Clean Development Mechanism South Africa
Designated National Authority

energy
Department:
Energy
REPUBLIC OF SOUTH AFRICA

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Project Design Document (PDD)

Project reference number (office use only)	
Date received (office use only)	

NOTES ON COMPLETING THIS PROJECT DESIGN DOCUMENT

1. Please provide this PDD in both hard-copy (one copy) and electronic formats (MSWord)
2. The information submitted to the DNA in this PIN will remain confidential.
3. Please ensure that all fields are filled in as far as possible to allow for proper consideration of the proposed project. Please indicate if information is not available for any particular item and reasons for the unavailability of information.

Part A: Project Proponent Details

Project Name	NuPlanet Small Scale Hydropower PoA.
Date of Submission of PDD	31/07/2012

Project Developer	
Name	CME: NuPlanet Project Development (Pty) Ltd CPA 1: Stortemelk Hydro (Pty) Ltd
Organizational Category	Private Company
Legal Status	(Pty) Ltd
Street Address	For the CME: NuPlanet Project Development (Pty) Ltd **Physical Address** NuPlanet House

	53 De Havilland Crescent Persequor Park Pretoria South Africa 0020
Postal Address (if different from above)	P O Box 35630 Menlopark 0102 South Africa
Website Address	http://www.nuplanet.co.za
Main Activities	NuPlanet develops, owns and operates hydropower facilities in Southern Africa.
Summary of Financial Performance in last fiscal year	N/A
Contact Person(s)	Anton-Louis Olivier
Telephone	Work: +27 (0)12 349 2944 Cell: +27 (0) 82 938 0682
Fax	+27 (0)12 349 2944
Email Address	al@nuplanet.co.za
Project Partners Provide the following Information for **all** project partners (copy and paste relevant sections of the table if information is to be provided on more than one partner organisation)	
Name	Stortemelk Hydro (Pty) Ltd
Nature of partner	Private company specifically set up to develop CPA 1 – Please note that all contact details currently c\o NuPlanet Project Development (Pty) Ltd.
Organizational Category	Private Company
Legal Status (if private company)	(Pty) Ltd
Street Address	NuPlanet House 53 De Havilland Crescent Persequor Park Pretoria South Africa 0020
Postal Address (if different to Street Address)	P O Box 35630 Menlopark 0102 South Africa
Website Address	N/A
Main Activities	Entering into and fulfilling the purposes of the power purchase, implementation, direct and connection agreements in respects of the Stortemelk Hydro Project.
Contact Person(s)	Seline van der Wat
Telephone	+27 (0)12 349 2944

Fax	+27 (0)12 349 2944
Email Address	seline@nuplanet.co.za
Contractual Arrangements	
Contractual arrangements between various entities involved	There is a an agreement in place between the CME (NuPlanet Project Development (Pty) Ltd) and Stortemelk Hydro (Pty) Ltd as the CPA Implementer of CPA 1.

Part B: Project Overview (Technical Summary, Location and Schedule)

Technical Summary of the project	
Objective of the Project	The purpose of the PoA is to support the development of hydropower projects that will supply renewable electricity into the grid. CPA 1 is a hydropower project in South Africa – Stortemelk Hydro (Pty) Ltd
Project Description CPA 001 is a 4.1 MW hydroelectric power installation registered as Stortemelk Hydro (Pty) Ltd. It is situated on the wall of an existing reservoir, the Botterkloof Dam. It has a head of 14 m, a design flow of 30 cubic metres per second and will use a vertical Kaplan type turbine. The project was a successful bidder in Round Two of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP).	
Project Constraints There are no constraints affecting project operations or commissioning.	
Technology to be employed	Water flows will be used to drive a vertical Kaplan type turbine, which will in turn drive a generator to produce electricity.
Greenhouse Gases Targeted	This project will target CO_2.

Technical Summary of the project	
Emission reductions	This information relates to CPA 1 Total emission reductions: 172 662 tCO_2e* Annual average emission reductions: 17 266 tCO_2e/year *A ten year fixed crediting period has been selected for this project activity.
Baseline & Additionality Assessment	Baseline: The baseline scenario is the purchase of electricity from Eskom. Additionality: The additionality of the project activity is demonstrated using an investment barrier analysis, as per the 'Guidelines on the Assessment of Investment Analysis'. As per the guidelines the equity IRR for the project does not breach the default equity IRR value for South Africa, and is therefore additional.
Monitoring	The following parameters will be monitored in the project activity: – The annual quantity of net electricity output supplied by the project to the grid.
Type of project/activities	*Identify which type of activity is involved in this project - and for each, provide brief details*
a. Energy Supply	This project activity generates electricity by using the kinectic energy contained in water.
b. Energy Demand	N/A
c. Industrial Process	N/A
d. Transport	N/A
e. Waste Management	N/A
f. Forestry/ land use	N/A
g. Other	N/A
Project Boundary The spatial extent of the project boundary includes the project power plant and all the power plants physically connected to the electricity system that CPA 1 is connected to.	

Technical Summary of the project	
Indicate Emissions outside the Project Boundary	There are no significant and measurable net emissions of GHGs that are attributable to the project outside of the project boundary.

Location of the Project	
Province	CPA 1 is in the Free State Province
Municipality	Dihlabeng Local Municipality
Nearest city/large town	Bethlehem
Brief description of the location of the project site	Farm Botterkloof 541 (approximately 15 km north of the town of Clarens in the Free State Province). Latitude 28°25'49.32"S Longitude 28°23'6.29"E

Project Schedule/Timetable	
Earliest Project Start Date	September 2012 – this is when the first equipment order is anticipated to be placed.
When is the expected first year of CER delivery	2014
Project Lifetime	30 years
Project End Date	2044
Crediting Period	A fixed ten year crediting period has been selected for this project activity.
Current Status or phase of the project	The project activity is in the preparation stage and was recently awarded preferred bidder status during the second bidding window for the Renewable Energy Independent Power Producer Programme (REIPPP).
DNA Approval	This project has not been previously submitted to the DNA for approval.
Approval by other bodies	The project was given Environmental Authorisation to proceed by the Free State Province's Department of Economic Development, Tourism and Environmental Affairs (Authorisation Register Number EMB/1K, 1M, 4/07/93 – Dated 9th December 2009).

Part C: Performance against the DNA's Sustainable Development Criteria

South Africa has identified the following sustainable development criteria and indicators against which each CDM project will be assessed. Please provide your interpretation of how this project will address each of these **criteria and indicators** where they are relevant to the project. If the space provided is not sufficient please append additional information as required.

NOTE: For all indicators which are of relevance to the project show how the performance of the project against these indicators can be objectively monitored and measured on an ongoing basis.

1. Economic: Does the project contribute to national economic development?

The development of the CPA 1 will support national economic development through increasing the amount of electricity generated in the country. This assists in addressing the problem of the supply and demand mismatches South Africa has been experiencing that have had negative impacts on economic activity in the country and job creation.

Job creation is a key focus of national government's economic strategy as defined in the "New Growth Plan". CPA 1 and subsequent hydropower projects developed under the auspices of the PoA will generate work opportunities (permanent and temporary) in the construction operational phases.

The project does therefore contribute to national economic development.

2. Social: Does the project contribute to social development in South Africa?

As a result of the development of CPA 1 and any subsequent CPA falling under the umbrella of this PoA there will be increases in household income in the areas surrounding the project. The income increases are a result of increased employment. Improving household incomes leads to improved social conditions which is an objective of Government's social development policies. The Government has also identified rural areas (as where CPA 1) is located as a praticulr focus for its social development objectives.

The project does therefore contribute to social development in South Africa.

3. Environmental: Does the project conform to the National Environmental Management Act principles of sustainable development?

i) That the **disturbance of ecosystems and loss of biological diversity** are avoided, or where they cannot be avoided, are minimised and remedied	*The scale of the disturbed area means that ecosystem disturbance and loss of biological diversity is limited.* *The Environmental authorisation for the project (No. EMB/1K, 1M, 4/07/93) issued by the Free State Province's Department of Economic Development. Tourism and Environmental Affairs, requires that an EMP be implemented during the construction phase supported by the appointment of an Environmental Control Officer to check on performance against the EMP's requirements. All disturbed land is to be rehabilitated to its original state.*
ii) That **pollution and degradation of the environment** are avoided, or where they cannot be altogether avoided, are minimised and remedied	*The Environmental Authorisation includes measures to prevent soil and water pollution which are included in the EMP for the construction phase. An environmental management system will be developed to ensure measures to avoid pollution are taken forward during the operational phase.*
iii) That the **disturbance of landscapes and sites that constitute the nation's cultural heritage** is avoided, or where it cannot be altogether avoided, is minimised and remedied	*All infrastructure will be designed and placed in a manner that ensures it mitigates any potential negative aesthetic impacts (as required by the environmental authorisation). This will minimise landscape disturbance. The limited footprint of the project and the fact that site has already been disturbed through the building of the Botterkloof Dam means that the disturbance is limited. No cultural heritage sites were found.*

iv) That **waste is avoided**, or where it cannot be altogether avoided, minimised and reused or recycled where possible and otherwise disposed of in a responsible manner	*Limited amounts of waste will be produced during the construction and operational phases. This will be reused and recycled as far as possible, and disposed of responsibly. Some hazardous waste will be produced (for example oils and solvents), for which a registered company will be used for disposal.*
v) That **the use and exploitation of non-renewable resources is responsible and equitable**, and takes into account the consequences of the depletion of the resource	*The project involves the use of a renewable resource to generate energy.*
vi) That the **development, use and exploitation of renewable resources is responsible and equitable**, and takes into account the consequences of the depletion of the resource.	*Only the kinetic energy contained in the As river's water flows is used. There is no other use of the water.*
vii) That **a risk averse and cautious approach** is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions	*This approach has been reflected in the granting of the environmental authorisation and the EMP guiding the construction phase. The Environmental Control Officer will also check that the EMP requirements are fulfilled. The environmental management system to be used to manage the ongoing operations will also reflect such an approach in its design.*
vii) That **negative impacts on the environment and on people's environmental rights** be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied	*The development of an environmental management system will assist in ensuring that any potential negative impacts on the environment or on people's environmental rights are anticipated and prevented as far as possible. This as any EMS has a regular review component included in it.* *Please note that there will be no resettlement as a result of this project's implementation.*
Other comments **Please provide any other comments on how this project contributes to sustainable development in South Africa** The project will assist South Africa in delivering on its objectives with regard to moving to a low greenhouse gas emissions trajectory. This as detailed in the national government's "National Climate Change Response White Paper (2011).	

Indicators in Support of the Project Approval Criteria			
Category		**Indicator**	**Comment**
Environmental	Impact on local environmental quality	• Impact of the project on air quality • Impact of the project on water pollution • Impact of the project on the generation or disposal of solid waste • Any other positive or negative environmental impacts of the project (such as impacts on noise, safety, visual impacts, or traffic)	• Due to the nature of the project, negative impacts on local air quality will be negligible with some dust related impacts during construction. • The project will not have any impact on water quality during its operation. During construction there is the potential for sediment to get into the river. However this will be limited as a result of the implementation of the EMP. • The project activity (in implementation and operation) will produce negligible amounts of solid waste. This issue is also addressed in the EMP. • Potential noise impacts during construction are managed by such activities being limited to normal working hours i.e. 07h00 to 17h00.
	Change in usage of natural resources	• Impact of the project on community access to natural resources • Impact of the project on the sustainability of use of water, minerals or other non renewable natural resources • Impact of the project on the efficiency of resource utilisation	• The project will have no impact on community access to natural resources. • The project activity does not make use of minerals or any other non-renewable natural resources. • The project will have no impact on water resources as the water passes through the facility, taking the kinetic energy in the water flows only. • The project will have no impact on the efficiency of water resource utilisation.
	Impacts on biodiversity and ecosystems	• Changes in local or regional biodiversity arising from the project	• The limited footprint of the project means that there will be no significant changes in local or regional biodiversity. No threatened species were found at the CPA1 site.

Indicators in Support of the Project Approval Criteria			
Category		**Indicator**	**Comment**
Economic	Economic impacts	• Impact of the project on foreign exchange requirements • Impact of the project on existing economic activity in the area • Impact of the project on the cost of energy • Impact of the project on foreign direct investment	• The project will contribute to foreign reserve earnings for South Africa via the carbon credit sales revenue. • The project will generate additional temporary employment in the construction phase, and will result in permanent employment during the operational phase. 600 person months of employment will be created during the construction phase. In the operational phase the project will employ a full-time plant caretaker from the local community. All other maintenance and operation needs will be met through two contracted skilled persons based in the project area, as well as a maintenance manager from Pretoria (this will involve approximately 20 person months of work per annum). During large shutdowns for scheduled maintenance there is the possibility of more employment for a short period as more labour is required. This would be sourced from the local community if at all possible. • CPA 1 is a successful bidder in the government's Renewable Energy Independent Power Producer Procurement Programme. The price the project is being paid for electricity produced is via a competitive bidding process and has been integrated into government planning with regard to energy pricing. • There will be no foreign direct investment as a result of this project.
	Appropriate technology transfer	• Positive or negative implications for the transfer of technology to South Africa arising from the project • Impacts of the project on local skills development • Demonstration and replication potential of the project	• In the short to medium term there will be technology transfer as the turbines are imported. In the longer term it is expected that such manufacturing will be done in South Africa. • Skills will be need to be developed to support the ongoing implementation of the project. • The project further supports the case that hydropower is a viable candidate for renewable energy project development in the country.

Indicators in Support of the Project Approval Criteria			
Category		**Indicator**	**Comment**
Social	Alignment with national provincial and local development priorities	• How the project is aligned with provincial and national government objectives • How the project is aligned with local developmental objectives • Impact of the project on the provision of, or access to, basic services to the area • Impact of the project on the relocation of communities if applicable • Contribution of the project to a any specific sectoral objectives (for example, renewable energy targets)	• The project supports the emission mitigation actions of South Africa. According to a letter sent to the United Nations Framework Convention on Climate Change (UNFCCC) on 29/01/2010, South Africa committed to "taking nationally appropriate mitigation actions to enable a 34% deviation below the 'Business as Usual' emissions growth trajectory by 2020 and a 42% deviation below the 'Business as Usual' emissions growth trajectory by 2025". The project will displace electricity consumption from a predominantly coal-fired grid, which will result in a reduction in all of the negative impacts associated with coal mining. • The project will create several permanent jobs. • The project activity does not involve the relocation of any communities. • The South African Government's economic policy is defined in the New Growth Path. This document indicates that the key social development deliverable the policy is aiming to support is the creation of new jobs in South Africa. Unemployment is recognised as key problem in the country that needs to be addressed. This project will create jobs during the installation and operational phases of the programme, thereby supporting Government's policy objectives. • The project has been selected under the DoE's REIPPP programme and supports the Minister of Energy's objective that 3725 MW of renewable energy capacity be developed in the country.

Indicators in Support of the Project Approval Criteria			
Category		**Indicator**	**Comment**
	Social equity and poverty alleviation	• Impact of the project on employment levels? (specify the number of jobs created/lost; the duration of time employed, distribution of employment opportunities, types of employment, categories of employment changes in terms of skill levels and gender and racial equity) • Impact of the project on community social structures • Impact of the project on social heritage • Impact of the project on the provision of social amenities to the community in which the project is situated • Contribution of the project to the development of previously underdeveloped areas or specially designated development nodes	• The project will create permanent and temporary jobs in the construction and operational phases. The creation of jobs is important as CPA 1 is located in an area with high unemployment and little opportunity to develop new skills beyond those linked to unskilled farm work. • The project in terms of REIPPPP requirements will provide a share holding of the project to community to support development in the areas surrounding the project.

Indicators in Support of the Project Approval Criteria			
Category		**Indicator**	**Comment**
General	General Project Acceptability	• Is the distribution of project benefits deemed to be reasonable and fair?	• The project contributes to sustainable development from an economic, environmental and social perspective. The local community and environment benefits from the project activity and these benefits are considered to be reasonably and fairly distributed.

Part D: Finance

Project Costs	
Development Costs (R's)	Confidential
Installed Costs (R's)	Confidential
Other Costs (R's)	N/A
Total Project Costs (R's)	Confidential
Sources of Finance	
Equity	Approx. 22-28%
Debt (long term)	Approx. 82-88%
Debt (short term)	N/A
Amount not identified (R's)	N/A
Total CDM Contribution sought	Confidential
Expected Price of CER in case of a contract to purchase for: A period of 7 years A period of 10 years A period of 14 years (2x7 years)	Uncertain but anticipated to be linked to the spot price.
Indicate the **projected Internal Rate of Return** for the project with and without CER revenues.	Equity IRR (without CDM income) – 1.1 % No calculation has been done with CDM income as CER prices are uncertain.
Constraints on tradability of carbon credits	There are no constraints related to tradability of the carbon credits from this PoA and CPA 1 project.
Preliminary discussions with potential purchasers	Very preliminary discussions have been held with European buyers.