



**NERSA**  
**Public Participation Process**  
**Aries Solar PV Energy Facility**  
**March 6, 2012**



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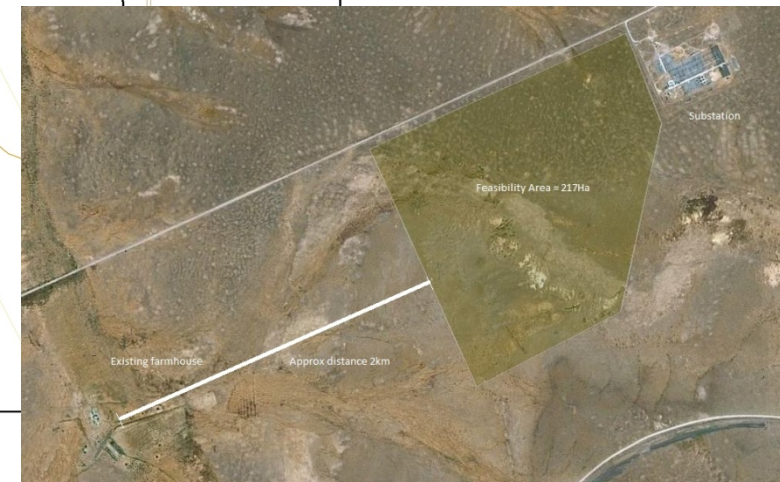
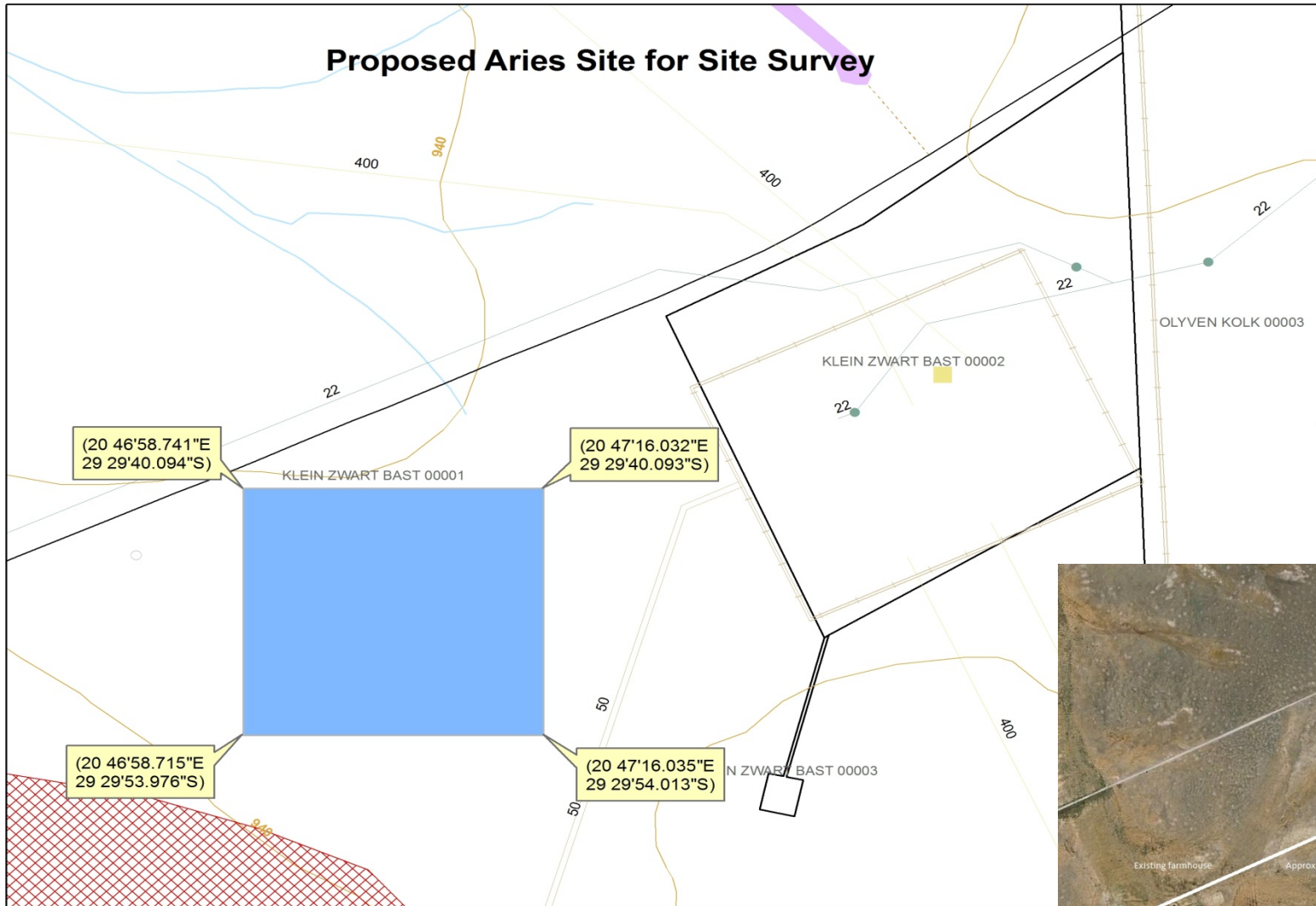


# Introducing Biotherm Energy

<b>Established South African Energy Producer</b>	<ul style="list-style-type: none"><li>• Founded in 2003 with initial focus on cogeneration projects</li><li>• Founding team has deep expertise in South African energy engineering, operations and finance</li></ul>
<b>Renewable Power Focus</b>	<ul style="list-style-type: none"><li>• In 2009, BioTherm shifted its focus towards the development of wind and solar power generation projects</li><li>• Extensive pipeline of wind generation projects</li><li>• Growing pipeline of solar projects</li></ul>
<b>Experienced Renewables Team</b>	<ul style="list-style-type: none"><li>• Current team has over 35 years of wind and solar development and investment expertise with over 1,000MW developed and operational in international markets</li></ul>
<b>Strong Equity Partners &amp; Senior Board in Place</b>	<ul style="list-style-type: none"><li>• Equity: Denham Capital</li><li>• Chairperson is Allen Morgan, ex CEO of Eskom</li></ul>
<b>Projects in operation</b>	<ul style="list-style-type: none"><li>• 4.2 MW byproduct methane cogeneration plant commissioned at PetroSA Mossel Bay plant</li><li>• Agricultural methane capture and destruction plant at largest piggery in South Africa</li></ul>



# Aries Solar PV Energy Facility



## OVERVIEW OF ARIES

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- Located approximately 30 km South west of Kenhardt in the Northern Cape Province
- Expected Commissioning Date: **July 2013**
- Leased Area: approximately 5000 hectares direct foot print of 20 Ha
- Planned Capacity: **10 MW** (Approximately 40,000 panels)
- Project connects to existing 22kV line connected directly to the Aries Substation
- Calculated Capacity Factor (independent assessor): 22 %
- Expected life of project: 20 years



# Module and Inverter Selection

Project Name:	<b>Aries Solar</b>
Contracted Capacity:	<b>10MW</b>
PV module type:	<b>Crystalline Silicone BYD250</b>
Number of PV modules:	<b>43008</b>
Number of Units (including the "Sub-field" that is part of the Facility, and further including the module strings connected to the inverter):	<b>11 Subfields, 24 Modules per string, 1792 strings in total.</b>
Mounting type:	<b>Fixed Tilt Racking</b>
Tracker type (if applicable):	<b>N/A</b>
PV inverter type:	<b>SMA Sunny Central SC630CP</b>
PV module mounting system configuration:	<b>Landscape</b>
PV module - PV inverter configuration:	<b>24 Modules per string, 2688 modules per inverter</b>
Number of Inverters:	<b>16</b>
Transformer type:	<b>315/22kV mineral oil cooled 3 phase transformer</b>
Number of transformers:	<b>16</b>
Grid connection point voltage level:	<b>22kV</b>



# EIA Process – please update

- Aries solar park was subject to the requirements of the Environmental Impact Assessment Regulations (EIA Regulations) of 2010.
- An EIA in the form of a basic assessment was required to be undertaken for this proposed project which is less than 20MW in capacity and the total project footprint is less than 20ha.



- EIA started Nov 2010
- Completed by July 2011

- Potential environmental issues identified
- Specialist reports provided for Visual, Biodiversity and Heritage Impacts
- Process ran from January 2011 to February 2011

- Addressed any identified potential environmental impacts and benefits (direct, indirect and cumulative impacts)
- Recommended mitigations were put forth
- Released to public on 15 Feb 2011

- Incorporated issues and responses raised during public review
- Submitted to DEA for decision on 23 March 2011

- Received 8 July 2011
- Took four (4) months from submission of final BA report
- The ROD was later amended and final ROD was received on 22 September 2011



# Grid Connection

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## Project grid info:

- 22 kV loop in loop out on site connection. Line runs directly from site into the Aries substation
- 22/400 kV transformer 45 MW capacity

## Status with Eskom

- Cost estimate letter received from Eskom for tender purposes and bid submission
- Design confirmed with Eskom, budget quote in process
- Self build connection option suggested





# Operations & Maintenance Structure

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## ***Maintenance Provider***

- The Project Company has also entered into Heads of Agreement with attached detailed term sheet with Juwi, as Maintenance Provider, to provide remote monitoring and maintenance services for the Facility.
- juwi will provide scheduled, unscheduled, inspection, on-site and remote monitoring, training and other services for the Facility.
- Juwi is a market leader in utility scale solar PV facilities and has 12 years of experience in constructing, owning and operating such equipment. They will complete the maintenance for an initial 5yr period

## ***Operator***

- The Project Company has entered into an Operations and Maintenance Agreement with BioTherm O&M to provide the day-to-day operations, reporting, routine maintenance and security for the Facility on behalf of the Project Company after the first five year period.
- During this five year period, there will be skills transfer between juwi and BioTherm O&M.



# Socio-Economic & Enterprise Development

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## Overall Challenges in area:

- High unemployment
- High HIV AIDS problems in the region
- Insufficient skill-levels amongst adults
- Substance and alcohol abuse

## Socio-Economic Development

- Contributions will represent 1.25% of the revenue from the project
- Based on a review of the Integrated Development Plan 2011, local economic strategy 2009 data available at SA Statistics and interviews held in the surrounding areas the focus of our efforts will be on creating facilities and services that will impact the following areas:
  - Economic related activities with focus on job creation
  - Skill development programs
  - Vocational training programs
  - Health services and facilities
  - Job creation opportunities

## Enterprise Development

- Contributions will represent 0.25% of the revenue from the project
- Goal of the enterprise development worker, who will be hired for this site will include:
  - Providing access to finance for women owned enterprises & micro finance loans
  - Support and mentoring for start-up and expanding enterprises
  - Fostering local entrepreneurship business training for local business owners



# Socio-Economic & Enterprise Development

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## Partnership:

- Project has partnered with the Ikamva Labantu Empowerment Trust and the Malibongwe Womens Development Trust, each are equity owners in the project.

## Local Community Trust

- 5% ownership in the project and it will benefit all citizens within 50km radius (over 42,000 people) of the project

## Training Programmes

- Project will select 3 candidates, from the local community, on a yearly basis to attend a 3-year NQF Level 4 **Engineering for Renewable Energy** programme
- Project will select 3 candidates, from the local community, on a yearly basis to attend an NQF Level 2 programme in **Environmental monitoring**.
- Over the life of the project we expect to train approximately 150 individuals between these two programmes