

ENVIRONMENTAL IMPACT ASSESSMENT AND PUBLIC PARTICIPATION PROCESSES

PROPOSED DEVELOPMENT OF THE KLIPFONTEIN SOLAR PV ENERGY FACILITIES AND GRID CONNECTION INFRASTRUCTURE, WESTERN CAPE PROVINCE

BACKGROUND INFORMATION DOCUMENT

March 2024

Salika South Africa (Pty) Ltd proposes the development of the Klipfontein Solar PV energy facilities and associated grid connection infrastructure, on a site located approximately 33km west of Merweville and 38km north east of the town of Laingsburg in the Western Cape and Northern Cape Provinces. The solar PV energy facility will have a contracted capacity of up to 1000MW. Associated grid connection infrastructure (EGI) will include a 132kV onsite switching station and overhead power line to connect the PV facilities to the national electricity grid at either the existing Eskom Koring Substation or Komsberg Substation. The entire extent of the PV site and EGI corridor falls within the Central Corridor of the Strategic Transmission Corridors and Komsberg REDZ.

The nature and extent of the solar PV energy facilities is explored in more detail in this Background Information Document (BID). In terms of Sections 24 and 24D of the National Environmental Management Act (No 107 of 1998), as read with Government Notice R324 – R327, as amended, Environmental Authorisation (EA) is required for the above-mentioned projects. A Basic Assessment process is required for the proposed Klipfontein Solar PV Energy Facilities and the EGI.

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 PV facility and EGI.
- » An overview of the BA processes and specialist studies being undertaken to assess the projects.
- » Details of how you can become involved in the BA processes, receive information or raise comments that may concern and/or interest you.

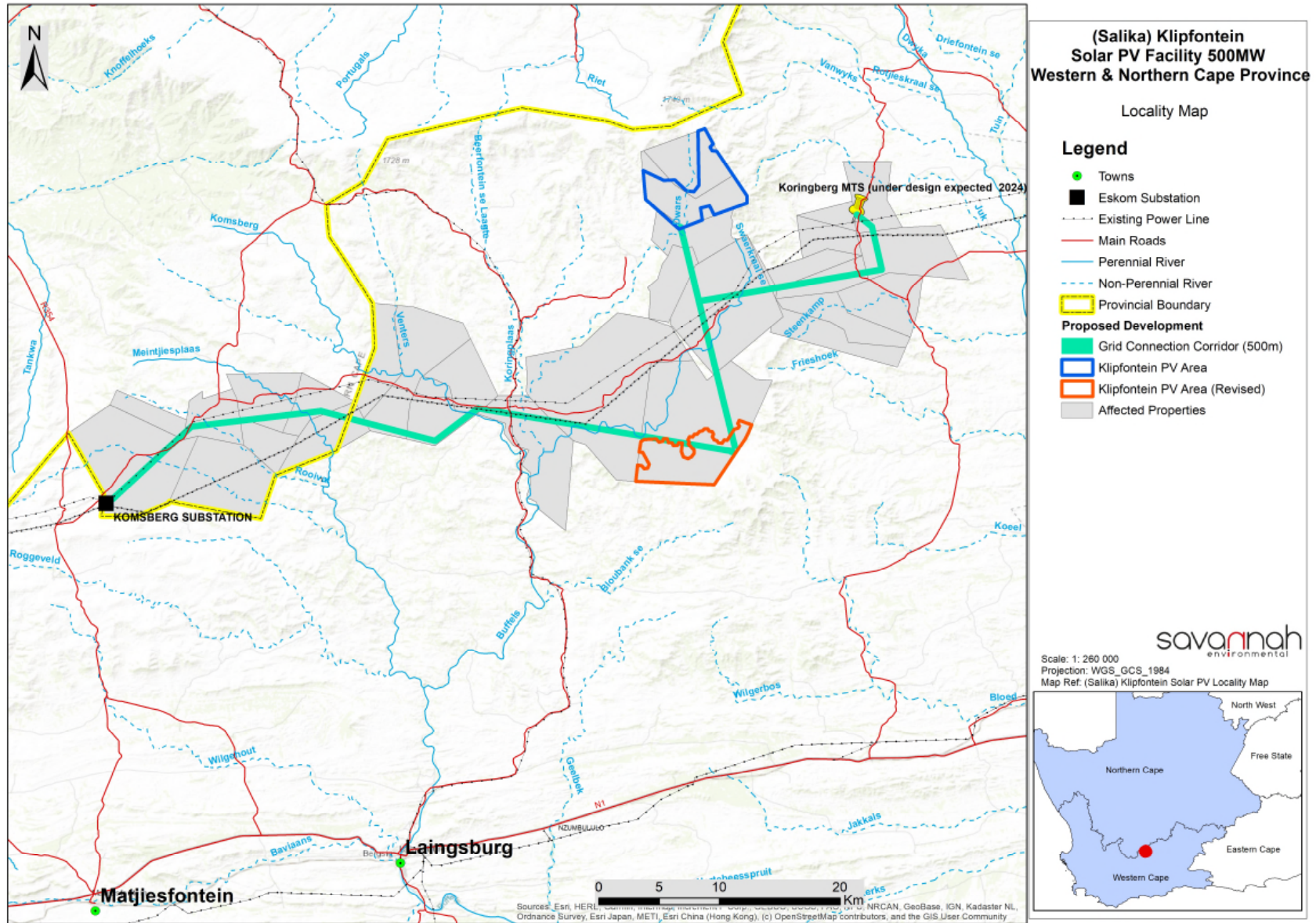


Figure 1: Locality Map of the proposed 1000MW Klipfontein Solar PV Energy Facilities and associated grid connection infrastructure.

OVERVIEW OF THE PROJECT

The Klipfontein Solar PV Energy Facilities and associated grid connection infrastructure is proposed in response to the identified objectives of the national and provincial government and local and district municipalities to develop renewable energy facilities for power generation purposes. It is the developer's intention to bid the proposed project in terms of a regulated power purchase procurement process (e.g., the Department of Mineral Resources and Energy's (DMRE's) Renewable Energy Independent Power Producer Procurement (REIPPP) Programme) to evacuate the generated power into the national grid. This will aid in the diversification and stabilisation of the country's electricity supply, in line with the objectives of the Integrated Resource Plan (IRP).

A development area of up to ~1450ha and a development footprint of up to ~1450ha have been identified within the project site (~21 400ha) by SALIKA (Pty) Ltd for the development of the Klipfontein Solar PV Energy Facilities and associated grid connection infrastructure.

The project site comprises the following properties:

| Klipfontein PV Solar Energy Facility | EGI |
|---|--|
| <ul style="list-style-type: none"> » Remainder of the Farm Modderfontein 7 » Portion 1 of the Farm Modderfontein 7 » Remainder of Portion 2 of the Farm Dwars Rivier 14 » Portion 3 (Portion of Portion 2) of the Farm Dwars Rivier 14 » Portion 4 of the Farm Dwars Rivier 14 » Farm Klipfontein Ext Farm 30 » Remainder of the Farm Klipfontein 31 » Remainder of the Farm Klipfontein Farm 32 » Portion 2 of the Farm Swaerskraal Farm 40 | <p><u>Klipfontein – Koring MTS</u></p> <ul style="list-style-type: none"> » Rietpoort Farm No. 15 RE » Rietpoort Farm No. 15 Portion 5 » Hamel Kraal Farm No. 16 Portion 7 » Spitskop Farm No. 20 <p><u>Klipfontein – Komsberg</u></p> <ul style="list-style-type: none"> » Swaerskraal 40 RE » Rietvalleyen 49 RE » Spitze Kop No. 42 Portion 1,2,3, 4 » Meintjies Plaats Farm No. 43 » Wolvenkop Farm No. 207 1,2,3 » Rheeboeke Fontein Farm No. 209 2,3 » Standvastigheid Farm No. 210 |

The infrastructure associated with the Klipfontein Solar PV Energy Facilities and associated grid connection infrastructure will include the following:

- » PV modules mounted on either a fixed tilt, single axis tracking or double axis tracking PV technology, dependent on optimisation, technology available and cost.
- » Inverters and transformers.
- » Low voltage cabling between the PV modules to the inverters.
- » Fence around the project development area with security and access control.
- » Camera surveillance.
- » Internet connection.
- » 33kV cabling between the project components and the facility substation.
- » 11/22/33kV to 132kV onsite facility substation.

- » Switching station with a capacity of up to 500MW
- » Battery Energy Storage System (BESS).
- » Site offices and maintenance buildings, including workshop areas for maintenance and storage as well as parking for staff and visitors.
- » Laydown/staging area on-site in front of mounting structures during installation.
- » Temporary store area close to site entrance.
- » Main access road (existing road to be upgraded with hard surface) and internal (new) gravel roads.
- » Temporary concrete batching facility.
- » Stormwater management infrastructure as required.

Proposed Grid connection infrastructure includes:

A 132kV overhead power line to evacuate power from the Klipfontein Solar PV Facility to Eskom's Koring MTS. Two alternative 500m wide corridors are being considered in the EIA process within which a 31m wide servitude will be placed:

- o Alternative 1: Connect to Eskom's Koring MTS
- o Alternative 2: Connect to Ekoms's Komsberg MTS

Properties within which the Klipfontein Solar PV Energy Facility and associated grid connection infrastructure project site will be located:

OVERVIEW OF SOLAR PV TECHNOLOGY PROPOSED

Solar energy facilities use energy from the sun to generate electricity through a process known as the **Photovoltaic Effect**. This effect refers to photons of light colliding with electrons, and therefore placing the electrons into a higher state of energy to create electricity. The solar fields of the PV facilities will comprise the following components:

Photovoltaic Cells:

A photovoltaic (PV) cell is made of silicone that acts as a semiconductor used to produce the photovoltaic effect. PV cells are arranged in multiples/arrays and placed behind a protective glass sheet to form a PV panel. Each PV cell is positively charged on one side and negatively charged on the opposite side, with electrical conductors attached to either side to form a circuit. This circuit captures the released electrons in the form of an electric current (i.e., Direct Current (DC)).

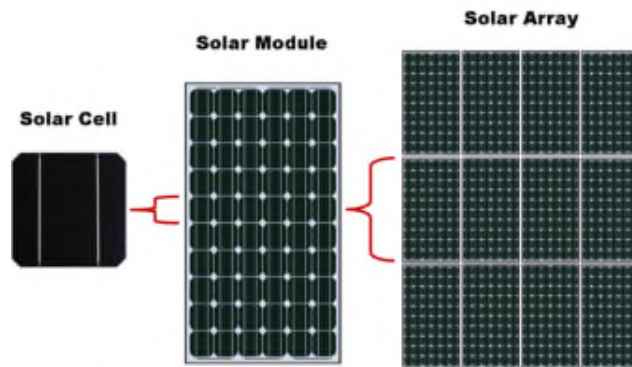


Figure 2: Overview of a PV cell, module and array/panel (Source: pveducation.com).

A solar PV module is made up of individual solar PV cells connected together, whereas a solar PV array is a system made up of a group of individual solar PV modules electrically wired together to form a much larger PV installation. The PV panels will be fixed to support structures to maximise exposure to the sun.

Inverters

Inverters are used to convert the electricity produced by the PV cells from Direct Current (DC) into Alternating Current (AC) to enable the facility to be connected to the national electricity grid. Numerous inverters will be arranged in several arrays to collect and convert power produced by the facilities.

The length of the construction period for the PV facility is estimated to be approximately 12 to 18 months. PV panels are designed to operate continuously for more than 20-25 years, mostly unattended and with low maintenance.

Support Structures

PV panels will be fixed to support structures. PV panels can either utilise fixed / static support structures, or alternatively they can utilise single or double axis tracking support structures. PV panels which utilise fixed / static support structures are set at an angle (fixed-tilt PV system) so as to optimise the amount of solar irradiation received. With fixed / static support structures the angle of the PV panel is dependent on the latitude of the proposed development and may be adjusted to optimise for summer and winter solar radiation characteristics. PV panels which utilise tracking support structures track the movement of the sun throughout the day so as to receive the maximum amount of solar irradiation.

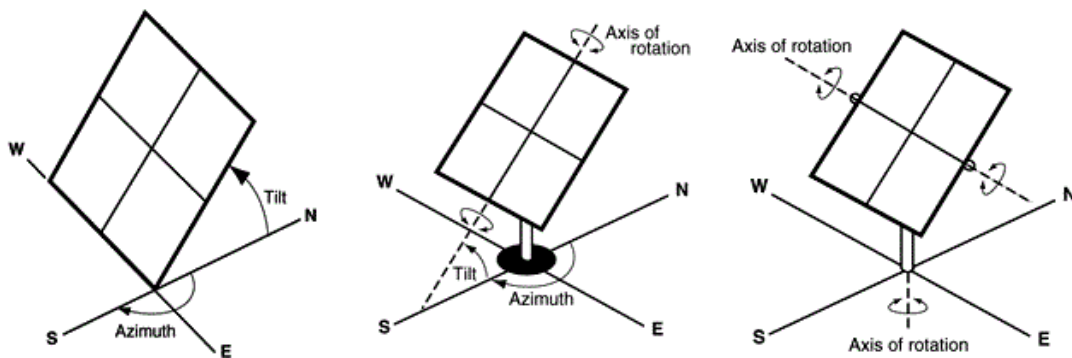


Figure 3: Overview of different PV tracking systems (from left to right: fixed-tilt, single-axis tracking, and double-axis tracking (Source: pveducation.com)).

Bifacial Solar Panel Technology

Bifacial (“two-faced”) modules produce solar power from both sides of the panel. Traditional solar panels capture sunlight on one light-absorbing side. The light energy that cannot be captured is simply reflected away. Bifacial solar panels have solar cells on both sides, which enables the panels to absorb light from the back and the front (refer to Figure 4). Practically speaking, this means that a bifacial solar panel can absorb light reflected off the ground or another material. In general, more power can be generated from bifacial modules for the same area, without having to increase the development footprint.

The optimum tilt for a bifacial module has to be designed so as to capture a big fraction of the reflected irradiation. Use of trackers is recommended so the modules can track the sun's movement across the sky, enabling them to stay directed to receive the maximum possible sunlight to generate power.

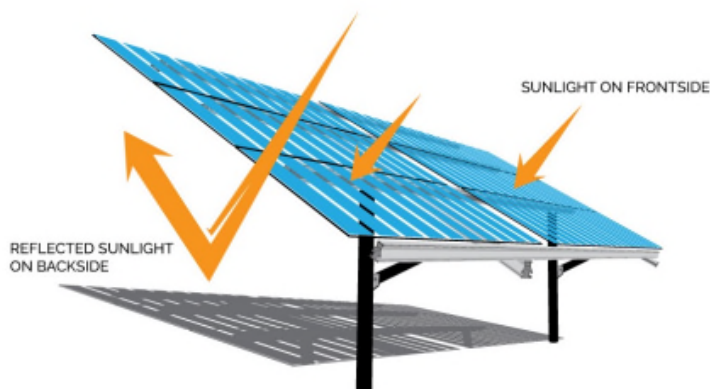


Figure 4: Diagram showing how bifacial Solar PV panels work (Source: <https://sinovoltaics.com/learning-center/solar-cells/bifacial-solar-modules/>)

BATTERY ENERGY STORAGE SYSTEM (BESS)

The need for a BESS stems from the fact that electricity is only produced by the Renewable Energy Facility while the wind or solar resource is available, while the peak demand may not necessarily occur during the daytime or as the resource is available. Therefore, the storage of electricity and supply thereof during peak-demand will mean that the facility is more efficient, reliable and electricity supply more constant.

The BESS will:

- » Store and integrate a greater amount of renewable energy from the Solar PV Facility into the electricity grid.
- » Assist with the objective to generate electricity by means of renewable energy to feed into the National Grid.
- » Proposed footprint of battery storage area: 100m x 100m.
- » Proposed capacity of battery storage: 500MWh
- » Proposed technology to be used: Lithium-ion batteries (LFP/NMC or others)

BASIC ASSESSMENT PROCESSES

In accordance with the EIA Regulations, 2014 (as amended) published in terms of the National Environmental Management Act (No 107 of 1998) (NEMA), the applicants will require environmental authorisation for the undertaking of the projects. In terms of Section 24(5) of NEMA, the EIA Regulations, 2014, as amended, (GNR 326), GNR 114 and Listing Notices (GNR 327, GNR 325, and GNR 324), as well as GNR 114 (the site is located within the Kombergs REDZ and the Central Corridor), Klipfontein Solar PV Facility and associated grid connection infrastructure is subject to the completion of a Basic Assessment (BA) process based on the location of the project sites within a REDZ. The application is required to be supported by comprehensive, independent environmental studies undertaken in accordance with the EIA Regulations, 2014 (as amended) and other relevant protocols and guidelines.

A Basic Assessment is an effective planning and decision-making tool. It allows for potential environmental consequences resulting from a proposed activity to be identified and appropriately managed during the construction, operation, and decommissioning phases of development. It also provides an opportunity for the project applicant to be forewarned of potential environmental issues and allows for the resolution of issue(s) identified and reported on as part of the BA process, as well as provides opportunity for dialogue with key stakeholders and Interested and Affected Parties (I&APs).

Savannah Environmental has been appointed as the independent environmental consultant responsible for managing the separate applications for EA and undertaking the supporting BA process required to identify and assess potential environmental impacts associated with each project, as well as propose appropriate mitigation and management measures to be contained within the Environmental Management Programmes (EMPrs). I&APs will be actively involved in the BA processes through the public participation process.

WHAT ARE THE POTENTIAL ENVIRONMENTAL IMPACTS ASSOCIATED WITH THE PROPOSED PROJECTS?

The projects will be assessed by independent environmental specialists to identify the potential for environmental impacts. Specialist studies that are proposed as part of the BA processes include the following:

| Specialist study | Scope |
|--|---|
| Biodiversity Impact Assessment | Assessment of impacts on ecology, fauna and flora, and freshwater resources associated with disturbance of vegetation, fauna, habitats and ecological processes within the project area. |
| Avifauna Impact Assessment | Pre-construction monitoring in terms of the relevant guidelines to inform the assessment of the impact on avifaunal habitats and sensitive species. |
| Soils and Agricultural Potential Assessment | Determination of land types within the project area, and assessment of the significance of loss of agricultural land due to the project development and impacts relating to soil degradation and/or erosion. |
| Heritage Impact Assessment (Archaeology, Palaeontology and cultural landscape) | Assessment of impacts on heritage resources due to disturbance or destruction of heritage sites and fossils during the construction phase through excavation activities, and assessment of impacts on heritage resources during operation as a result of visual impact. |
| Visual Impact Assessment | Determination of the presence of visual sensitive receptors in the area and assessment of the impact of the projects on these receptors and the overall aesthetics within the area. |
| Social Impact Assessment | Assessment of the positive and negative impacts on the social environment as a result of the construction and operation of the projects. |

Site-specific studies will be undertaken to assess the potential impact of the proposed developments, in order to delineate areas of sensitivity within the affected farm portions, assess impacts associated with the projects and make recommendations regarding avoidance, management and mitigation of impacts. Studies will be informed by available information and detailed field investigations undertaken in accordance with the relevant guidelines and protocols. Once the constraining environmental factors have been determined, the layouts for the proposed projects can be determined and presented in the BA reporting.

PUBLIC PARTICIPATION PROCESS

The sharing of information forms the basis of the public participation process and offers I&APs the opportunity to become actively involved in the EIA and BA processes. Comments and inputs from I&APs are encouraged in order to ensure that potential impacts are considered throughout the EIA processes. The public participation processes for the PV facility and the associated EGI. The process aims to ensure that:

- » Information containing all relevant facts in respect of the applications are 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 projects.
- » Adequate review periods are provided for I&APs to comment on the findings of the BA Reports.

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

- » Identifying I&APs, including affected and adjacent landowners and occupiers of land, and relevant Organs of State, and recording details within a database.

- » Notifying registered I&APs of the commencement of the BA processes and distributing a Background Information Document (BID).
- » Providing access to registered parties to an online stakeholder engagement platform, which centralises project information and stakeholder input in a single digital platform.
- » Providing an opportunity for registered I&APs and stakeholders to engage with the project team.
- » Placing site notices at the affected properties and in the study area.
- » Placing an advertisement in a local newspaper to provide details of the BA processes and the availability of reports for public review and comment.
- » Notifying registered I&APs of the release of the reports for review and comment, meetings to be held, and the closing dates by which comments must be received.
- » Providing an opportunity to engage with the project team via appropriate mechanisms, including meetings, telephonic consultations and written correspondence.

YOUR RESPONSIBILITIES AS AN I&AP

In terms of the EIA Regulations, 2014 (as amended) and the Public Participation Guidelines, 2017, your attention is drawn to your responsibilities as an I&AP:

- » To participate in the BA processes and provide comments on reports, you must register yourself on the I&AP database.
- » You are required to disclose any direct business, financial, personal, or other interest that you may have in the approval or refusal of the applications.
- » You must ensure that any comments regarding the proposed projects are submitted to the relevant consultant/s within the stipulated timeframes.

HOW TO BECOME INVOLVED

- » By responding by phone, fax, or e-mail to the invitation for your involvement.
- » By returning the reply form to the relevant contact person.
- » By engaging with the project team during the BA processes.
- » By contacting the public participation and/or environmental consultant with queries or comments.
- » By reviewing and commenting on the reports within the stipulated review and comment periods.

If you consider yourself an I&AP for the proposed projects, 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 forms a key element of the EIA and BA processes.

By completing and submitting the accompanying reply form, you automatically register yourself as an I&AP for the proposed projects, and are ensured that your comments, concerns, or queries raised regarding the projects will be noted. Please note that all comments received will be included in the project documentation. This may include personal information.

COMMENTS AND QUERIES

Direct all comments, queries, or responses to:

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To visit the online stakeholder engagement platform and view project documentation, visit www.savannahSA.com.

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