

DECEMBER 2014

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

ESTABLISHMENT OF THE PROPOSED

TUTUKA PHOTOVOLTAIC SOLAR ENERGY FACILITY

MPUMALANGA PROVINCE

AN INITIATIVE OF ESKOM HOLDINGS SOC LTD

BACKGROUND INFORMATION DOCUMENT

Eskom Holding SOC Ltd is proposing to establish a 65.9MW photovoltaic solar energy facility and associated infrastructure on a site within the Tutuka coal fired power station boundary, approximately 28 km north-east of Standerton in Mpumalanga Province. Eskom Holdings SOC Limited has identified a favourable site within the power station boundary for consideration and evaluation of the project in terms of the requirements of the Environmental Impact Assessment (EIA) Regulations. The proposed facility will hereafter be referred to as the Tutuka Photovoltaic Solar Energy Facility, the nature and extent of which is explored in more detail in this document.

## AIM OF THIS BACKGROUND INFORMATION DOCUMENT

This document aims to provide you, as an interested and/or affected party (I&AP), with:

- » An overview of the proposed photovoltaic solar facility.
- » An overview of the EIA process (including a Scoping Phase and an EIA Phase) and the specialist studies being undertaken to assess the potential impacts associated with the proposed project.
- » Details of how you can become involved in the EIA process, receive information, or raise issues which may concern and/or interest you.

## NEED AND JUSTIFICATION FOR THE PROJECT

Internationally there is an increase in the deployment of renewable energy technologies for the generation of electricity due to concerns such as climate change and exploitation of non-renewable resources. Through the Integrated Resource Plan (IRP), the South African Government has set a target for renewable energy of 17 GWh renewable energy contributions to final energy consumption by 2030, to be produced mainly from biomass, wind, solar and small-scale hydro. Eskom has already successfully installed PV systems at offices and parking lots within Eskom-owned property to promote renewable energy awareness and to diversify their own energy mix. Furthermore, Eskom is looking at further reducing their self-consumption at their various owned or utilised sites by introducing Eskom's Ilanga PV Project Portfolio which aims to install 150MWp at their various power stations, offices and substations, which includes the proposed Tutuka Photovoltaic Solar Energy Facility. The solar PV facilities will promote the reduction of Eskom's carbon footprint and support the demand side management energy efficiency programme.

## SITE SELECTION PROCESS

The screening process undertaken by Eskom to assess potential for installing PV facilities at Eskom power stations in Gauteng, Free-State, Mpumalanga and Kwa-Zulu Natal regions provided an indication of the potential capacity, land availability, environmental constraints and electrical connection options for each of the power stations including Arnot, Duvha, Kendal, Kriel, Lethabo, Majuba, Matimba, Tutuka, Camden, Komati and Ingula. The five (5) power stations which Eskom is currently doing EA processes for are selected as the first targeted sites and this includes Arnot, Duvha, Lethabo, Majuba and Tutuka. The secondary objective of the screening process was to identify the second reference project, following Grootvlei power station<sup>1</sup> to build a solar PV facility. The power stations were assessed using the following criteria which are discussed below:

- » Technical feasibility – taking into account all electrical considerations including point of connection and electrical infrastructure available;
- » Land availability and environmental constraints; and
- » Power station stakeholder's acceptance of the Ilanga PV Portfolio.

At screening it was concluded by Eskom that the Tutuka power station has land available for a large PV facility with the land profile being predominantly flat with little vegetation and trees and a minimal number of power lines running through some of the preferred site. The point of electrical connection is situated in close proximity to the land area and there are no foreseen risks from an environmental perspective at a high level. The Tutuka PV site is outside the immediate power station fence but it is still located within the

<sup>1</sup>Grootvlei power station is proceeding forward as the first reference project for the Ilanga PV Portfolio.

broader power station property on Eskom owned property.

## OVERVIEW OF THE PROPOSED PROJECT

The Tutuka Solar Energy Facility is proposed on portion 4, 10, 11 and 12 of the farm Pretorius Vley 374 IS, in the jurisdiction of Gert Sibande District Municipality and Lekwa Local Municipality within the Mpumalanga Province. The facility is proposed to include several arrays of photovoltaic (PV) solar panels with a generating capacity of approximately 65.9MW and includes the following associated infrastructure:

- » Arrays of photovoltaic (PV) panels.
- » Mounting structures to support the PV panels.
- » Cabling between the project components.
- » Inverters/transformer enclosures.
- » An on-site substation or switching station.
- » A power line to facilitate the connection of the solar energy facility to a substation located within the Tutuka power station
- » Internal access roads.
- » Buildings (which could include workshop area for maintenance and storage, and an on-site office)

The overall aim of the design and layout of the facility is to maximise electricity production through exposure to the solar radiation, while minimising infrastructure, operation and maintenance costs, and social and environmental impacts. The layout of the facility will be informed by the outcomes of the EIA process to be undertaken.

## RENEWABLE ENERGY TECHNOLOGY PROPOSED FOR THE PROJECT

The use of solar irradiation for power generation is considered a non-consumptive use of a natural resource which produces zero greenhouse gas emissions. The generation of renewable energy will contribute to South Africa's electricity market which has, to date, been heavily dominated by coal-based power generation. The advancement of renewable energy is a priority for South Africa as defined by the Integrated Resource Plan, and in terms of international obligations regarding the reduction of greenhouse gases.

Solar energy facilities, such as those using PV technology use the energy from the sun to generate electricity through a process known as the Photovoltaic Effect. Simply speaking, this refers to photons of light knocking electrons into a higher state of energy to create electricity. PV facilities consist of the following components:

### Photovoltaic Cell

A photovoltaic cell is made of silicone which acts as a semiconductor used to produce the photovoltaic effect. Individual PV cells are linked and placed behind a protective glass sheet to form a PV panel. Arrays of PV panels are to be installed to form the PV facility over an area of approximately 55.4ha.

### Inverter

The photovoltaic effect produces electricity in direct current. Therefore an inverter must be used to change it to alternating current. Sections of the PV field will be wired to central inverters. The inverters will be housed in small buildings close to the point of connection to the panels.

### Support Structure

The PV panels will be fixed to support structures set at an angle to receive the maximum amount of solar radiation. The angle of the panel is dependent on the latitude of the proposed facility. In South Africa, panels are usually north facing and tilted between 30 and 33 degrees. The angle of the support structure may be adjusted in winter and summer to optimise summer or winter solar radiation characteristics.



Figure 1: Illustration of PV panels (solar-energy-systems1.blogspot.com)

The proposed development would consist of several PV arrays with a generating capacity of 65.9MW of electricity. Construction would take approximately 18-24 months to complete and would include the following main activities:

- » Terrain levelling and vegetation clearance. Flat areas will be selected where possible to minimise the need for levelling. Vegetation will be cleared from the development footprint for the construction phase.
- » Construction and use of access roads. Existing roads will be used where possible to avoid/minimise the need for new road construction. The turning circle of trucks will however need to be taken into consideration when planning these internal roads. There will be minimal use of access roads once the plant is operational.
- » Trenching. All DC and AC wiring within the PV plant will be trenched (buried underground).
- » Foundations. Concrete foundations for panels could be cast or holes drilled into the ground for supporting a deep seated screw, depending on the mounting method to be used.

Following construction, the affected areas would be rehabilitated and vegetation will be re-established. The PV panels are designed to operate continuously, unattended and with low maintenance for approximately 20 years. During operation, maintenance of the facility is required to ensure optimal operation. This would include regular maintenance of the PV arrays, trimming of vegetation where this could interfere with the operation of the panels (through shading), and cleaning of the panels using water or compressed air.

#### REQUIREMENT FOR AN ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

In terms of sections 24 and 24D of NEMA, as read with the EIA Regulations of GN R543 (Regulations 26-35), R544, R545 and R546 (as amended), a power generation facility with a generating capacity of 20MW or more, and which occupies an area of more than 20ha requires the undertaking of an Environmental impact Assessment. Therefore, Eskom Holdings SOC Limited requires authorisation from the National Department of Environment Affairs (DEA) (in consultation with the Free State Department of Economic Development, Tourism and Environmental Affairs (DETEA)) for the undertaking of the proposed project. In order to obtain authorisation, comprehensive, independent environmental studies must be undertaken in accordance with the EIA Regulations. An application for authorisation has been submitted to DEA, and the project has been registered under application reference number 14/12/16/3/3/2/754.

The following listed activities have been applied for<sup>2</sup> -

GNR544 item 10(i);	An overhead power line and on-site substation will be constructed to connect the PV facility to the Eskom grid
GNR544 item 11 (i) (ii) (x) (xi)	The PV facility will include the construction of buildings (workshop area and site office) and infrastructures (underground cabling, panels) within 32 metres of a watercourse.
GNR 544 item 18(i)	Construction of the PV facility may require the infilling or excavation and removal of soil of more than 5 cubic metres from a watercourse.
GNR 544 item 22(ii)	The facility will require construction of new access roads. These may exceed 8 metres in width.
GNR 544 item 29(ii)	The development footprint of the current Tutuka power station will be expanded by 1 hectare or more with the construction of the PV facility.
GN544 Item 47(ii)	The facility will require the widening/lengthening of existing access roads within the site.
GN545 Item 1	The proposed facility will consist of arrays of photovoltaic (PV) panels with an electricity output of 65.9MW.
GN545 Item 15	The development footprint of the solar energy facility would be in excess of 20ha.
GN546 Item 4(a) (ii) (cc)	Access roads will be constructed during the development of the proposed facility within sensitive areas as identified by the Mpumalanga Biodiversity Conservation Plan
GN546 Item 10(a) (ii) (cc)	The solar energy facility may require facilities for the temporary storage of fuels / oils during construction to be situated on site of a combined capacity of up to 80m <sup>3</sup> within sensitive areas as identified by the Mpumalanga Biodiversity Conservation Plan
GN546 Item 14(a) (i)	The solar energy facility will be located outside urban areas and will require the clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation cover.
GN546 Item 13(a) (ii) (cc)	The solar facility may result in the clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation within sensitive areas as identified by the Mpumalanga Biodiversity Conservation Plan
GN546 Item 19(a) (ii) (cc)	Access roads may be widened or lengthened within a sensitive area as identified by the Mpumalanga Biodiversity Conservation Plan during the development of the proposed facility.

In terms of the above activities, a Scoping & EIA Process is required to be undertaken. Potential impacts will be assessed in two phases as follows:

1. A Scoping Phase, where potential issues associated with both projects will be identified, described and evaluated as part of a desktop study. Areas of sensitivity within the broader site are identified and delineated in order to identify an appropriate portion of the site for the proposed development.
2. An EIA Phase, which involves a detailed assessment of potentially significant impacts identified in the Scoping Phase. Practical and achievable mitigation and management measures will be recommended within Draft Environmental Management Programmes (EMPr).

Eskom Holdings SOC Ltd has appointed Savannah Environmental, as the independent environmental consultants, to undertake the required EIA process. As part of this process, I&APs will be actively involved through the public involvement process being undertaken by Savannah Environmental.

<sup>2</sup> It must be noted that a precautionary approach has been taken in determining the list of relevant Listed Activities such that all possible activities relevant to the project have been included in the application. This list may be refined during the course of the EIA process and listed activities may be removed or added as applicable depending on the findings of the EIA process.

## WHAT ARE THE POTENTIAL ENVIRONMENTAL IMPACTS ASSOCIATED WITH THE PROPOSED PROJECT?

Although a solar facility utilises a renewable resource to generate electricity, the construction and operation of the proposed facility has the potential to impact on the environment in both a positive and negative manner. A number of potential environmental impacts associated with the proposed solar facility have been identified at this stage. These potential impacts will be assessed through the following specialist studies:

- » Ecology, fauna and flora - the construction of the facility and the associated disturbance of vegetation may affect the ecology and biodiversity of the site.
- » Avifauna - The impact of the power line and PV facility on birds using the area will be assessed.
- » Wetlands - the construction of the facility and the associated disturbance of wetland systems in the area.
- » Soil erosion - the construction of the proposed facility may result in soil degradation and/or increased erosion potential.
- » Agricultural potential - solar facilities typically result in whole-scale disturbance of the development footprint and therefore the impact on the agricultural potential of the identified site must be assessed.
- » Heritage sites and palaeontology - disturbance to or destruction of heritage sites and fossils may result during the construction phase through excavation activities.
- » Visual aesthetics - the establishment of an industrial facility of this nature has the potential to affect the visual aesthetics within the area.
- » Social - the construction and operation of the facility may result in positive socio-economic opportunities in terms of local employment as well as negative impacts in terms of safety and security and land use characteristics.

Specialist studies will be informed by existing information, field observations and input from the public participation process. As an I&AP, your input is considered an important part of this process, and we urge you to become involved.

## PUBLIC PARTICIPATION PROCESS

The sharing of information forms the basis of the public participation process and offers you the opportunity to become actively involved in the EIA Process from the outset. Comments and inputs from I&APs during the Scoping and the EIA Phases are encouraged in order to ensure that potential impacts are considered within the ambit of the study. The public participation process aims to ensure that:

- » Information that contains all the relevant facts in respect of the application is made available to I&APs for review.
- » I&AP participation is facilitated in such a manner that they are provided with a reasonable opportunity to comment on the proposed project.
- » Adequate review periods are provided for I&APs to comment on the findings of the draft Scoping and EIA Reports.

In order to ensure effective participation, the public participation process includes the following:

- » Distribution of this Background Information Document at the start of the process.
- » Identification of I&APs including adjacent landowners and relevant Organs of State.
- » Placement of site notices at the affected properties.
- » Placement of advertisements in local and/or regional newspapers.
- » Compilation of an I&AP database which is updated throughout the EIA Process. All registered I&APs are personally notified at milestones in the EIA process through a stakeholder letter.
- » Release of the Draft Scoping and EIA Reports for public review.

- » Holding public meetings, and focus group meetings with I&APs to further facilitate the participation process.

## YOUR RESPONSIBILITIES AS AN I&AP

In terms of the EIA Regulations, your attention is drawn to your responsibilities as an I&AP:

- » In order to participate in this EIA process, you must register yourself on the project database.
- » You must ensure that any comments regarding the proposed project are submitted within the stipulated timeframes.
- » You are required to disclose any direct business, financial, personal or other interest which that you may have in the approval or refusal of the application for the proposed solar energy facility.

## HOW TO BECOME INVOLVED

1. By responding by phone, fax or e-mail to the invitation for your involvement which has been advertised in local newspapers.
2. By returning the reply form to the relevant contact person.
3. By attending the meetings to be held during the course of the process. As a registered I&AP you will automatically be invited to attend these meetings. Dates for public meetings will also be advertised in local newspapers.
4. By contacting the consultants with queries or comments.
5. By reviewing and commenting on the draft Scoping and EIA Reports within the stipulated 30-day review periods.

If you consider yourself an I&AP for this project, we urge you to make use of the opportunities created by the public participation process to provide comment, raise issues and concerns which affect and/or interest you or request further information. Your input into this process forms a key element of the EIA process.

By completing and submitting the accompanying reply form, you automatically register yourself as an I&AP for this project, and are ensured that your comments, concerns or queries raised regarding the project will be noted.

## COMMENTS AND QUERIES

Direct all comments, queries or responses to:

Gabriele Wood of Savannah Environmental  
PO Box 148, Sunninghill, Johannesburg, 2157

Phone: 011 656 3237

Fax: 086 684 0547

E-mail: [gabriele@savannahsa.com](mailto:gabriele@savannahsa.com)














To view project documentation, visit  
[www.savannahSA.com](http://www.savannahSA.com)

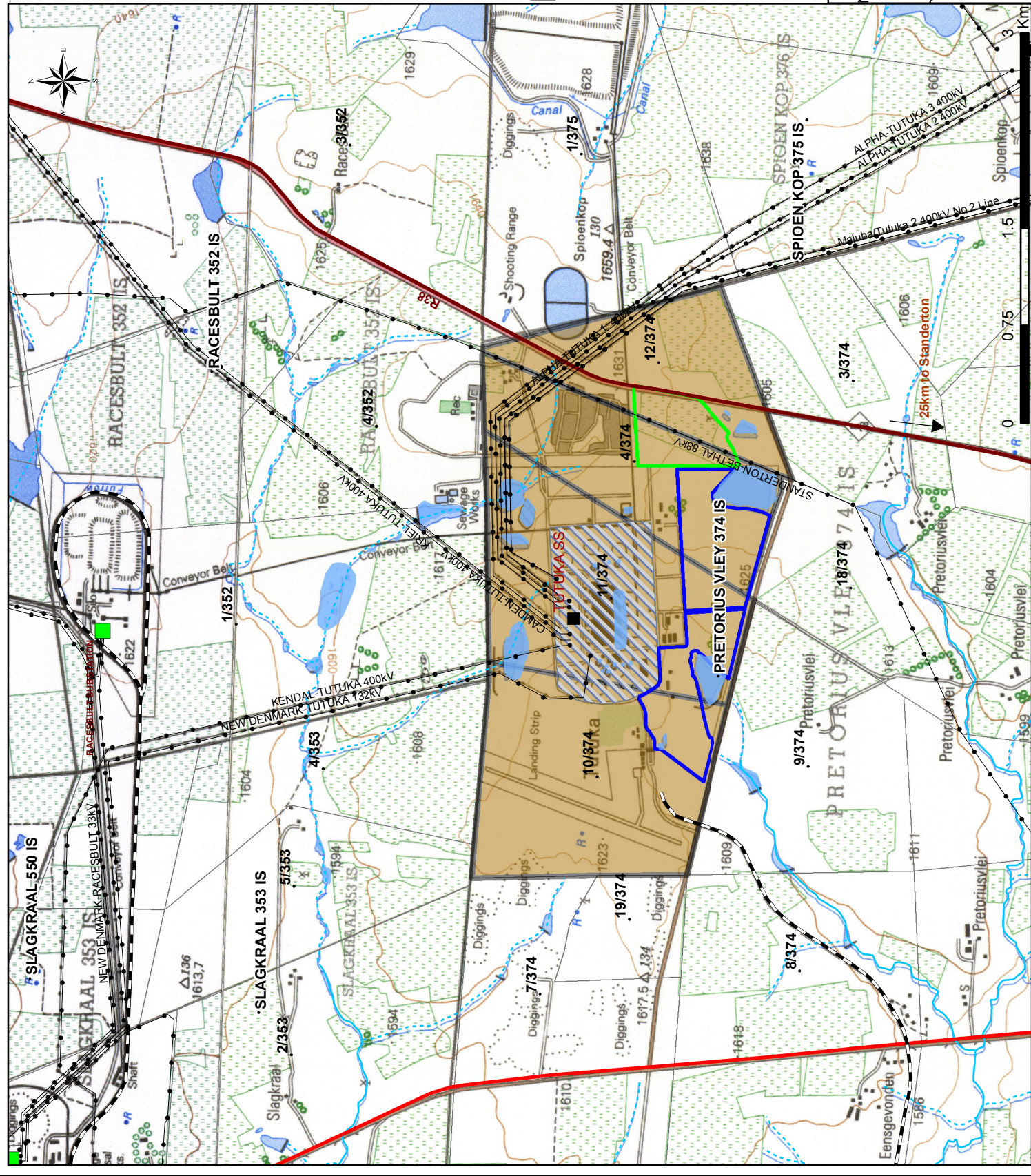
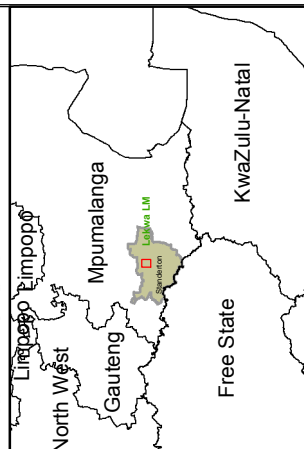


# Tutuka Solar Energy Facility

Locality map

## Legend

-  Transmission substation
-  Distribution substation
-  Existing Powerline
-  Railway Line
-  Regional road
-  Secondary road
-  Perennial river
-  Non Perennial river
-  NFEPA wetlands/waterbody
-  Proposed Tutuka Solar PV facility
-  Alternative Solar PV facility
-  Tutuka Power Station
-  Farm portions





DISEMBA 2014

INQUBO YOKUHLOLWA KOMTHELELA KWEZEMVELO

UKUSUNGULWA

KWENDAWO YOKUPHEHLA UGESI WELANGA  
YASETUTUKA EHLONGOZWAYO

ESIFUNDAZWENI SASEMPUMALANGA

UMZAMO OQALISWA YI-ESKOM HOLDINGS SOC LTD



INCWADI YOLWAZI OLUYISENDLALELO

I-Eskom Holding SOC Ltd ihlangoza ukusungula indawo yokuphehla ugesi welanga engu-65MW kanye nengqalasizinda ehlobene nayo esayithini ngaphakathi komngcele wesiteshi sikagesi ophelwa ngamalahlle eTutuka, ebangeni elingaba ngu-28 km enyakatho-mpumalanga ye-Standerton eSifundazweni SaseMpumalanga. I-Eskom Holdings SOC Limited iye yahlonza indawo ekahle ngaphakathi komngcele wesiteshi sikagesi ukuba icatshangelwe futhi ihlolelwe le phrojekthi ngokuvumelana nezimfuneko zeZiqondiso zoKuhlaziywa Komthelela Kwezemvelo (EIA). Le ndawo ehlongozwao kamuya lapha kuzobhekiselwa kuyo ngokuthi i-Tutuka Photovoltaic Solar Energy Facility, isimo sayo kanye nobubanzi bayo budingidwa kabanzi kule ncwadi.

## INHLOSO YALE NCWADI YOLWAZI OLUYI SENDLALELO

Le ncwadi ihlose ukukunikeza wena muntu onomdlandla kanye/noma othintekayo (I&AP) lokhu:

- » Ukubuyekwezwa kwendawo yokuphehla ugesi welanga.
- » Ukubuyekwezwa kwinqubo ye-EIA (kuhlanganise iSigaba Sokwenza Ucwango neSiba se-EIA) kanye nezingcwangano zochwepheshe ezenziwayo ukuze kuhlolwe imithelela engase ibe khona ehlobene nephrojekthi ehlongozwayo.
- » Imininingwane yokuthi ungabandakanyeka kanjani kwinqubo ye-EIA, uthole ulwazi, noma uphakamise izinkinga ezingase zikukhathaze futhi/noma ube nesasasa kuzo.

## ISIDINGO NOKUTHI KUNGANI IDINGEKA LE PHROJEKTHI

Emazweni ngamazwe kuyanda ukusetshenziswa kobuchwepheshe bamandla azivuselelayo ekuphehleni ugesi ngenxa yokukhathazeka okunjengokushintsha kwesimo sezulu nokusetshenziswa kabi kwemithombo yamandla engazivuseleli. Ngohlelo okuthiwa i-Integrated Resource Plan (IRP), uHulumeni waseNingizimu Afrika usebeke umgomo wamandla kagesi azivuselelayo ongu-17 GWh ozosetshenziswa ekwenziweni kukagesi kokugcina ngo-2030, ozokhiqizwa ngokuyinhloko ngezitshalo, umoya, ilanga namanzi ngokwezinga elincane. U-Eskom usewafake ngokuphumelelayo kakade amasistimu e-PV emahhovisi nasezindaweni zokupaka ezakhiwe ze-Eskom ukuze aqwashise ngamandla azivuselelayo futhi athole amandla emithonjeni ehluahlukene. Ngaphezu kwalokho, u-Eskom ubheke ukuba aphinde anciphise ukusebenzisa kwakhe ugesi kumasayithi akhe ahluahlukene ngokwethula i-Ilanga PV Project Portfolio ye-Eskom ehlose ukufaka u-150MWp eziteshini zakhe zikagesi ezihluahlukene, emahhovisi naseziteshini ezincane, okuhlanganisa ne-Tutuka Photovoltaic Solar Energy Facility. Izindawo ze-PV yelanga zizothuthukisa ukuncishiswa kwamagesi akhishelwa emkhathini yi-Eskom futhi zisekele izinhlelo zokonga ugesi.

## INQUBO YOKUKHETHA ISAYITHI

Inqubo yokuhlunga eyenziwa yi-Eskom yokuhlola amathuba okufaka izindawo ze-PV eziteshini zikagesi ze-Eskom eGauteng, e-Free-State, eMpumalanga naKwa-Zulu Natal inikeze umbono ngamandla angase abe khona, ukutholakala komhlaba, izinto eziyimingcele ngokwemvelo kanye nezinto zokuxhuma ugesi okungakhethwa kuzo zesiteshi sikagesi ngasinye kuhlanganise i-Arnot, i-Duvha, i-Kendal, i-Kriel, iLethabo, iMajuba, iMatimba, iTutuka, i-Camden, iKomati ne-Ingula. Iziteshi ezinhlanu (5) u-Eskom enza kuzo izinqubo ze-EA manje zikhethwe njengeziteshi zokuqala ezisophiwe futhi lezi zihlanganisa i-Arnot, Duvha, Lethabo, Majuba ne-Tutuka. Injongo yesibili yenqubo yokuhlunga kwakwukuhlonza iphrojekthi yesibili okungabhekiselwa kuyo, ngemva kwesiteshi sikagesi<sup>1</sup> sase-Grootvlei ukuze yakhe indawo ye-PV okuphehla ugesi welanga. Iziteshi zikagesi zahlolwa kusetshenziswa lezi zimfuneko ezilandelayo ezidingidwe ngezansi:

- » Indlela yokwenza – kucatshangelwa zonke izinto zikagesi kuhlanganise lapho uzoxhunywela khona nengqalasizinda kagesi ekhona;
- » Ukutholakala komhlaba kanye nemingcele engokwemvelo; kanye
- » Ukuvumela kwababambiqhaza besiteshi sikagesi i-Ilanga PV Portfolio.

Ekuhlungeni i-Eskom yaphetha ngokuthi isiteshi sikagesi saseTutuka sinawo umhlaba wendawo ye-PV enkulu njengoba ingxenyane enkulu yomhlaba iyithafa futhi inezitshalo nezihlala ezingatheni futhi aziziningi izintambo zikagesi ezihamba kwezinye zezindawo ezithandwayo. Indawo okuzoxhunywela kuyo

<sup>1</sup> Isiteshi sikagesi sase-Grootvlei siqhubekela phambili njengephrojekthi yokuqala okubhekiselwa kuyo ye-Ilanga PV Portfolio.

iseduze kakhulu nendawo yalo mhlabathi azikho izingozi ezibonakalayo ngokwezemvelo. Isayithi ye-PV yaseTutuka ingaphandle kothango lwesiteshi sikagesi kodwa ingaphakathi komngcele wendawo yesiteshi sikagesi okungeye-Eskom.

## UKUBUYEKEZWA KWEPHROJEKTHI EHLONGOZWAYO

Indawo Kagesi Welanga YaseTutuka ihlongozwa esiqeshini 4, 10, 11 no-12 sepulazi i-Pretorius Vley 374 IS, endaweni kaMasipala Wesifunda I-Gert Sibande noMasipala Wendawo ILekwa eSifundazweni SaseMpumalanga. Le ndawo kuhlongozwa ukuba ihlanganise izingxenyane eziningana zamaphaneli okuphehla ugesi welanga (PV) namandla okuphehla alinganiselwa ku-65.9MW futhi ihlanganisa lezi zingqalasisinda ezilandelayo ezihlobene nayo:

- › Izingxenyane zamaphaneli okuphehla ugesi welanga (PV).
- › Ukumisa izinsika zokusekela amaphaneli e-PV.
- › Ukufaka amakhebula phakathi kwezici zephrojekthi.
- › Izindawo ezivalekile zama-inverters/transformer.
- › Isiteshi sokuvulela ugesi esingaphakathi esayithini noma esincane.
- › Ulayini kagesi ozokwenza lula ukuxhuma indawo kagesi welanga esiteshini esingaphansi kwesiteshi sikagesi saseTutuka
- › Imigwaqo yokungena ngaphakathi.
- › Izakhiwo (ezingase zihlanganise indawo yewekhishophu yokulungisa izinto nokuzigcina, nehhovisi elisesayithini)

Inhloso yonkana yokuklanywa nokuma kwale ndawo ukusebenzisa ngokugcwele ukukhiqizwa kukagesi ngokusebenzisa imisebe yelanga, kuyilapho kuncishiswa ingqalasisinda, ukusebenza, izindleko zokulungisa, kanye nemithelela kwezenhlalo nakwezemvelo. Ukuma kwale ndawo kuzoshiwo yimiphumela yenqubo ye-EIA ezokwenziwa.

## UBUCHWEPHESHE BAMANDLA AVUSELELEKAYO OBUHLONGOZWAYO KULE PROJEKTHI

Ukusetshenziswa kokukhanya kwelanga ekuphehleni ugesi kubhekwa njengendlela engawudli umthombo wemvelo nengakhipheli amagesi ayingozi emkhathini. Ukuphehlwa kwamandla avuselelekayo kuzoba neqhaza kagesi waseNingizimu Afrika, obulokhu utholakala kakhulu ngokuphehlwa ngamandla amalahlle kuze kube namuhla. Intuthuko emandleni avuselelekayo iyinto eseqhulwini eNingizimu Afrika njengoba ichazwe ku-Integrated Resource Plan, futhi nangokuvumelana nezibopho zamazwe ngamazwe mayelana nokunciphisa amagesi ayingozi akhishelwa emkhathini.

Izindawo zamandla kagesi, njengalezo ezisebenzisa ubuchwepheshe be-PV, zisebenzisa amandla avela elangeni ukuze ziphehle ugesi ngenqubo eyaziwa ngokuthi i-Photovoltaic Effect. Kalula nje, lokhu kubhekisela kumaphrothokho okukhanya ashaya ama-electron esimweni esiphezulu samandla ukuze akhe ugesi. Izindawo ze-PV ziqukethe lezi zici ezilandelayo:

### I-Photovoltaic Cell

I-photovoltaic cell yakhiwa yi-silicone esebenza njenge-semiconductor esetshenziselwa ukukhiqiza i-photovoltaic effect. Ama-PV cell angawodwa axhunywa futhi abekwe ngemuva koqwebembe lwengilazi ukuze akhe ipaneli ye-PV. Izingxenyane zamaphaneli e-PV kufanele zifakwe ukuze zakhe indawo ye-PV endaweni elinganiselwa ku-55.4ha.

### I-Inverter

I-photovoltaic effect ikhiqiza ugesi kwikharenti eqondile. Ngakho-ke kumelwe kusetshenziswe i-inverter ukuze ishintshwe ibe yikharenti eshintshashintshayo. Izigaba zenkundla ye-PV ziyoxhunywa nama-inverter amakhulu. Ama-inverter ayofakwa ezakhiweni ezincane eziseduze nendawo yokuxhuma ugesi kumaphaneli.

### Izinsika Zokusekela

Amaphaneli e-PV azohlala endaweni eyodwa ukuze asekele izinsika ezibekwe ku-engela ethile ukuze zithole yonke imisebe yelanga ezingase ziyithole. I-engela yepaneli incike ekumeni kwendawo

ehlongozwayo. ENingizimu Afrika, amaphaneli avame ukubheka enyakatho futhi abe phakathi kuka-30 no-33 degrees. I-engela yensika yokusekela ingase ishintshwe ebusika nasehlobo ukuze izisebenzise ngokugcwele izici zemisebe yelanga yasehlobo noma yasebusika.



Umfanekiso 1: Imifanekiso yamaphaneli e-PV (solar-energy-systems1.blogspot.com)

Lokhu okuhlongozwayo kuzoba nezingxenye ze-PV ezingana ezinamandla okuphehla ugesi ongu-65.9MW. Ukwakha kuyothatha cishe izinyanga ezingu-18-24 ukuba kuphele futhi kuyohlanganisa le misebenzi eyinhloko elandelayo:

- » Ukuhlelemba indawo nokususa izitshalo. Uma kungenzeka kuyokhethwa izindawo ezingamathafa ukuze kuncishiswe isidingo sokuhlelemba. Kuyosuswa izitshalo endaweni ezosetshenziswa ukuze kwakhiwe.
- » Ukwakhiwa nokusetshenziswa kwemigwaqo yokungena. Lapho kungenzeka khona kuyosetshenziswa imigwaqo ekhona ukuze kugwenywe/kuncishiswe isidingo sokwakhiwa kwemigwaqo emisha. Kodwa-ke, isiyingo sokujika kwamaloli kuyodingeka sicutshangelwe lapho kuhlelwa le migwaqo yangaphakathi. Kuyoba kuncane ukusetshenziswa kwemigwaqo yokungena uma iplanti isisebenza.
- » Ukugqiba. Wonke amawaya e-DC nawe-AC ngaphakathi kuplanti ye-PV ayogqitshwa ngaphansi komhlaba.
- » Izisekelo. Izisekelo eziqinile zamaphaneli zingase zithelwe noma kumbiwe imigodi emhlabathini ukuze kusekelwe isikulufu esijulile, kuye ngendlela yokumisa esetshenzisiwe.

Ngemva kokwakha, izindawo ezithintekile ziyohlunyelelwa futhi kuphinde kutshalwe. Amaphaneli e-PV aklanyelwe ukuba asebenze ngokuhubekayo, angalokhu elungiswa noma alungiswe kancane iminyaka elinganiselwa kwengu-20. Ngesikhathi isisebenza, kudingeka ukuba ilungiswe le ndawo ukuze kuqinisekwe ukuthi isebenza kahle kakhulu. Lokhu kuyohlanganisa ukulungiswa njalo kwezingxenye ze-PV, ukuthena izihlahla lapho zingase ziphazamise khona ukusebenza kwamaphaneli (ngemithunzi), nokuhlazwa kwamaphaneli kusetshenziswa amanzi noma umoya ovalelwe endaweni ethile.

## IMFUNeko YENqUBo YOKUHLAZI YWA KOMTHELELA KWEZEMVELO

Ngokwezigaba 24 no-24D ze-NEMA, njengoba zifundwa neZiqondiso Ze-EIA ze-GN R543 (iZiqondiso 26-35), R544, R545 no-R546 (njengoba zichitshiyelwe), indawo yokuphehla ugesi enamandla angu-20MW noma ngaphezulu, futhi esendaweni engaphezu kuka-20ha idinga ukuhlolwa Komthelela Kwezemvelo. Ngakho-ke, i-Eskom Holdings SOC Limited idinga isigunyazo esivela eMnyangweni Wezemvelo Kazwelonke (DEA) (ngokuxhumana noMnyango Wezokuthuthukiswa Komnotho, Ezokuvakasha Nezemvelo Wase-Free State (DETEA)) ukuze kwenziwe le phrojekthi ehlongozwayo. Ukuze kutholakale isigunyazo, kudingeka kwenziwe izingcwangingo zezemvelo ezibanzi ngokuvumelana neZiqondiso Ze-EIA. Isicelo sesigunyazo siye sahanjiswa ku-DEA, futhi le phrojekthi iye yabhaliswa ngaphansi kwenombolo yefarensi yesicelo ethi 14/12/16/3/3/2/754.



Le misebenzi esohlwini elandelayo iye yafakelwa isicelo<sup>2</sup> -

GNR544 indima 10(i)	Ulayini kagesi ohamba phezulu kanye nesiteshi esingaphansi esisesayithini kuzokwakhiwa ukuze kuxhume indawo ye-PV kugridi ye-Eskom
GNR544 indima 11(i)(ii)(x)(xi)	Indawo ye-PV izohlanganisa ukwakhiwa kwezakhiwo (indawo yewekhishophu nehovisi lasesayithini) nezingqalasisinda (amakhebulangaaphansi komhlaba, amaphaneli) ebangeni elingamamitha angu-32 ukusuka emithonjeni yamanzi.
GNR 544 indima 18(i)	Ukwakhiwa kwendawo ye-PV kungase kudinge ukugcwaliswa noma ukumbiwa nokusuka kwenhlabathi engaphezu kwama-cubic metre angu-5 ukusuka ezindaweni eziyimithombo yamanzi.
GNR 544 indima 22(ii)	Indawo izodinga ukwakhiwa kwemigwaqo yokungena emisha. Lena ingase ibe ngaphezu kwamamitha angu-8 ububanzi.
GNR 544 indima 29(ii)	Indawo ethuthukiswayo yesiteshi sikagesi saseTutuka esikhona manje izonwetshwa ngehektha elilodwa noma ngaphezulu lapho kwakhona indawo ye-PV.
GN544 Indima 47(ii)	Indawo izodinga ukunwetshwa ngobubanzi/ngobude kwemigwaqo yokungena esayithini ekhona.
GN545 Indima 1	Indawo ehlongozwayo izoba nezingxenye zamaphaneli kagesi welanga (PV) angakhipha ugesi ongu-65.9MW.
GN545 Indima 15	Indawo ethuthukiswayo yendawo yamandla kagesi izoba ngaphezu kuka-20ha.
GN546 Indima 4(a)(ii)(cc)	Imigwaqo yokungena izokwakhiwa phakathi nokusungulwa kwendawo ehlongozwayo ngaphakathi kwezindawo ezisheshe zizwele njengoba zihlonzwe yi-Mpumalanga Biodiversity Conservation Plan
GN546 Indima 10(a)(ii)(cc)	Indawo yamandla elanga ingase idinge izindawo zokuginwa kwesikhashana kokokubasa / uwoyela ngesikhathi kwakhiwa ukuba zibe sendaweni enamandla ahlalene angafika ku- 80m <sup>3</sup> ngaphakathi kwezindawo ezisheshe zizwele njengoba zihlonzwe yi-Mpumalanga Biodiversity Conservation Plan
GN546 Indima 13(a)(ii)(cc)	Indawo yamandla kagesi ingase idinge ukusuka kwezitshalo endaweni eyihlektha elilodwa noma ngaphezulu lapho u-75% noma ngaphezulu wezitshalo kuyizitshalo zendabuko ezingaphakathi kwezindawo ezisheshe zizwele njengoba zihlonzwe yi-Mpumalanga Biodiversity Conservation Plan
GN546 Indima 14(a)(i)	Indawo yamandla kagesi ehlongozwayo izobe ingaphandle kwezindawo ezingamadolobha futhi izodinga ukusuka kwezitshalo endaweni engamahektha angu-5 noma ngaphezulu lapho u-75% noma ngaphezulu kuyizitshalo zendabuko.
GN546 Indima 19(a)(ii)(cc)	Imigwaqo yokungena ingase inwetshwe ngobubanzi noma ngobude ngaphakathi ngaphakathi kwezindawo ezisheshe zizwele njengoba zihlonzwe yi-Mpumalanga Biodiversity Conservation Plan phakathi nokusungulwa kwendawo ehlongozwayo.

Ngokuvumelana nale misebenzi engenhla, iNqubo yoKubhekwa Kwesimo ne-EIA kudingeka yenziwe. Imithelela engase ibe khona izohlolwa ngezigaba ezimbili ezilandelayo:

1. ISigaba Sokwenza Ucwangingo, lapho kuzohlonzwa khona, kuchazwe futhi kuhlaziywe izinto ezingase zibe yinkinga ezihlobene nawo womabili amaphrojekthi, njengengxenye yocwangingo olukha phezulu. Izindawo ezingase zizwele kakhulu esayithini enkulu ziyahlonzwa futhi zishiwo ukuthi zikuphi ukuze kuhlonzwe isiqephu esifanele sesayithi salokhu okuhlongozwayo.
2. ISigaba Se-EIA, esibandakanya ukuhlolwa okubanzi kwemithelela enqala engase ibe khona ehlonzwe eSigabeni Sokwenza Ucwangingo. Izinyathelo zokudambisa imithelela nokuyilawula ezingokoqobo nezingenzeka zizotuswa Ohlakeni Lwezinhlelo Zokulawula Ezemvelo (EMPr).

<sup>2</sup> Kumelwe kuphawulwe ukuthi kuye kwasetshenziswa indlela yokuqapha ekunqumeni uhlu lweMisebenzi Esohlwini efanele ngendlela yokuthi yonke imisebenzi engase ibe khona efanelana nale phrojekthi iye yafakwa kulesi sicelo. Lolu hlu lungase lubuyekezwe phakathi nenqubo ye-EIA futhi imisebenzi esohlwini ingase ikhishwe noma yenezelwe njengoba kufanele kuye ngalokho okutholwe yinqubo ye-EIA.

I-Eskom Holdings SOC Ltd iqoke i-Savannah Environmental, njengamakhonsalithenti ezemvelo azimele, ukuba yenze inqubo ye-EIA edingekayo. Njengengxenye yale nqubo, ama-I&AP azobandakanyeka ngenqubo yokubamba iqhaza komphakathi eyenziwa yi-Savannah Environmental.

## YIMIPHI IMITHELELA ENGASE IBE KHONA KWEZEMVELO EHLOBENE NA PHROJEKTHI EHLONGOZWAYO?

Nakuba indawo kagesi welanga isebenzisa umthombo ovuselelekayo ukuze iphehle ugesi, ukwakhiwa nokusebenza kwendawo ehlongozwayo kungase kube nomthelela kwezemvelo kokubili ngendlela enhle nemi. Kuye kwahlonzwa imithelela engaba khona kwezemvelo eminingana ehlobene nendawo kagesi welanga ehlongozwayo kulesi sigaba. Le mithelela engase ibe khona izohlolwa ngalezi zingcwangingo ezikhethekile ezilandelayo:

- » Indawo yemvelo, izilwane nezitshalo - ukwakhiwa kwale ndawo nokuphazamiseka okuhambisana nakho ezitshalweni kungase kuthikameze indawo yemvelo nezinto eziphilayo ezihlukahlukene kule sayithi.
- » Izilwane ezindizayo - Umthelela kalayini kagesi nendawo ye-PV ezinyonini ezisebenzisa le ndawo uzohlolwa.
- » Amaxhaphozi - ukwakhiwa kwendawo kanye nokuphazamiseka okuhambisana nako ohlelweni lwamaxhaphozi ale ndawo.
- » Ukuguguleka kwenhlabathi - ukwakhiwa kwendawo ehlongozwayo kungase kuphumele ekugugulekeni kwenhlabathi kanye/noma ukwanda kwamathuba okuguguleka kwenhlabathi.
- » Umthelela ongase ube khona kwezolimo - izindawo zikagesi welanga kahle-hle zibangela ukuphazamiseka okukhulu endaweni ethuthukiswayo futhi ngenxa yalokho umthelela kumelwe kuhlolwe umthelela wale ndawo ehlonziwe kwezolimo.
- » Izindawo zamagugu esizwe nezinsalela zasendulo - ukuphazamiseka noma ukucekeleka phansi kwezindawo zamagugu esizwe kanye nezinsalela zasendulo kungase kube khona phakathi nesigaba sokwakha lapho kumbiwa.
- » Ukubukeka kwendawo - ukwakhiwa wendawo yezimboni yalolu hlobo kungase kube nomthelela ekubukekeni kwale ndawo.
- » Ezenhlalo - ukwakhiwa nokusebenza kwale ndawo kungase kuholele emathubeni amahle kwezenhlalo nakwezomnotho mayelana nokutholakala kwemisebenzi kule ndawo kanti futhi kungase kube nemithelela emibi mayelana nokuphepha nokuvikeleka nezici zokusetshenziswa komhlaba.

Izingcwangingo ezikhethekile zizoncike olwazini olukhona, okubonakalayo endaweni kanye nombono ovela kwinqubo yokubamba iqhaza komphakathi. Njenge-I&AP, uvo lwakho lubhekwa njengengxenye ebalulekile yale nqubo, futhi sikunxusa ukuba ubandakanyeke.

## INQUBO YOKUBAMBA IQHAZA KOMPHAKATHI

Ukucobelelana ngolwazi kuyisisekelo senqubo yokubamba iqhaza komphakathi futhi kukunikeza ithuba lokuba neqhaza kwiNqubo ye-EIA zisuka nje. Ukuphawula nezimvo ezivela kuma-I&AP phakathi neSigaba soKubhekwa Kwesimo nese-EIA kuyakhuthazwa ukuze kuqinisekise ukuthi imithelela engase ibe khona iyacatshangelwa lapho kwenziwa ucwangingo. Inqubo yokubamba iqhaza komphakathi ihlose ukuqinisekisa ukuthi:

- » Ulwazi oluqukethe wonke amaqiniso adingekayo mayelana nokufakwa kwesicelo lwenziwa lutholakale kuma-I&AP ukuze lubuyekizwe.
- » Ukubamba iqhaza kwama-I&AP kwenziwa ngendlela yokuthi anikezwa ithuba elanele lokuphawula ngale phrojekthi ehlongozwayo.
- » Izikhathi zokubuyekiza ezanele zinikezwa ama-I&AP ukuze aveza uvo lwawo ngalokho okutholakele ohlakweni loMbokoi woKubhekwa Kwesimo nowe-EIA.

Ukuze kuqinisekise ukubamba iqhaza okuphumelelayo, inqubo yokubamba iqhaza komphakathi ihlanganisa lokhu okulandelayo:

- » Ukusatshalaliswa kwale Ncwadi Yolwazi Oluyisendlalelo ekuqaleni kwenqubo.
- » Ukuhlonzwa kwama-I&AP kuhlanganise nabanikazi bomhlaba oncikene nale ndawo kanye neZinhlaka Zikahulumeni ezifanele.
- » Ukufakwa kwezaziso zesayithi ezindaweni ezithintekayo.

- » Ukubekwa kwezikhangiso kumaphephandaba endawo kanye/noma esifunda.
- » Ukuhlanganiswa kwenqolobane yolwazi yama-I&AP okufakwa ulwazi olusha ngeNqubo ye-EIA. Wonke ama-I&AP abhalisile aziswa mathupha ngegxathu eliyinqqophamlando elifinyelelwe yinqubo ye-EIA ngokubhalelwa incwadi yababambiqhaza.
- » Ukudedelwa kohlaka loMbiko woKubhekwa Kwesimo ne-EIA ukuze kubuyekwezwe umphakathi.
- » Ukubamba imihlangano yomphakathi, nemihlangano yezingxoxo zeqembu kanye nama-I&AP ukuze kuqhutshelwe nokwenziwa lula kwenqubo yokubamba iqhaza komphakathi.

## IZIBOPHO ZAKHO NJENGE-I & AP

NgokweZiqondiso Ze-EIA, kucelwa ukuba unake izibopho zakho njenge-I&AP:

- » Ukuze ubambe iqhaza kule nqubo ye-EIA, kumelwe uzibhalise enqolobaneni yolwazi yale phrojekthi.
- » Kumelwe uqinisekise ukuthi noma yiziphi izimvo mayelana nephrojekthi ehlongozwayo zihanjiswa phakathi nezikhathi ezibekiwe.
- » Kudingeka ukuba udalule noma yiliphi ibhizinisi eliqondile, inzuzo yezimali, yomuntu siqu, noma enye ongase ube nayo ekuvunyweni noma ekwenqatshweni kwesicelo sendawo ehlongozwayo kagesi welanga.

## INDLELA YOKUBANDAKANYEKA

1. Ngokuphendula ngocingo, ngefeksi noma nge-imeyili esimemweni sokubandakanyeka kwakho esiyi sakhangiswa emaphephandabeni endawo.
2. Ngokubuyisela ifomu lokuphendula kumuntu okufanele kuxhunanwe naye ofanele.
3. Ngokuba khona emihlanganweni ezobanjwa phakathi nale phrojekthi. Njenge-I&AP ebhalisile, uyomenywa ngokuzenzakalelayo ukuba ube khona kule mihlangano. Izinsuk uzemihlangano yomphakathi ziyokhangiswa emaphephandabeni endawo.
4. Ngokuxhumana namakhonsalithenti ngemibuzo noma ngezimvo.
5. Ngokubuyekeza nokuphawula ohlakeni loMbiko woKubhekwa Kwesimo nowe-EIA phakathi nesikhathi sokubuyekeza esibekiwe esiyizinsuku ezingu-30.

Uma uzibheka njenge-I&AP yale phrojekthi, sikunxusa ukuba usebenzise amathuba akhiwe yinqubo yokubamba iqhaza komphakathi ukuze unikeze uvo, uphakamise izinkinga nokukhathazeka okukuthintayo kanye/noma onesasasa kukho noma ucele ulwazi olwengeziwe. Uvo lwakho kule nqubo lwakha isice esiyinhloko senqubo ye-EIA.

Ngokugcwalisa futhi uthumele ifomu lokuphendula elihambisana nale ncwadi, uzibhalisa njenge-I&AP yale phrojekthi, futhi uyaqinisekiswa ukuthi izimvo zakho, ukukhathazeka noma imibuzo oyiphakamisile mayelana nale phrojekthi iyonakwa.

## IZIMVO NEMIBUZO

Zonke izimvo, imibuzo noma ukuphendula kumelwe kuyiswe lapha:

Gabriele Wood of Savannah Environmental

P.O Box 148, Sunninghill, 2157

Ucingo: 011 656 3237

Ifeksi: 086 684 0547

I-imeyili: gabriele@savannahsa.com

Ukuze ubone izincwadi, vakashela lapha

[www.savannahSA.com](http://www.savannahSA.com)

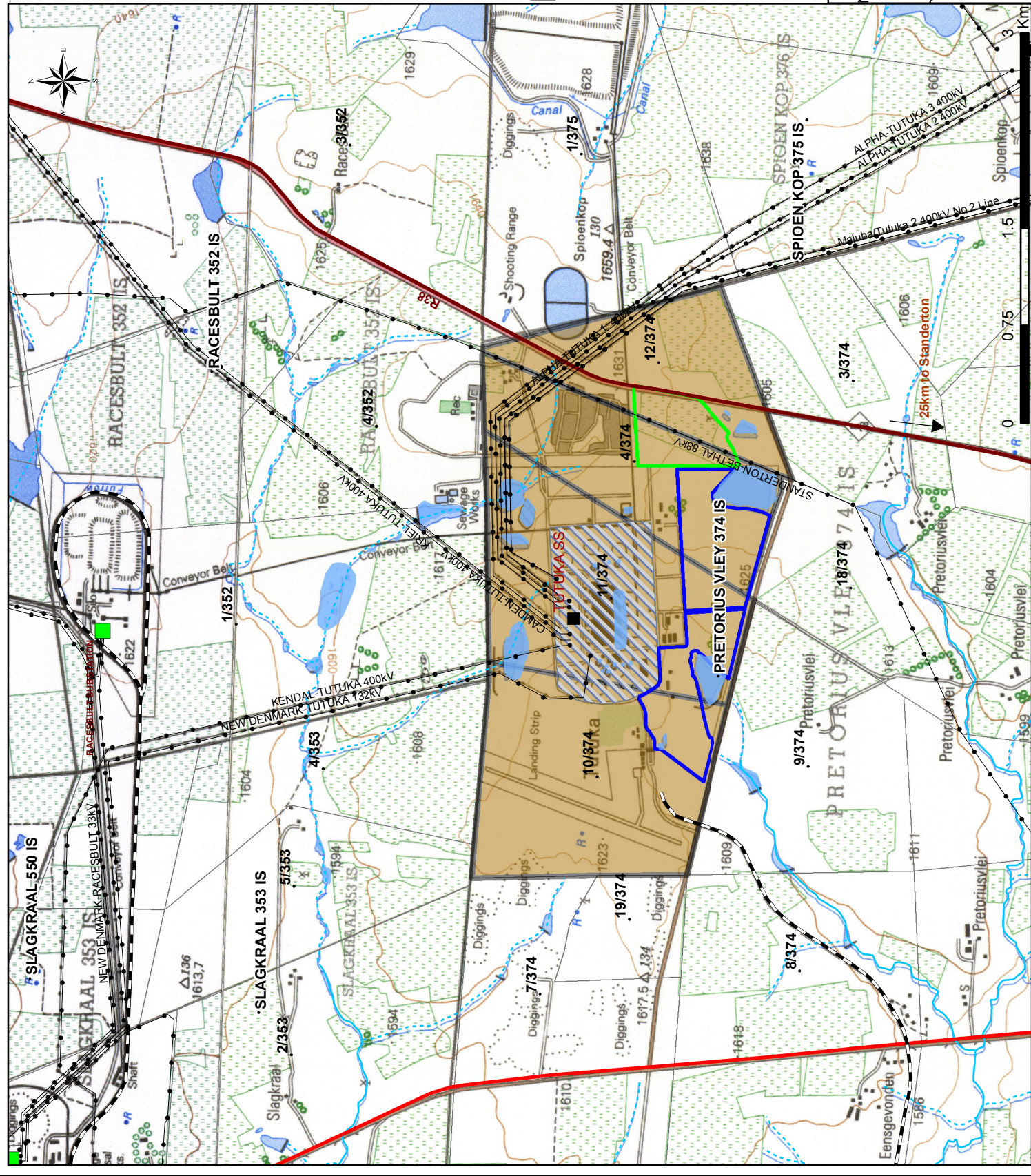
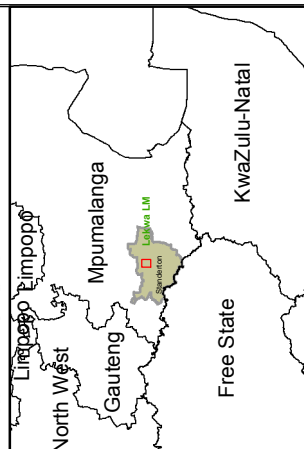


# Tutuka Solar Energy Facility

Locality map

## Legend

- Transmission substation
- Distribution substation
- Existing Powerline
- Railway Line
- Regional road
- Secondary road
- Perennial river
- Non Perennial river
- NFEPA wetlands/waterbody
- Proposed Tutuka Solar PV facility
- Alternative Solar PV facility
- Tutuka Power Station
- Farm portions





**ENVIRONMENTAL IMPACT ASSESSMENT PROCESS**  
**PROPOSED TUTUKA PHOTOVOLTAIC SOLAR ENERGY FACILITY, MPUMALANGA**  
**PROVINCE**  
**(DEA REF No. 14/12/16/3/3/2/754)**  
**PUBLIC PARTICIPATION PROCESS STAKEHOLDER REPLY FORM**

Return completed reply form to: **Gabriele Wood** of **Savannah Environmental**

Fax: **086 684 0547**

Telephone: **011 656 3237**

E-mail: **gabriele@savannahsa.com**

Postal Address: **PO Box 148, Sunninghill, Johannesburg, 2157**

**Please provide your complete contact details:**

Name & Surname:			
Organisation & Designation:			
Postal Address:			
Telephone:	Cellphone:		
Fax:	E-mail:		

**Would you like to register as an interested and affected party (I&AP)?** YES   
 (please tick the relevant box) NO

Note: You are required to register as an I&AP to receive further correspondence regarding the EIA process for the project.

**Please state your interest in the project** (add additional pages if necessary):

**Please list your questions, views or concerns regarding the project** (add additional pages if necessary):

**Please provide contact details of other persons who you regard as a potential interested or affected party:**

Name & Surname:			
Organisation & Designation:			
Postal Address:			
Telephone:	Cellphone:		
Fax:	E-mail:		



(See reverse side for isiZulu)

**INQUBO YOKUHLOLWA KOMTHELELA KWEZEMVELO: UKUSUNGULWA KWENDAWO KAGESI  
OPHEHLWA NGELANGA ITUTUKA EHLONGOZWAYO, ESIFUNDAZWENI SASEMPUMALANGA  
(Ino. YERIFARENSI YE-DEA 14/12/16/3/3/2/754)**

**IFOMU LOKUPHENDULA LENQUBO YOKUBANDAKANYEKA KOMPHAKATHI**

Phindisela ifomu lokuphendula eligcwalisiwe lapha: **Gabriele Wood of Savannah Environmental**

Ifeksi: **086 684 0547**

Ucingo: **011 656 3237**

I-imeyili: **gabriele@savannahsa.com**

Ikheli Lokuposa: **PO Box 148, Sunninghill, Johannesburg, 2157**

**Sicela unikeze imininingwane yokuxhumana nawe ephelele:**

Igama Nesibongo:			
Inhlangano Nesikhundla:			
Ikheli Lokuposa:			
Ucingo:	Umakhalekhuk hwini:		
Ifeksi:	I-imeyili:		

**Ungathanda yini ukubhalisa njengomuntu onomdlandla nothintekayo (I&AP)?** YEBO

(sicela ufake uqhushi ebhokisini elifanele)

CHA

Okumelwe ukwazi: Kudingeka ubhalise njenge-I&AP ukuze uthole ezinye izincwadi ezimayelana nenqubo ye-EIA yale phrojekthi.

**Sicela usho isasasa onalo kule phrojekthi (yenezela amakhasi engeziwe uma kudingeka):**

--

**Sicela usho uhlu lwemibuzo yakho, imibono noma okukukhathazayo mayelana nale phrojekthi (yenezela amakhasi engeziwe uma kudingeka):**

--

**Sicela unikeze imininingwane yokuxhumana nabanye abantu obabheka njengabangase babe abanomdlandla noma abathintekayo:**

Igama Nesibongo:			
Inhlangano Nesikhundla:			
Ikheli Lokuposa:			
Ucingo:	Umakhalekhuk hwini:		
Ifeksi:	I-imeyili:		



(See reverse side for English)