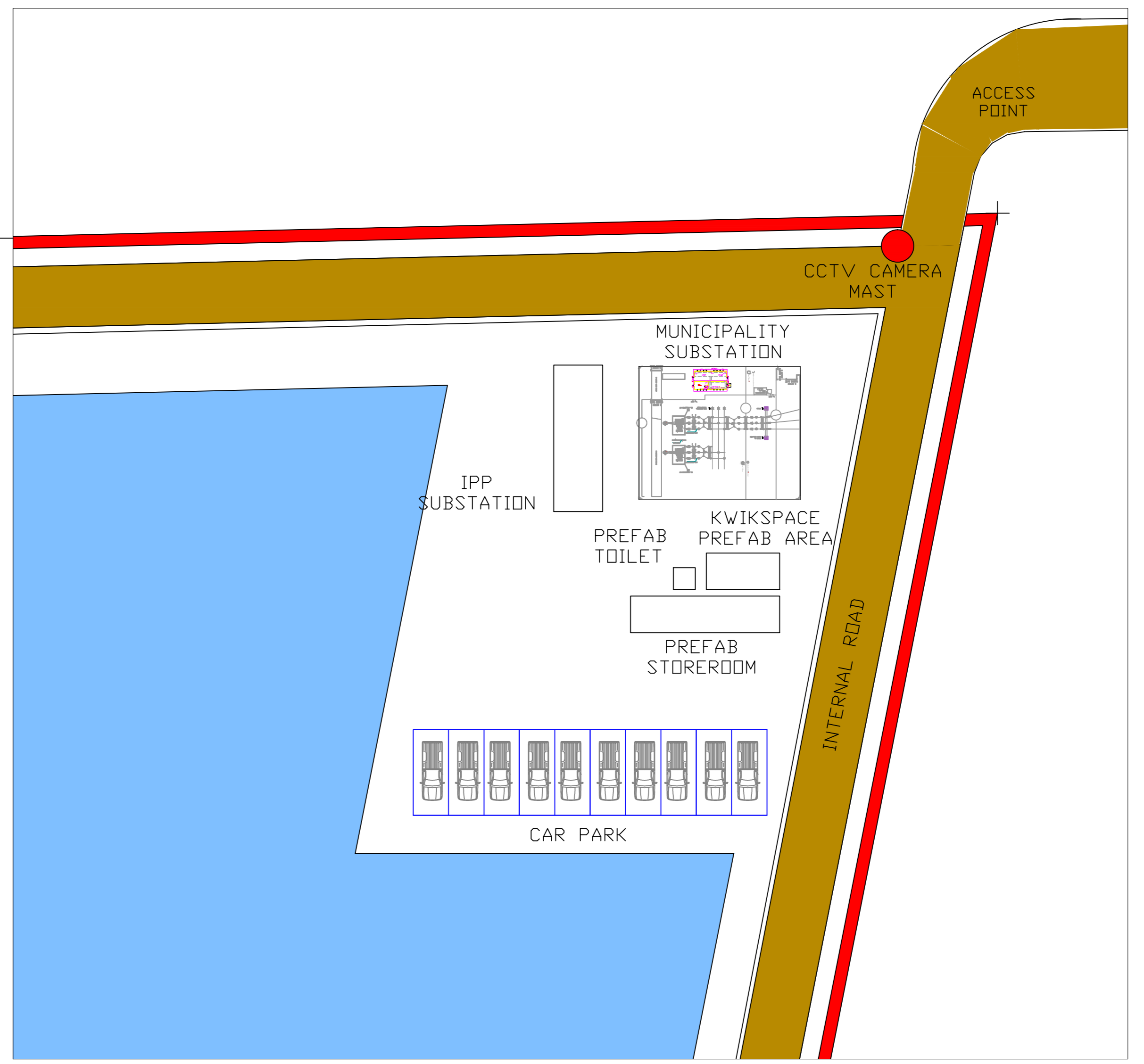
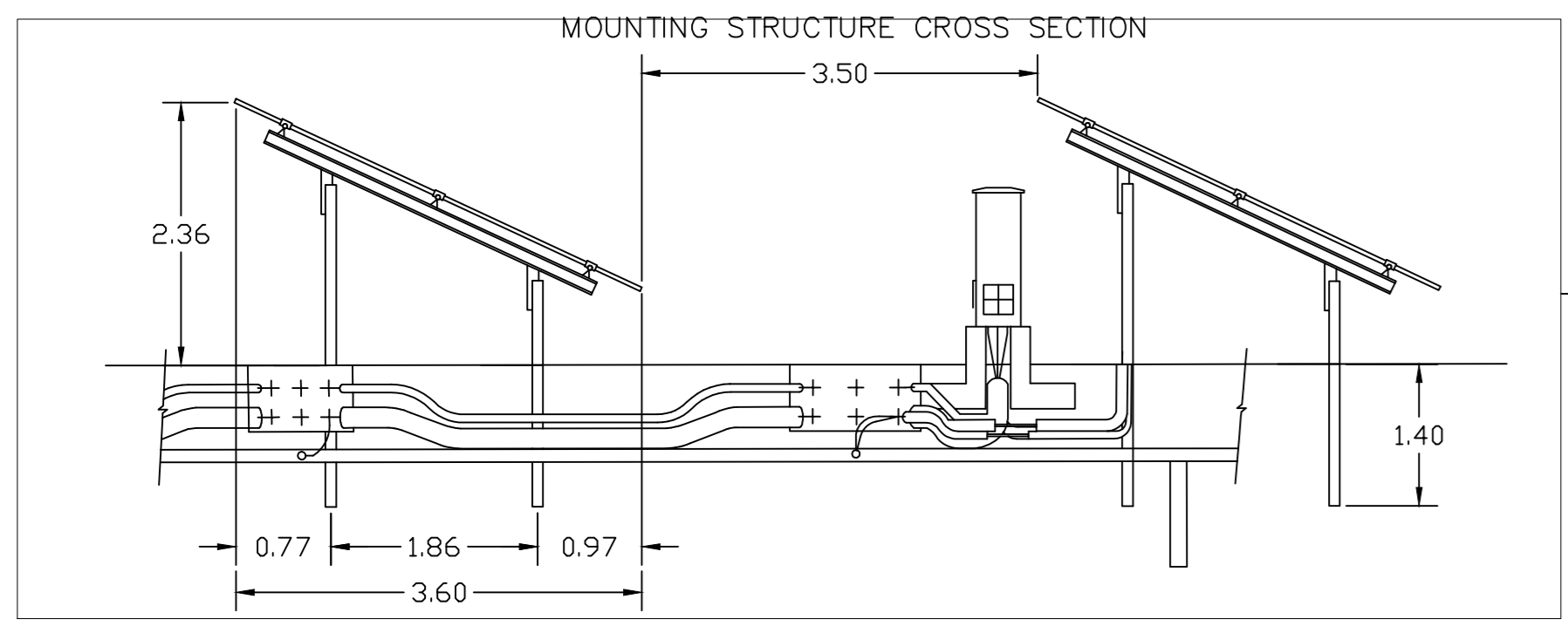
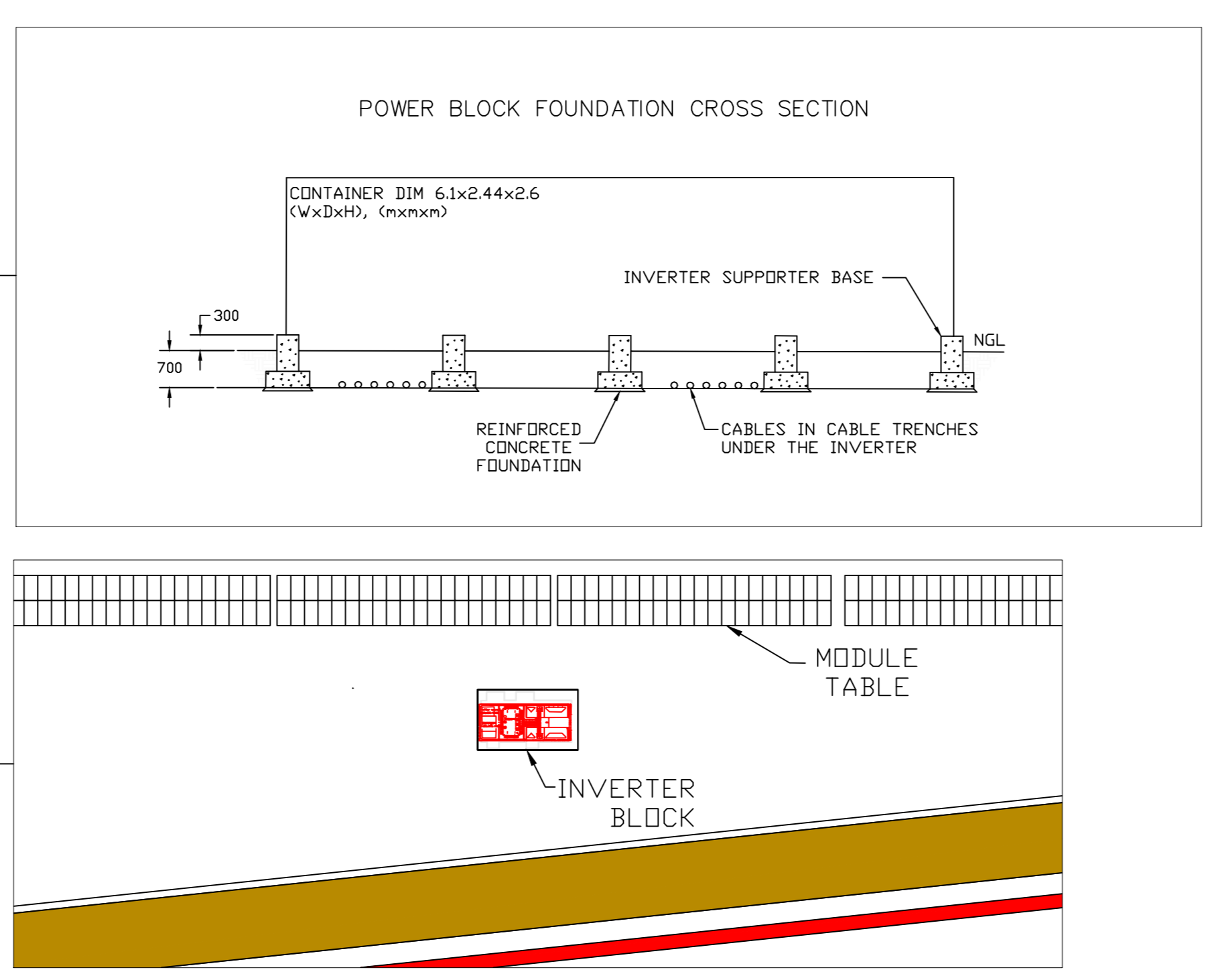
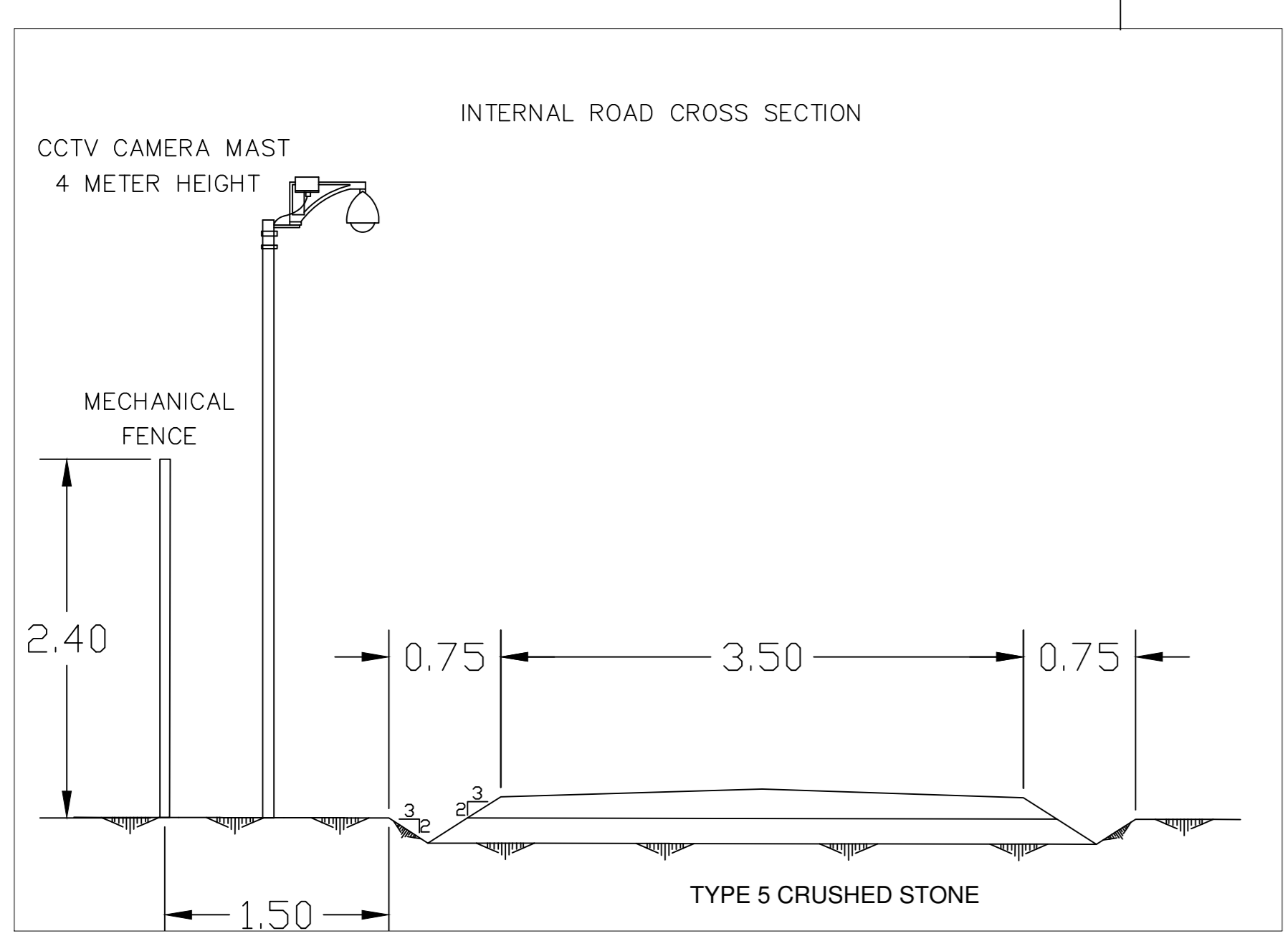
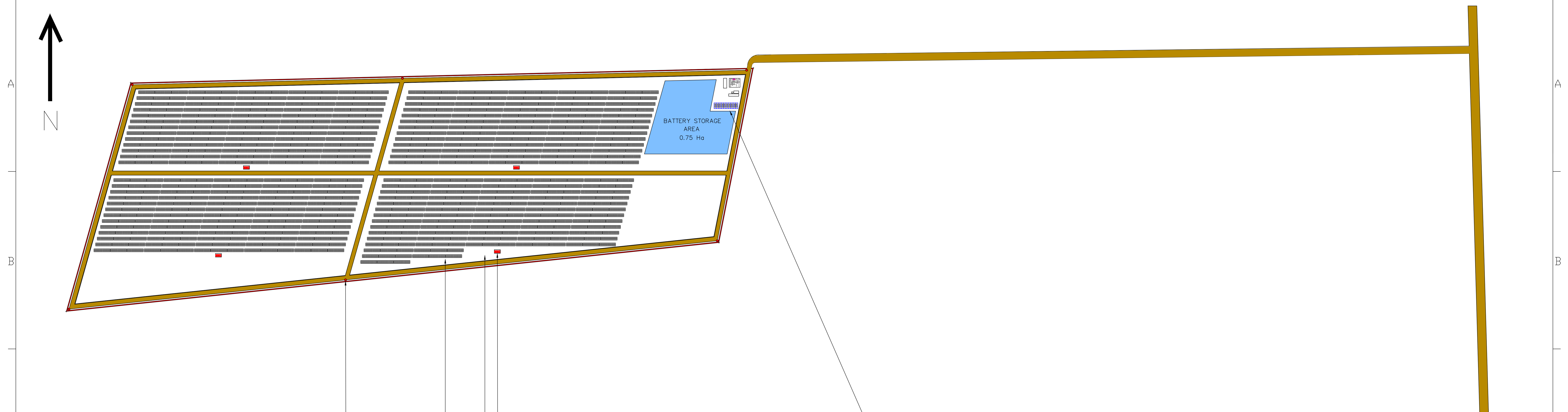
- 19.1 Application is herewith made in terms of Section 35 of the Rand West City Local Municipality Spatial Planning and Land Use Management By-laws, 2017, read in conjunction with Clause 7 of the Peri-Urban Areas Town Planning Scheme, 1975:

- To obtain Council's Special Consent to utilize Part of the Remainder of the farm Wheatlands 260 I.Q. (the site) for an Urban Solar Farm (USF).

- 19.2 The Special Consent Use Application has been adequately dealt with and it is therefore believed that this application is worthy of a favourable recommendation.

APPENDIX C2

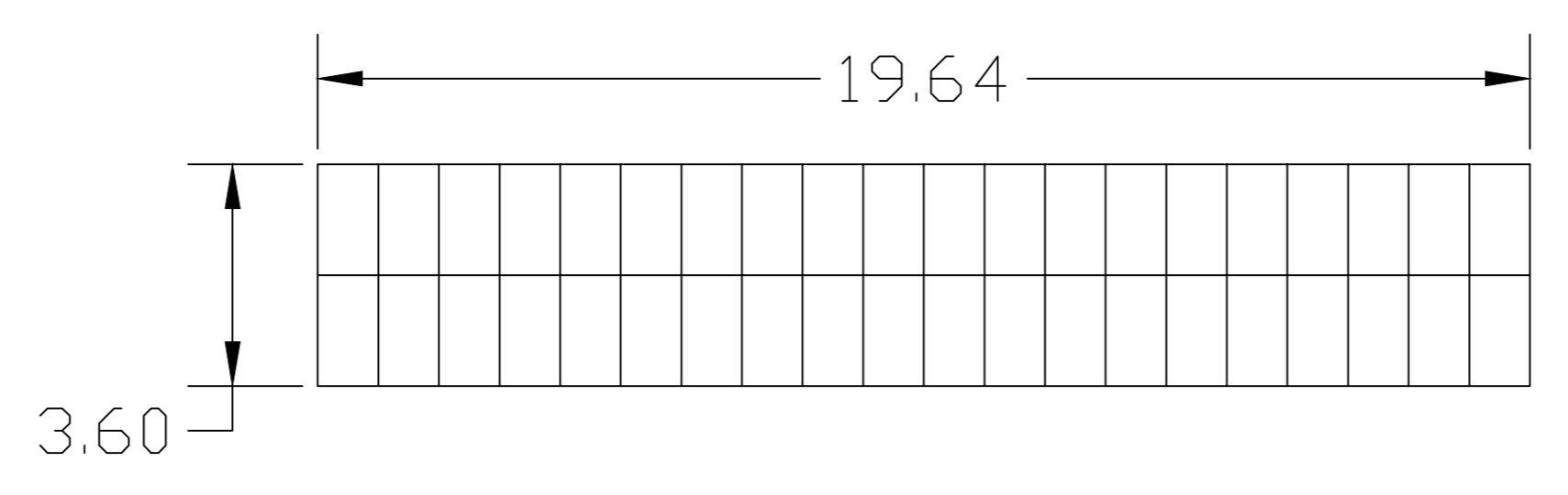
**CONCEPTUAL DESIGN/PROPOSED
LAYOUT**



NOTES :

1. ALL DIMENSIONS ARE IN METER.
2. MODULE TABLE CAPACITY : 12.8 kW
3. TOTAL PV BOUNDARY AREA : 18.65 Ha sq.m
4. ROAD AREA : 1.49 Ha sq.m
5. NO. OF HA PER MWp : 1.87 Ha/MWp
6. NO. OF 320Wp MODULES : 31200x
7. NO. OF STRINGS : 1560
8. TOTAL NO OF 1165kW INVERTERS : 8x
9. NO OF MODULES PER STRINGS : 20x
10. NO. OF MODULE PER TABLES : 40x
11. DC CAPACITY : 9.984 MWp
12. AC CAPACITY : 9.320 MW AC
13. OVERALL ROAD LENGTH : 3019.0 m
14. OVERALL BOUNDARY LENGTH : 2058.1 m

TYPICAL MODULE TABLE DETAIL



Zero Point Energy
43 The Braids Road
Greenside, Johannesburg
060 521 8388
infor@zpenery.co.za

APPROVED	NAME	DATE	SIGN
	M.T.KHAN	21/4/17	
CHECKED	A.K.MOHAMED	20/4/17	
DRAWN	W.PIROMYOD	19/4/17	
DRAWING TITLE:			
SITE_LAYOUT			
PROJECT NAME:			
WHEATLANDS			
Sheet	Drawing No	Rev	
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REVISION HISTORY			
REV	DATE	DESCRIPTION	SIGN

APPENDIX D1

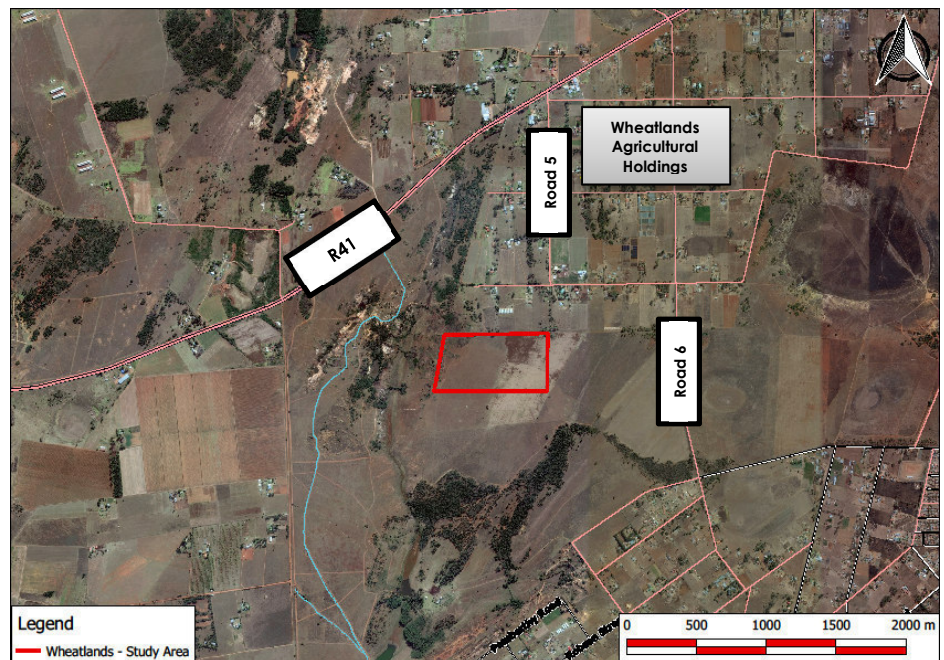
PROOF OF SITE NOTICES

NOTICE OF ENVIRONMENTAL AUTHORISATION AND WATER USE LICENSE APPLICATIONS

Notice is hereby given that an application for a **Basic Assessment Process** in terms of the EIA Regulations, 2014 (Regulations in terms of Chapter 6 of the National Environmental Management Act, 1998, as amended) will be lodged with the Gauteng Department of Agriculture and Rural Development. A **Water Use License Application** (WULA) in terms of the National Water Act, 1998 (Act No. 36 of 1998) will be submitted to the Department of Water and Sanitation.

Project & Property Description: The establishment of the **Wheatlands Urban Solar Farm** on the **Remaining Extent of the Farm Wheatlands 260 IQ**.

Location: The proposed Wheatlands Urban Solar Farm is situated in the Wheatland's Agricultural Holdings, Rand West City Local Municipality, approximately 8.5 km west-south-west from Randfontein between the R41 to the north and the R559 to the south. The site can be accessed via the Road 6 running past the development site from north to south approximately 1 km to the east.



Listing Activities Applied for in terms of NEMA EIA Regulations, 4 December 2014:

GNR 983 (Listing Notice 1) – Activity 1, 11, 27 & 56.
GNR 985 (Listing Notice 3) – Activity 4, 12, 15 & 18.

The aforementioned proposed activity requires an application in terms Section 21 of the National Water Act, 1998 (Act 36 of 1998) (NWA) for the following water uses:

- Section 21 (c): Impeding or diverting the flow of water in a watercourse
- Section 21 (i): Altering the bed, banks, course or characteristics of a watercourse

Proponent: Solar Reserve SA (Pty) Ltd

Date of Notice: 7 March 2017 – 7 April 2017

In order to ensure that you are identified as an Interested and/or Affected Party (I&AP) please submit your name, contact information and interest in the matter, in writing, to the contact person given above **within 30 days from the date of commencement of this Notice**.

Queries regarding this matter should be referred to:

Bokamoso Landscape Architects and Environmental Consultants CC

Public Participation registration and Enquiries: **Juanita De Beer**

Project & WULA Enquiries: **Adèle Drake**

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