



energy

Department:
Energy
REPUBLIC OF SOUTH AFRICA

Private Bag X 19 , Acardia ,Pretoria, 0007, Tel:012-444 4116, Fax: 012 444 4501
Private Bag X9111, Cape Town, 8000, Tel: 021-469 6412, Fax: 021-465 5980

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	SA Calcium Carbide Furnace Waste Gas to Electricity CDM Project
Date of Submission of PDD	3 July 2012

Project Developer	
Name	SA Calcium Carbide (Pty) Ltd.
Organizational Category	Private Company
Legal Status	SA Calcium Carbide (SACC) is a legal Private Proprietary Limited Company registered in South Africa trading under the registered company named SA Calcium Carbide (Pty) Ltd.
Street Address	SA Calcium Carbide (Pty) Ltd. Karbochem Road Karbochem Industrial Area Newcastle SOUTH AFRICA
Postal Address (if different from above)	SA Calcium Carbide (Pty) Ltd. Private Bag X6630, Newcastle 2940

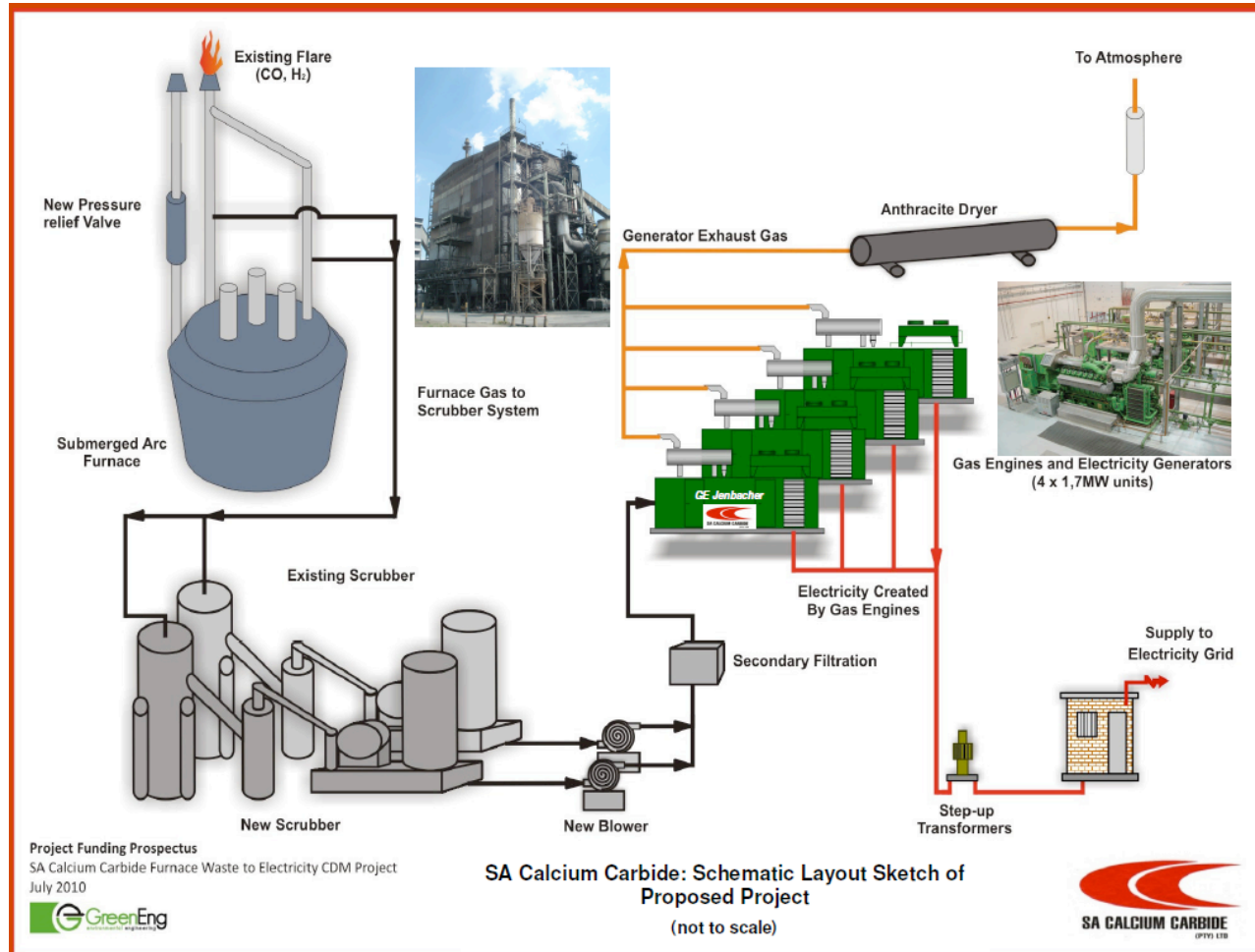
	SOUTH AFRICA																				
Website Address	www.sacarbide.com																				
Main Activities	SA Calcium Carbide primarily produces calcium carbide, a basic raw material for acetylene gas production. SACC produce some 72,000 tons of calcium carbide per annum with a capacity capability to produce up to 90,000 tons per annum. SACC are the only producer of calcium carbide on the African continent.																				
Summary of Financial Performance in last fiscal year	<p>The annual income of SA Calcium carbide was some R400,0 million and the net profit of the Company in the 2009 fiscal was R52,64 million of which total net equivalent cash from financing activities was some R21,3 million.</p> <table border="1"> <thead> <tr> <th></th> <th>2009 Audited</th> <th>2010 Audited</th> <th>2011 Draft</th> </tr> </thead> <tbody> <tr> <td>Revenue</td> <td>383,055,399</td> <td>413,861,394</td> <td>498,467,896</td> </tr> <tr> <td>Net Profit after Tax</td> <td>52,640,782</td> <td>4,735,511</td> <td>17,195,424</td> </tr> <tr> <td>Cash & cash equivalent</td> <td>21,302,665</td> <td>19,931,245</td> <td>23,309,002</td> </tr> <tr> <td>Equity</td> <td>116,633,691</td> <td>119,437,202</td> <td>126,802,634</td> </tr> </tbody> </table>		2009 Audited	2010 Audited	2011 Draft	Revenue	383,055,399	413,861,394	498,467,896	Net Profit after Tax	52,640,782	4,735,511	17,195,424	Cash & cash equivalent	21,302,665	19,931,245	23,309,002	Equity	116,633,691	119,437,202	126,802,634
	2009 Audited	2010 Audited	2011 Draft																		
Revenue	383,055,399	413,861,394	498,467,896																		
Net Profit after Tax	52,640,782	4,735,511	17,195,424																		
Cash & cash equivalent	21,302,665	19,931,245	23,309,002																		
Equity	116,633,691	119,437,202	126,802,634																		
Contact Person(s)	Juan Sabio (General Manager) Lindsay Strachan (Project Manager)																				
Telephone	Work: +27 (0)34 370 1172 Cell: +27 (0)83 626 6301(Juan) Cell: +27 (0)79 882 3940 (Lindsay)																				
Fax	Fax: +27 (0)34 370 1164																				
Email Address	juans@sacarbide.com Lindsay@greeneng.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	None envisaged																				
Nature of partner	<i>Describe nature of relationship with partner</i> na																				
Organizational Category	<i>Select most applicable:</i> <i>National Government/ Government Agency/ provincial Government/ Municipality/ Private Company/ Non-Governmental Organisation/ Other (give details)</i> na																				
Legal Status (if private company)	<i>For example: Privately held company/ limited company/ limited partnership etc.</i> na																				
Street Address	na																				

Postal Address (if different to Street Address)	na
Website Address	na
Main Activities	na
Contact Person(s)	na
Telephone	na
Fax	na
Email Address	na
Contractual Arrangements	
Contractual arrangements between various entities involved	SA Calcium Carbide (Pty) Ltd are the Project Owners and will Procure the required equipment, goods and services through engineering contracts and SACC's procurement systems.

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

Technical Summary of the project	
Objective of the Project	<p>SA Calcium Carbide (SACC) (Pty) Ltd in Newcastle, South Africa is to develop an electricity generation project utilizing furnace waste gas that has been flared since the construction of the industrial facility. Because of the high CO concentration, the waste gas produced in the closed submerged electric arc furnace has to be flared (combusted) for safety reasons before it goes out to atmosphere.</p> <p>The electricity generated on site will displace a net of 2,191MWh per year of the electricity imported from the South African national grid if all four gensets are running at design rated capacity and if sufficient gas is produced in the furnace so that the gensets can run at design capacity for 7,157 hours a year.</p> <p>Construction of the project activity starts on 1 March 2012. Commissioning of the gensets will occur by 1 October 2012.</p> <p>Starting date of the project activity is 11 August 2011 when the deposit is made toward purchasing the equipment.</p> <p>A fixed crediting period of 10 years is selected.</p>
Project Description	
<ol style="list-style-type: none"> i. The proposed project involves the installation of waste gas-fired gensets in-line with the post-scrubber gas flows from the existing SACC furnace. These gensets are purpose built for special gas fuels such as the mixture of CO and H₂ produced by the SACC furnace. It is anticipated that the four engines will be GE-Jenbacher engines. These gensets have a guaranteed power capacity (rated capacity) of 1.515kWe each. ii. Most of the available waste gas from the furnace, will be diverted into the gen-sets. There will always be a small flow of gas that must be flared for safety reasons and so that the process can be kept under control and if the gas scrubbing plant trips the gas will automatically ignite. iii. To improve the efficiency of a sustained supply of gas to the new gen-sets, a second scrubber plant is to be installed. The newly proposed second scrubber plant will incorporate a moistener, a wet scrubber system and an in-line disintegrator. This arrangement will allow for any one of the two scrubbers to be placed off-line for cleaning and servicing. iv. It is proposed that exhaust gas heat from the engines may be fed to the existing kiln for the drying of the carbon source material replacing the existing combined usage of furnace CO gas and LPG fuel. No emission reductions will be claimed for this part of the project. v. When the gas production from the furnace is greater than the amount of gas required by the gen-sets or when the engine gen-sets are off for any reason i.e. maintenance and the furnace is running, gas will continue to be flared for safety reasons. vi. The gen-sets are to deliver 11kV electrical power complete with synchronization and control equipment. vii. Only the waste gas will be used as fuel and no other fuel will be used to augment supply to the gen-sets. 	

Technical Summary of the project



Project Constraints

Are there any constraints affecting project operations or commissioning? (Brief description: 1 paragraph or less) *Note: these may be due to energy supply, infrastructure, other resources etc.*

There are several constraints in terms of the proposed project activity, due to the following:

- Capital cost of small-scale power generation facilities are normally prohibitive if executed in the absence of CDM

Technical Summary of the project			
revenue. <ul style="list-style-type: none"> Operating cost of small-scale power generation facilities are relatively expensive because of the scale of operation, when compared to large fossil-fuel power stations. There are no known installations using the selected technology on Calcium Carbide furnace offgas anywhere in the world. None of the operating partners have any experience on operation or maintenance of this type of technology. 			
Technology to be employed	Technology selection		
	Table 1: Design parameters for the preferred technology (Source: Annex 8: Updated Jenbacher specification sheet)		
	Manufacturer	Units	GE Jenbacher
	Engine type		JGS 620 GS-S.L Converter gas: engine version E58
	Working principle		4-stroke
	Configuration		V 60°
	No. of cylinders		20
	Bore	Mm	190
	Stroke	Mm	220
	Piston displacement	Lit	124.75
	Electrical output	kW el.	1.515
	Spec. fuel consumption of engine	kWh/kWh	2.62
Electrical efficiency	%	37.1	
Greenhouse Gases Targeted	Identify which greenhouse gas(es) this project will target. CO ₂		
Emission reductions	Average over one year: 40,686 tonnes CO ₂ e Total over 10 years: 406,860 tonnes CO ₂ e		
Baseline & Additionality Assessment	Approved methodology AMS-III.Q for small scale project with title "Waste Energy Recovery (gas/heat/pressure) Projects", Version 04, Sectoral Scope: 01 and 04.		

Technical Summary of the project

This methodology also refers to the following:

- Tool to calculate the emission factor for an electricity system, Version 02.2.1
- Tool for the demonstration and assessment of additionality, Version 6
- Approved consolidated baseline and monitoring methodology ACM0012, Version 04.0.0

The risks faced by the project activity are demonstrated through following barriers:

1. Technological barrier
2. Barrier due to prevailing practice

Monitoring

Data / Parameter:	1.EG _{i,j,y}
Data unit:	MWh
Description:	Electricity generated by the project activity
Source of data to be used:	Plant records produced by SACC
Value of data	43,371 The expected amount of electricity that is generated is based on the guaranteed output of the gensets, assuming sufficient waste gas is available so that all four are operating 7,157 hours of the year. Guaranteed rated capacity of the genset (1.515) x 4 x 7,157 hours per year = 43,371 MWh per year. Refer to spreadsheet for the calculation.
Description of measurement methods and procedures to be applied:	An electricity meter will be installed to measure the electricity generated by the gensets. Continuous monitoring will be done and the data will be logged daily. Monthly records will be available for verification. Location of meter: See Annex 7 for the diagram. The meter will be installed on the 11kV line after the Jenbachers on the feeder panel.
QA/QC procedures to be applied:	The electricity meters will be calibrated and maintained in accordance with manufacturer's specifications. The electricity meter reading will be checked against the individual electricity readings from each engine.
Any comment:	The monitoring process and equipment for this procedure is standard. The above data will be kept for a minimum of two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.

Technical Summary of the project

Data / Parameter:	3. $EC_{PJ,y}$
Data unit:	MWh
Description:	Additional electricity consumed in year y for project related equipment that are installed as a result of the implementation of the project activity.
Source of data to be used:	The electricity consumption (parasitic load) of the gen-sets, the scrubber and the auxiliaries installed under the project will be recorded.
Value of data	2,191 Based on 39.040kW x 4 x 7,157hours (parasitic load for the 4 Gensets) and 150kw x 7,157hours (for the Scrubber) – See Annex 22:Specification sheet for the scrubber
Description of measurement methods and procedures to be applied:	An electricity meter will be installed to measure the electricity consumed by the gen-sets and the gas cleaning equipment (scrubber) that is installed as part of the project activity. Continuous monitoring will be done and the data will be logged daily. Monthly records will be available for verification.
QA/QC procedures to be applied:	The electricity meters will be calibrated and maintained in accordance with manufacturer's specifications. The electricity meter reading will be checked against the individual electricity readings from each engine.
Any comment:	The above data will be kept for a minimum of two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.

Data / Parameter:	2. $Q_{OE,y}$
Data unit:	GJ
Description:	Quantity of actual output generated during year y
Source of data to be used:	SACC power plant process data
Value of data applied for the purpose of calculating expected emission reductions in section B.5	156,137
Description of measurement methods and procedures to be	Continuous monitoring will be done and the data will be logged daily.

Technical Summary of the project																	
	<table border="1"> <tr> <td>applied:</td> <td></td> </tr> <tr> <td>QA/QC procedures to be applied:</td> <td>The electricity meters will be calibrated and maintained in accordance with manufacturer's specifications.</td> </tr> <tr> <td>Any comment:</td> <td>The above data will be kept for a minimum of two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.</td> </tr> </table>	applied:		QA/QC procedures to be applied:	The electricity meters will be calibrated and maintained in accordance with manufacturer's specifications.	Any comment:	The above data will be kept for a minimum of two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.										
applied:																	
QA/QC procedures to be applied:	The electricity meters will be calibrated and maintained in accordance with manufacturer's specifications.																
Any comment:	The above data will be kept for a minimum of two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.																
	<table border="1"> <tr> <td>Data / Parameter:</td> <td>4. f_{cap}</td> </tr> <tr> <td>Data unit:</td> <td>Unitless</td> </tr> <tr> <td>Description:</td> <td>Energy that would have been produced in project year y using waste heat generated in base year expressed as a fraction of total energy produced using waste heat in year y.</td> </tr> <tr> <td>Source of data to be used:</td> <td>Calculated</td> </tr> <tr> <td>Value of data</td> <td>1</td> </tr> <tr> <td>Description of measurement methods and procedures to be applied:</td> <td>The relevant f_{cap} will be determined prior to each verification according to the calculation procedure described by ACM0012.</td> </tr> <tr> <td>QA/QC procedures to be applied:</td> <td></td> </tr> <tr> <td>Any comment:</td> <td>The above data will be kept for a minimum of two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.</td> </tr> </table>	Data / Parameter:	4. f_{cap}	Data unit:	Unitless	Description:	Energy that would have been produced in project year y using waste heat generated in base year expressed as a fraction of total energy produced using waste heat in year y.	Source of data to be used:	Calculated	Value of data	1	Description of measurement methods and procedures to be applied:	The relevant f_{cap} will be determined prior to each verification according to the calculation procedure described by ACM0012.	QA/QC procedures to be applied:		Any comment:	The above data will be kept for a minimum of two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.
Data / Parameter:	4. f_{cap}																
Data unit:	Unitless																
Description:	Energy that would have been produced in project year y using waste heat generated in base year expressed as a fraction of total energy produced using waste heat in year y.																
Source of data to be used:	Calculated																
Value of data	1																
Description of measurement methods and procedures to be applied:	The relevant f_{cap} will be determined prior to each verification according to the calculation procedure described by ACM0012.																
QA/QC procedures to be applied:																	
Any comment:	The above data will be kept for a minimum of two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.																
Type of project/activities	<i>Identify which type of activity is involved in this project - and for each, provide brief details</i>																
a. Energy Supply	Waste Energy to electricity																
b. Energy Demand	NA																
c. Industrial Process	NA																
d. Transport	NA																
e. Waste Management	NA																
f. Forestry/ land use	NA																
g. Other	NA																
Project Boundary Define the Project Boundary (Approximately 1 paragraph)																	

Technical Summary of the project

The physical, geographical site of the facility where the waste gas/heat/ pressure is produced and transformed into useful energy delineates the project boundary.

The geographical extent of the project boundary shall include the following:

- (a) The industrial facility where waste energy is generated, including the part of the industrial facility where the waste gas was utilized for generation of captive electricity prior to implementation of the project activity;

The industrial facility where waste energy is generated is SACC, therefore the SACC industrial facility is included in the boundary.

- (b) The facility where steam/process heat in the element process/electricity/mechanical energy is generated (generator steam/process heat/electricity/mechanical energy). Equipment providing auxiliary heat to the waste energy recovery process shall be included within the project boundary; and

The electricity is generated by gen-sets at the SACC industrial facility. The gen-sets and auxiliary equipment is included in the boundary.

- (c) The facility(ies) where steam/process heat in the element process/electricity/ mechanical energy is used (the recipient plant(s)) and/or grid where electricity is exported, if applicable.

The electricity produced by the project activity will be used for own consumption.

Indicate Emissions outside the Project Boundary	There are no net emissions attributable to the proposed project activity outside the project boundary.
---	--

Location of the Project	
Province	Kwazulu Natal
Municipality	Newcastle
Nearest city/large town	Newcastle
Brief description of the location of the project site	The project will be implemented as a brownfields expansion on the existing industrial site of the SA Calcium Carbide Smelter. The SA Calcium Carbide site is located in the “Karbochem” Industrial Area, Newcastle.

Project Schedule/Timetable	
Earliest Project Start Date	11 August 2011 The starting date of the project activity is the date that the deposit was paid on the equipment.
When is the expected first year of CER delivery	2014
Project Lifetime	15 years, but the crediting period is only 10 years
Project End Date	2024
Crediting Period	10 years
Current Status or phase of the project	In construction
DNA Approval	PIN submitted on 30 August 2010. A positive letter of no objection was received on 4 November 2010.
Approval by other bodies	No

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?

Yes, the project activity has a robust economic dimension addressing the following in terms of national economic development:

- The project will generate employment both during construction (estimated 350 temporary positions) and operation (estimated 10 permanent positions). The majority of these positions will be filled from the local community of Newcastle and surrounding districts.
- After the initial CDM crediting period, the shares in the project will be transferred to SA Calcium

Carbide who is a local entity. From this point all financial returns will accrue to the local entity.

- There are no existing projects using the envisaged technology in South Africa and the project will provide an opportunity for technological interaction and knowledge transfer to local citizens.

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

Yes, the project will contribute significantly to the social upliftment and development of the people of South Africa and particularly in the project area, through the following:

- Through the creation of jobs both temporary and permanent, most of which will be from the local communities, the project activity will contribute to alleviation of poverty in the project area.
- Because there are no similar technology installations in the area, the local people will require education and training in the operation and maintenance of the plant. This will enhance information sharing and skills transfer from foreign parties to the local community.
- The creation of jobs, together with the wider impact of poverty alleviation will create a distribution of wealth within the local communities, with a direct and measurable improvement of health and quality of life for citizens of the local community.

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

Please provide brief comment for each of these below.

i) That the disturbance of ecosystems and loss of biological diversity are avoided, or where they cannot be avoided, are minimised and remedied	There will be no disturbance of any ecosystem or loss of biodiversity through the project activity. The selected site is on the existing industrial property between existing operational units with no active ecosystem or biodiversity constraints.
ii) That pollution and degradation of the environment are avoided, or where they cannot be altogether avoided, are minimised and remedied	<i>(1 paragraph)</i> By replacing fossil fuel based electricity from the national grid, the project activity will have a positive impact on pollution by lowering national CO ₂ emission levels. Therefore, there will be no pollution or degradation of the environment through the project activity.
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	<i>(1 paragraph)</i> There will be no disturbance of landscapes and sites that constitute the nation's cultural heritage through the project activity as the selected site is within the boundary of the existing SA Calcium Carbide industrial complex.
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	<i>(1 paragraph)</i> The project activity will not generate any operating waste. A small quantity of inert building rubble will be generated during construction, which is normal for this type of project. The building rubble will be removed and used as filling materials or disposed in an approved landfill.
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	<i>(1 paragraph)</i> The project activity will not consume or exploit non-renewable resources. By generating waste-gas based electricity, the project will have a positive impact on the use of non-renewable resources by replacing fossil fuel based generation capacity.
vi) That the development, use and exploitation of renewable resources is responsible and equitable, and takes	<i>(1 paragraph)</i> The electricity generated by the project is based on a waste offgas from the furnace at SA Calcium Carbide. Therefore the project activity by

<p>into account the consequences of the depletion of the resource.</p>	<p>definition will not consume or exploit renewable resources but rather a waste source.</p>
<p>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</p>	<p><i>(1 paragraph)</i> Prior to construction the project activity will be scrutinized and monitored by the appointed EIA consultants. In addition, a monitoring methodology forming part of the UNFCCC criteria for CDM registration will be implemented and adhered to during operation.</p>
<p>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</p>	<p><i>(1 paragraph)</i> By effectively replacing fossil fuel based electricity from the national grid, the project activity will have a positive impact on the environment by lowering national CO₂ emission levels. Therefore, there will be no negative impacts on the environment and on people's environmental rights through the project activity.</p>
<p>Other comments Please provide any other comments on how this project contributes to sustainable development in South Africa (optional)</p>	

Indicators in Support of the Project Approval Criteria

	Category	Indicator	Comment
Environmental	Impact on local environmental quality	<ul style="list-style-type: none"> • 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) 	<ul style="list-style-type: none"> • On a national scale the project will have a positive impact on air quality, as CO₂ emissions will be mitigated. • The project uses closed water-cooling circuits with low consumption and no effluent. There will therefore be no negative impact on water pollution. • There will be no solid waste generated by the project operation, save for minimal building rubble during construction. This will be used on-site as filler material or disposed of in an approved dump site. • Since the site is part of an existing industrial site, no visual or traffic impacts are applicable. Noise pollution will be mitigated by the design of the technology employed to adhere to national standards. Safety will be addressed both during construction and operation in line with the existing, very successful, SA Calcium Carbide safety standards.
	Change in usage of natural resources	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • The project makes use of a waste source (furnace offgas) as fuel. Therefore, there will be no effect on community access to natural resources. In addition, and for the same reason, the project will have no impacts on any non-renewable resources at local level. • On a national level, the project will have a positive impact on non-renewable resources by replacing fossil-fuel based power from the national grid. This will lower both coal and water consumption at source and improve the efficiency of resource utilization.
	Impacts on biodiversity and ecosystems	<ul style="list-style-type: none"> • Changes in local or regional biodiversity arising from the project 	<ul style="list-style-type: none"> • Zero impact on ecosystems or biodiversity at site is envisaged since the selected location is part of an industrial site and there are no existing active ecosystems.

Indicators in Support of the Project Approval Criteria		
Category	Indicator	Comment
Economic	Economic impacts	<ul style="list-style-type: none"> • Foreign Exchange Requirements will be identified pending configuration of financing structure. • Due to the additional employment opportunities created from the implementation of the project, areas such as Newcastle and surrounding districts will benefit from the increased spending power of such employees. • No significant cost benefit exists in terms of energy cost since the additional power produced from the project is very small compared to that supplied to the national grid from Eskom. The added electrical energy cost will be on par with Eskom's future expanded capacity cost. • Significant foreign direct investment consists of the equity investment made by AAP Carbon as a Hong Kong entity into a local plant in South Africa.
	Appropriate technology transfer	<ul style="list-style-type: none"> • Significant benefits exist in transfer of technology to South Africa since this type of technology has not been applied in this industry as yet. • The power plant will use only local manpower for operation. The technology supplier, as part of its supply, will train these local operators in the required skills for reliable independent operation. It is further envisaged that as the population of this type of technology in SA grows, local teams will be trained up to maintain the equipment. <p>Because of the significant number of smelter plants operational in South Africa, in conjunction with the modularity of the technology, there is potential to replicate the same configuration at every one of these plants, even if capacity and commodity produced differs between plants. AAP has set itself the goal of using this approach to enable an industry transformation through the smelting industry.</p>

Indicators in Support of the Project Approval Criteria		
Category	Indicator	Comment

Indicators in Support of the Project Approval Criteria

Category	Indicator	Comment
Social	Alignment with national provincial and local development priorities	<ul style="list-style-type: none"> • 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)
	Social equity and poverty alleviation	<ul style="list-style-type: none"> • 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 meets the National, Local and Provincial Governmental objectives and initiatives. The project will contribute towards the provincial economy; create sustainable employment opportunities; enhance profitability; ensure sustainable development and poverty eradication. It is also in line with both ASGI-SA and the Provincial Growth and Development Strategy (PGDS).

• The project is expected to enhance the sustainability of access and provision of basic services already established by the existing SA Calcium Carbide smelter.

• No impact is expected in terms of relocation of communities.

• The project will positively impact on the provision of alternative energy to the country's national grid.

• It is envisaged that the project will create circa 350 temporary employment opportunities during construction. These construction opportunities will be available for approximately 10 months and consist predominantly of unskilled and semi-skilled labour.

• During operation circa 10 permanent employment opportunities will be created which will last for at least the 10-year operation duration. These will consist of predominantly skilled labour and qualified operational staff.

• Because of the relatively small scale of the project no impacts are expected on the community social structures or social heritage.

• The project will form part of the larger industrial development area dominated by SA Calcium Carbide. No additional social amenities are envisaged.

The project will enhance the development of the Newcastle and surrounding areas in conjunction with the existing SA Calcium Carbide plant.

Indicators in Support of the Project Approval Criteria

	Category	Indicator	Comment
General	General Project Acceptability	<ul style="list-style-type: none"> Are the distribution of project benefits deemed to be reasonable and fair? 	<ul style="list-style-type: none"> Yes, the distribution of project benefits are deemed to be reasonable and fair. Additional support and guidance for this distribution will be sought from the DME as well as from the DOE tasked with validation of the PDD submission.

Part D: Finance

Figure 1

Project Costs	
Capital Expenditure Costs (R's) Total Capital Expenditure (CAPEX) plus Mobilisation Cost	R115.1 million
Other Costs (R's) Annual Operation and Maintenance Cost estimate*	(1) Operating & Maintenance Costs on Engines: R91.3 million (2) Monitoring Costs: R7.4 million (3) Finance Charges: R57.2 million
Total Project Costs (R's)	R271 million
Sources of Finance	
Equity	R4.475 million equity payment was paid towards project development by SACC
Senior Debt (long term)	The IDC of SA has provided two debt loans as follows: 1. Suspensive sale agreement for some: R47.6 million 2. Loan Agreement for some: R52.4 + R15.1 (contingency increase) = R67.5 million
Subordinated Debt (long term)	No additional loans on the project are in place currently.
Total CDM Contribution sought	For the estimated CDM generation of some 550,000 CER's, some R48.0 million is anticipated from prospective Carbon Buyers
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)	€8.50 (Euro) at an exchange rate of 10 ZAR to 1 Euro.
Indicate the projected Internal Rate of Return for the project with and without CER revenues.	<i>Note: Please indicate assumed price of CER as used in your calculation</i> With CER's sales: >15% IRR; Without CER's sales: 9% IRR.
Constraints on tradability of carbon credits	Have any commercial arrangements been made that may impact the tradability of the carbon emission reductions? If yes, please define. Note. Examples would be subjection to a mortgage, government tax etc. No commercial arrangements are in place at present that may place constraints on the CER tradability.

Preliminary discussions with potential purchasers	Have you had any preliminary discussions with any potential purchasers of the carbon credits (CERs) Preliminary discussions with several interested parties are in progress but no firm commitments have been made by SACC.
--	--