



South African Mainstream Renewable Jeffreys Bay Pty Ltd

Presented to : NERSA,
Pine Lodge Conference Centre, Port Elizabeth

Date: 2nd March 2012



MAINSTREAM
RENEWABLE POWER
SOUTH AFRICA

A joint venture with Genesis Eco-Energy

Presentation outline

1. Background
2. Milestones
3. Project Location/Layouts
4. Energy Analysis
5. Environmental
6. Technology
7. Delivery
8. Project Structure
9. Local Development Benefits
10. Questions



1. Background - Mainstream Renewable Power SA

- Mainstream Renewable Power is a **leading global renewable energy developer** with a portfolio of over 15,000MW of wind and solar projects across **eight countries**.
- Mainstream South Africa, a Joint Venture with **Genesis Eco Energy** has been active since 2009 developing over 4,000MW of wind and solar projects in the Eastern, Northern and Western Capes.
- In December 2011, a consortium led by Mainstream was awarded **preferred bidder status** by the Department of Energy in South Africa to deliver **138MW of wind energy and 100MW of solar PV** into commercial operation by 2014.
- This partnership is unique and teams the local knowledge, development skills and relationships of Genesis Eco-Energy with the core global strengths of Mainstream Renewable Power. These global strengths are in the areas of **finance, engineering and procurement** where Mainstream has a strong track record in delivering **large-scale renewable energy plants** around the world.

1. Background - A Project with a long history in SA

- Kouga Wind Farm proposed on part of Sunnyside dairy farm, outside Jeffrey's Bay in 2001
- Municipality very supportive and representative on the project Steering Com established in 2004
- EIA Authorisation received in March 2009 for 16 MW
- Proponent local company - Genesis Eco Energy
- Project has since expanded, into the Jeffrey's Bay Wind farm when the JV Mainstream SA was formed between Genesis Eco Energy and international development company Mainstream Renewable Power in March 2009

J-Bay set to be new powerhouse with wind farm project

Development bank commitment makes plan workable

By GUY ROGERS
Environment & Tourism Editor

A R50-MILLION wind farm project at Jeffreys Bay ratcheted forward yesterday with commitments to the project announced by the Development Bank of South Africa and the local municipality.

The bank's commitment should see the project's vital on-site study phase begin immediately and will also send out positive signals to other possible investors.

Speaking at a site inspection, the bank's agency services manager Christina Golino said the bank was ready to finance technical assistance including a feasibility study, and was also keen to invest in the finished product.

"We're very excited, especially in terms of the benefits for the local economy," she said, "and on a wider scale in terms of carbon trading."



BREEZY . . . Key players in the wind farm project, pictured here on site, include (from left) farmer Mark Holliday, Kouga mayor Robbie Dennis, Christina Golino, of the Development Bank of Southern Africa, and Genesis CE Dr Andries van der Linde. Picture: GUY ROGERS

This extra power will help cater for the growing electricity demand load in the area, eliminate the current problem of dips and blackouts, and boost development.

A cornerstone of the project

Golino said the bank had not yet set aside a particular sum for the technical assistance grant, "but other projects of this kind have received a substantial sum".

Kouga mayor Robbie Den-

1. Background – Jeffreys Bay

- Location: Located within the Kouga municipal area on the coastal plateau inland of the towns of Humansdorp and Jeffrey's Bay, in the Eastern Cape
- Total number of landowners = 8 landowners including the Fatman Cooperative Farming Trust
- The Project will be spread across cover a total area of approx 3574 ha. All land is currently used for grazing.
- Installed Capacity - 138 MW consisting of 60 x 2.3 Megawatt Wind Turbines
- Wind turbine generators and related components take up 5% of the land
- Farming activities will continue alongside the turbines and will be the primary land use activity

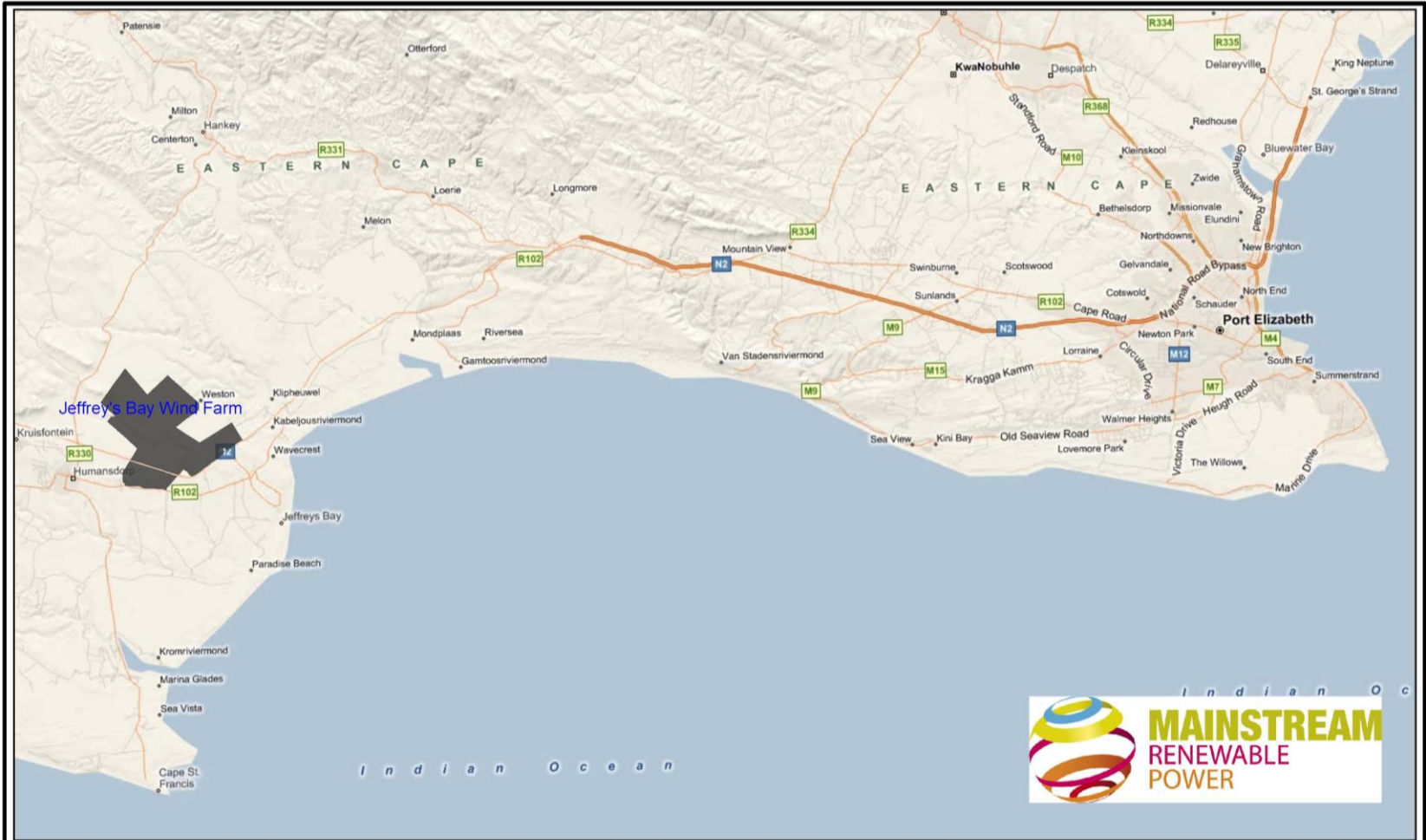
2. Jeffreys Bay– Milestones Achieved

Project Element	Status	Comment
Land Access	✓	Land Options for project footprint signed
Environmental Permitting	✓	Record of Decision (ROD) obtained on 15 th of April 2011, with no appeals, bird monitoring complete
Civil Aviation Authority	✓	CAA permit received Q1 2011
Subdivision of Agricultural Land Act 70 of 1970 (SALA)	✓	Permit from the Department of Agriculture end Of 2011
Wind Measurement	✓	4 year's data recorded – proving an excellent Wind Regime - Fully Bankable Energy Report
Wind Turbines	✓	Strategic partnership agreement in place with Siemens South Africa for the supply of 'best in class' wind turbines
Geotechnical Data	✓	Detailed Geotechnical investigations completed on project site
Transportation Study	✓	Transportation study completed.
SANRAL and District Roads	✓	Consulted and agreements in place.
Engineering & Construction Contracts	✓	Heads of Terms signed with lead contractor and Siemens. Consultant engineer in place. Preliminary work completed
Grid Connection	✓	Long standing consultation with ESKOM. Currently formalising grid connection agreements with ESKOM.

2. Jeffreys Bay– The Road Ahead...

- Preferred bidders status awarded Dec 2011
- Financial close June 2012
- **Activities:**
 - ***Development***
 - Land Use Permit (Kouga Muni) May 2012
 - Water Use License (DWA) May 2012
 - ***Financial Close***
 - PPA Finalised (**DoE**) April 2012
 - License Application (**NERSA**) May 2012
 - Final Grid Quote accepted (**Eskom**) May 2012
 - Contracts Signed June 2012
 - ***Construction*** July 2012
 - ***Commercial Operation*** Dec 2013

3. Project Location



South Africa



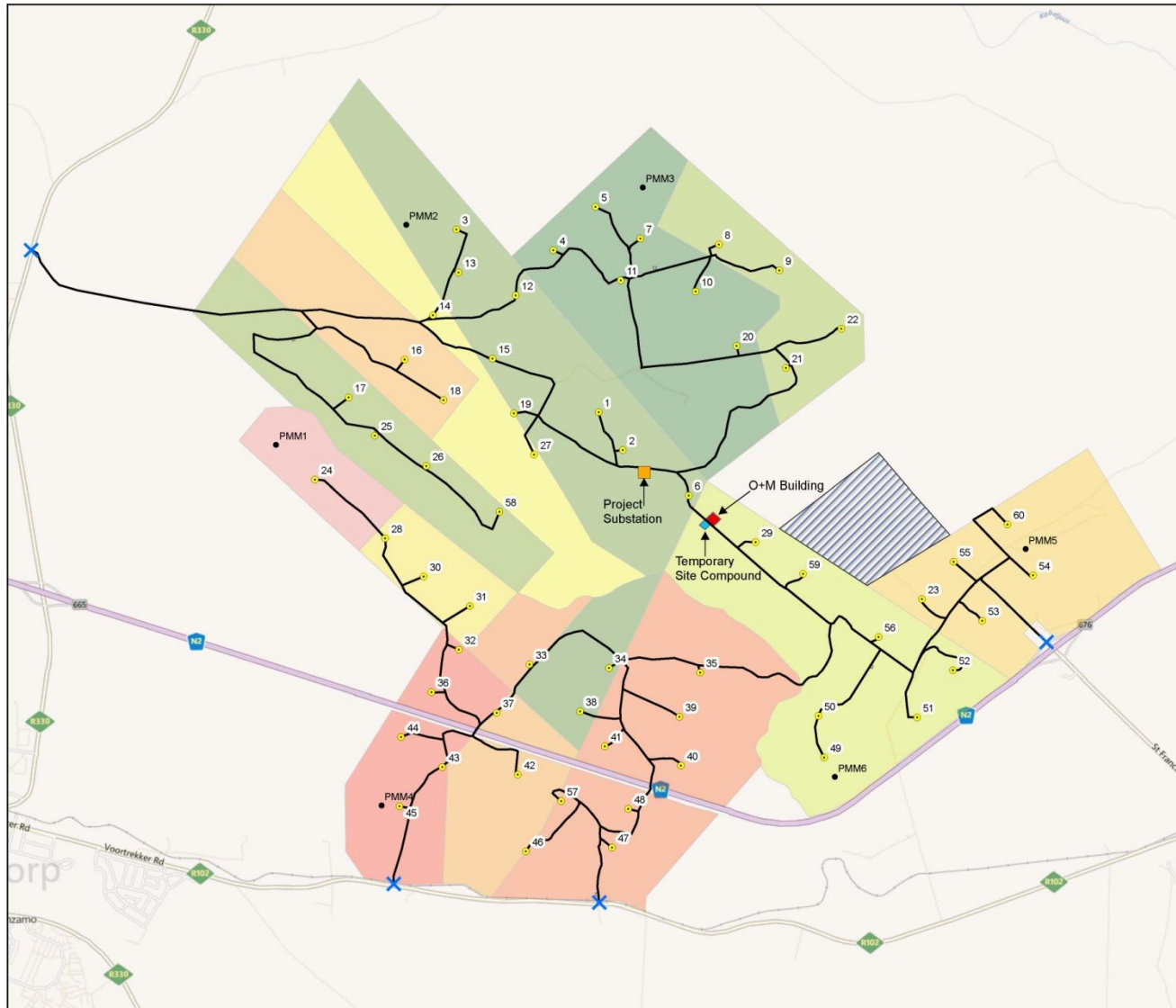
Drawn By: **Liam Lyng**

Jeffreys Bay Wind Farm Location

Sheet No. v1
Geographic WGS84

Checked by:
Date: **9th November 2009**

3. Jeffreys Bay– Site Layout



Project	
Jeffreys Bay	
Map Title	
Site Layout	
Version / Revision	
Version 1	
Legend	
✕	Site Access Points
●	Turbine Layout
●	Permanent Met Masts
■	Substation
—	Site Access Roads
▨	Laydown Area
▨	O+M Building
▨	Temporary Site Compounds
Map Details	
Reference: UTM Zone 35 Southern Hemisphere	
Created By: Eoin McPartland	
Checked By: Leo Quinn	
Date: 28 February 2012	
Credits	
<small>Copyright © Mainstream Renewable Power Limited, 2012. Map produced by Mainstream Renewable Power for internal use only. Not to be copied, reproduced, or otherwise distributed without expressly written permission.</small>	

3. Visual Illustration of the Project from the R102



4. Energy analysis

- Wind measurements onsite proves exceptional wind resource across the site.
- 4 years of high quality wind data since June 2007, verified by GL Garrad Hassan
- 37% capacity factor
- 4.5 years of wind data taken from three 3x70m masts; 2x15m and 1x40m mast
- Wind resource and energy yield assessment carried out by GL Garrad Hassan and independently verified by Wind Prospect.
- Fully Bankable Energy Assessment



5. Environmental approval

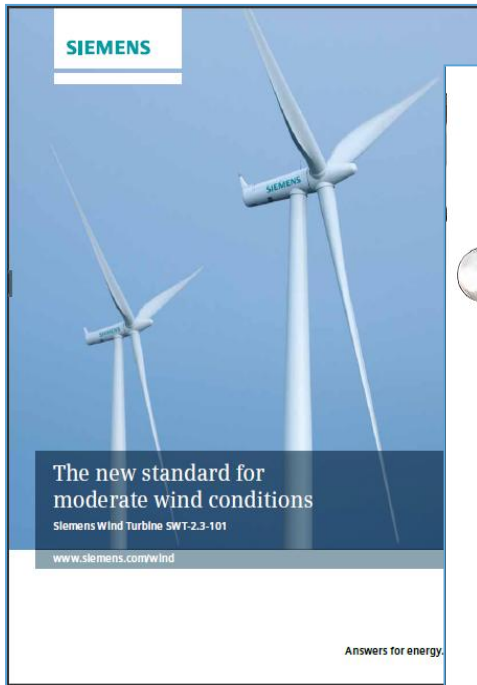
- EIA commenced July 2010 with extensive public participation.
- Environmental authorisation received on 15th of April 2011, with no appeals
- Study conducted to World Bank Equator Principles.
- Comprehensive bird monitoring program complete.



6. Technology choices

Siemens SWT-2.3 MW- Over 8,000 MW installed globally by Siemens.

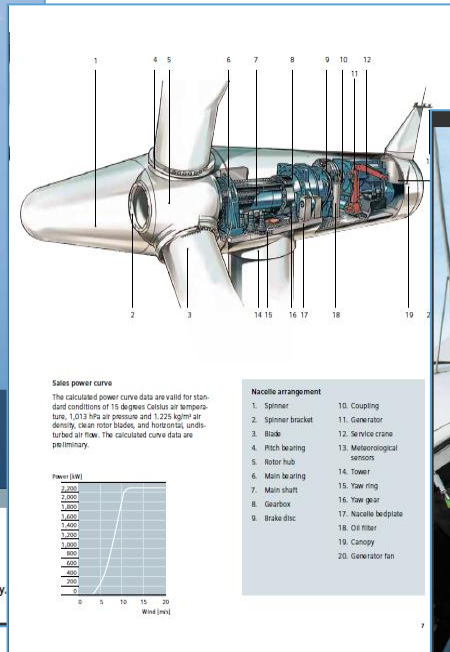
- ‘Best in Class Machine’- Excellent track record in terms of durability and availability.
- Over 3500 units installed internationally.
- Fully compliant with IEC/EN 61215 and IEC/EN 61730 and IEC 61400



SIEMENS

The new standard for moderate wind conditions
Siemens Wind Turbine SWT-2.3-101
www.siemens.com/wind

Answers for energy.



Sales power curve
The calculated power curve data are valid for standard conditions of 15 degrees Celsius air temperature, 1.013 bar air pressure and 1.225 kg/m³ air density, clean rotor blades, and horizontal, undisturbed air flow. The calculated curve data are preliminary.


Power (kW)	Wind (m/s)
0	0
0	5
0	10
0	15
0	20
200	20
400	20
600	20
800	20
1000	20
1200	20
1400	20
1600	20
1800	20
2000	20
2200	20
2400	20
2600	20
2800	20
3000	20
3200	20
3400	20
3600	20
3800	20
4000	20
4200	20
4400	20
4600	20
4800	20
5000	20
5200	20
5400	20
5600	20
5800	20
6000	20
6200	20
6400	20
6600	20
6800	20
7000	20
7200	20
7400	20
7600	20
7800	20
8000	20
8200	20
8400	20
8600	20
8800	20
9000	20
9200	20
9400	20
9600	20
9800	20
10000	20

Nacelle arrangement

- Spinner
- Spinner bracket
- Blade
- Pitch bearing
- Rotor hub
- Main bearing
- Main shaft
- Gearbox
- Brake disc
- Coupling
- Generator
- Service crane
- Meteorological sensors
- Tower
- Yaw ring
- Yaw gear
- Nacelle bedplate
- Oil filter
- Canopy
- Generator fan



Technical specifications



Rotor	Yaw system
Diameter: 101 m	Type: Active
Swept area: 8,000 m ²	
Rotor speed: 6-16 rpm	Monitoring system
Power regulation: Pitch regulation with variable speed	SCADA system: WinWPS
	Remote control: Full turbine control
Blades	Tower
Type: 849	Type: Cylindrical and/or tapered tubular
Length: 49 m	Hub height: 80 m or site-specific
Aerodynamic brake	Operational data
Type: Full span pitching	Cut-in wind speed: 3-4 m/s
Activation: Active, hydraulic	Rated power at 12-13 m/s: 2.3 MW
	Cut-out wind speed: 25 m/s
Transmission system	Maximum 3-g-ppt: 55 m/s (standard version)
Gearbox type: 3-stage planetary/helical	60 m/s (EC version)
Gearbox ratio: 1:91	Weights
Gearbox oil filling: Wet-in and off-line	Rotor: 62 tons
Gearbox cooling: Separate oil cooler	Nacelle: 82 tons
Oil volume: Approximately 400 l	Tower for 80 m hub height: 142 tons
Mechanical brake	
Type: Hydraulic disc brake	
Generator	
Type: Asynchronous	
Nominal power: 2,300 kW	
Voltage: 690 V	
Cooling system: Integrated heat exchanger	

7. Output (Value - Environmental)

Savings	Volume	Unit
Electricity Produced per Annum 138MW	362,664	MWh/per year
Number of SA Homes per annum	241,776	Houses per year
Annual Tonnes of CO2 emissions avoided	306,451	Tonnes per year
Lifetime CO2 emissions avoided	6,129,022	Lifetime of project
Water Savings	520,000,000	Liters Per annum

7. Delivery

Pre construction (Dec 2011 – June 2012)

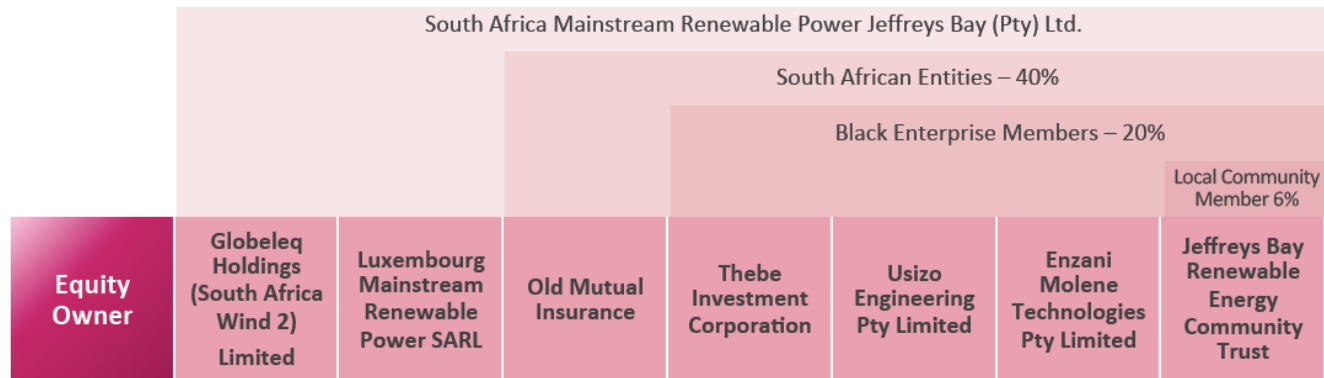
- Concluding as part of Financial close.
- Owners engineers appointed – detailed design being concluded
- Lead contractor appointed
- Grid connection
- PPA signed

Construction Phase (July 2012 to Dec 2013)

- Construction to start in Last quarter of 2012
- COD end 2013

8. Structure of project and financing

- 40% South African owned.
- 40% Black South African owned.
- Thebe Investment Corporation is Broad Based BEE partner.
- Two black-owned Engineering firms are actively engaged in project delivery.
- Local Community Trust shareholding in the Project Company.
- Fully underwritten Senior Debt by Absa Capital.



9. Local Development Benefits

Operation

20 – 30 yrs

- Development Trust
- ED support
- SED support
- Permanent Jobs
- Support to emerging farmer
- Income to landowners
- Local services
- Stability of grid
- Electricity supply
- Tourism

Construction

18 months

- Temporary Jobs
- Temporary Services
- Upgrade of certain infrastructure
- Local Procurement of goods & services

Development

- Local spend
- Support to local projects
- Exposure


9. Job Creation and Indirect Jobs

- The creation of decent jobs is central to this project, and of all the Renewable Energies, which can be transferred within the Eastern Cape and beyond.
- Ave 120 people employed over the entire construction period peaking at 175.
- Many Indirect jobs are also foreseen anticipated in the following areas: accommodation , buses, tourists, agricultural, security, amongst others...
- Capacitating of local companies (where applicable) in the renewable energy space also creates decent jobs.
- Operational Jobs: Minimum of 11 full time positions for the 20 year operational life of the project.

9. Socio-Economic Development

- Commitment of 1.485% of annual gross revenue over 20 years and confirmed in our Implementation Agreement that is a condition of our license and PPA

- Socio-Eco Development commitment focus areas eg's:
 - **Addressing Poverty & Unemployment**
 - Project 1: The CSML Mpendulo Savings Program
 - **Improving Education**
 - Project 1: ABET Learning Initiatives for local community.
 - **Children**
 - The Joshua Project: Hospice and Education for Homeless Children.

	Description	Threshold	Target	Response	
Socio-Economic Development	Socio-Economic Development Contributions	1%	1.5%	1.1%	All thresholds exceeded 
	Adjusted Socio-Economic Development Contributions	1%	1.5%	1.485%	

9. Socio-Economic Development: Working within the Community to date

MAINSTREAM SURFING FOUNDATION

JEFFREYS BAY SOUTH AFRICA

Croix Street, Jeffreys Bay * Thys Strydom 082 324 084



JOSHUA PROJECT
Bond Servants with our Lord
for our Community



A joint venture with Genesis Eco-Energy

9. Enterprise Development

- Commitment of a 0.54% of annual gross revenue over 20 years and confirmed in our Implementation Agreement that is a condition of our license and PPA
- **Business Development and Entrepreneur Programme**
- **Tourism Enterprise Development**
- **Agriculture and Enterprise Development**
- **Renewable Energy Enterprise Development Plan Components**
 - In partnership with ASGISA, identify develop and implement RE initiatives..
 - Encourage and facilitate private sector local involvement in the project supply chain in conjunction with the Kouga Black Chamber of Commerce (KBCC).

	Description	Threshold	Target	Response	
Enterprise Development	Enterprise Development Contributions		0.6%	0.4%	✓
	Adjusted Enterprise Development Contributions		0.6%	0.54%	

9. The Development Trust

- The Trust has been established to take up a % holding in Jeffreys Bay Wind Farm.
- The dividends will provide consistent funding and investment to local entrepreneurs and into social projects across key areas of
 - Education
 - Healthcare
 - Land Reform Initiatives
 - Enterprise Development
 - Energy
- Governance: 1 trustee now, operational will have trustees made up local representatives with Municipal as advisor/ex-officio
- Beneficiaries of the project will fall within a 50 KM radius of the project



Thank you



Leila Mahomed-Weideman

Tel: 021 657 4040

PO Box 45063, Claremont, 7735

1st Floor, St Albans on Cavendish,

2 Osborne Road, Claremont

083 789 2923

leila.mahomed@mainstreamrp.com

Leo Quinn

Project Manager

083 783 4155

Leo.quinn@mainstreamrp.com



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Questions?
Thank you



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