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# VALIDATION REPORT

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## Chennai Water Desalination Limited

### Energy Efficiency Measures at Desalination Plant in Chennai

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**SGS Climate Change Programme**  
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<b>Date of Issue:</b> 12-11-2008		<b>Project Number:</b> CDM.VAL1623	
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<b>Publication of PDD for Stakeholders Consultation</b>			
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First PDD Version and Date:		01 dated 02/01/2008	
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<b>Summary:</b>			
<p>Zero Emissions Technologies SA has commissioned SGS to perform the validation of the project: Energy Efficiency measures at Desalination Plant in Chennai.</p> <p>Methodology used: AMS II D</p> <p>Version and Date: Version 11, EB35.</p> <p>The scope of the validation is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. SGS has employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.</p> <p>The report is based on the findings of document reviews, the stakeholder consultation process and responses from the project participants to the findings raised in this report.</p> <p>The report and the annexed validation describes a total of 21 findings which include:</p> <ul style="list-style-type: none"> <li>• 10 Corrective Action Requests;</li> <li>• 11 New Information Requests; and</li> </ul> <p>All findings have been closed out satisfactorily Project is recommended to the CDM Executive Board with a request for registration.</p>			
<b>Subject:</b>			
CDM Validation			
<b>Validation Team:</b>			
Pankaj Mohan – Lead Assessor Sathis Kumar – Assessor		<input checked="" type="checkbox"/> No Distribution (without permission from the Client or responsible organisational unit)  <input type="checkbox"/> Limited Distribution  <input type="checkbox"/> Unrestricted Distribution	
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Name: Siddharth Yadav Date: 18 <sup>th</sup> February 2009			
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## Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CER	Certified Emission Reductions
CMWSSB	Chennai Metropolitan Water Supply and Sewerage Board
CO <sub>2</sub>	Carbon Dioxide
CWDL	Chennai Water Desalination Limited
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EF	Emission Factor
GHG	Greenhouse Gas(es)
HCA	Host Country Approval
IDA	International Desalination Association
IPCC	Intergovernmental Panel on Climate Change
ISHC	International Stakeholder Consultation
KP	Kyoto Protocol
MED	Multi Effect Technology
MLD	Million Litres per Day
MP	Monitoring Plan
NIR	New Information Requests
ODA	Official Development Assistance
PDD	Project Design Document
PE	Project Emissions
PP	Project Proponent
RO	Reverse Osmosis
SGS	SGS United Kingdom Ltd
UNFCCC	United Nations Framework Convention on Climate Change
VFD	Variable Frequency Drive

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## 1. Validation Opinion

SGS United Kingdom Ltd has been contracted by Zero Emissions Technologies SA to perform a validation of the project: "Energy Efficiency measures at Desalination Plant in Chennai" in India.

The Validation was performed in accordance with the UNFCCC criteria for the Clean Development Mechanism (CDM) and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

SGS reviewed of the project design documentation, using a risk based approach and conducted follow-up interviews.

It is a small scale energy efficiency project in which five medium Voltage Variable Frequency Drives (VFD) will be put up in the high pressure pumps used in the Reverse Osmosis (RO) process of a desalination plant. In the absence of the project activity the high pressure pumps will be operated without VFD there by consuming excess electrical energy. The use of VFD will result in the reduction of electrical energy consumption by these high pressure pumps which will result in reductions of greenhouse gas emissions that are real, measurable and give long-term benefits to the mitigation of climate change.

In our opinion, the project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria. The project correctly applies methodology AMS II D version 11, EB35. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the project are estimated to be 164834 tCO<sub>2</sub>e over a 10 year crediting period, averaging **16483 tCO<sub>2</sub>e** annually. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given the underlying assumptions do not change.

The project is recommended by SGS for registration with the UNFCCC.

**Signed on Behalf of the Validation Body by Authorized Signatory**



Signature:

Name: Siddharth Yadav

Date: 20<sup>th</sup> February 2009

## 2. Introduction

### 2.1 Objective

Zero Emissions Technologies SA has commissioned SGS to perform the validation of the project: Energy Efficiency Measures at Desalination Plant in Chennai with regard to the relevant requirements for CDM project activities. The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, the monitoring plan (MP) and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Certified Emission Reduction (CER). UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM rules and modalities and related decisions by the COP/MOP and the CDM Executive Board.

### 2.2 Scope

The scope of the validation is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. SGS has employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

The validation is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

### 2.3 GHG Project Description

It is a small scale energy efficiency project in which five medium Voltage Variable Frequency Drives (VFD) will be put up in the high pressure pumps used in the Reverse Osmosis (RO) process of a desalination plant. It is a new plant and the desalination plant is under construction. In the absence of the project activity the high pressure pumps will be operated without VFD there by consuming excess electrical energy. The use of VFD will result in the reduction of electrical energy consumption by these high pressure pumps which will result in reductions of greenhouse gas emissions that are real, measurable and give long-term benefits to the mitigation of climate change

### 2.4 The Names and Roles of the Validation Team Members

Name	Role	Affiliate
Pankaj Mohan	Lead Assessor	SGS India
Sathis Kumar	Assessor	SGS India

### 3. Methodology

#### 3.1 Review of CDM-PDD and Additional Documentation

The validation is performed primarily as a document review of the publicly available project documents. The assessment is performed by trained assessors using a validation protocol.

A site visit is usually required to verify assumptions in the baseline.

A site visit was performed by the Assessor and findings are attached in Annex 1 with this document.

#### 3.2 Use of the Validation Protocol

The validation protocol used for the assessment is partly based on the templates of the IETA / World Bank Validation and Verification Manual and partly on the experience of SGS with the validation of CDM projects. It serves the following purposes:

- it organises, details and clarifies the requirements the project is expected to meet; and
- it documents both how a particular requirement has been validated and the result of the validation.

The validation protocol consists of several tables. The different columns in these tables are described below.

Checklist Question	Ref ID	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements are linked to checklist questions the project should meet.	Lists any references and sources used in the validation process. Full details are provided in the table at the bottom of the checklist.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (Y), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). New Information Request (NIR) is used when the validation team has identified a need for further clarification.

The completed validation protocol for this project is attached as Annex 2 to this report

#### 3.3 Findings

As an outcome of the validation process, the team can raise different types of findings

In general, where insufficient or inaccurate information is available and clarification or new information is required the Assessor shall raise a **New Information Request (NIR)** specifying what additional information is required.

Where a non-conformance arises the Assessor shall raise a **Corrective Action Request (CAR)**. A CAR is issued, where:

- mistakes have been made with a direct influence on project results;
- validation protocol requirements have not been met; or
- there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be verified.

The validation process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a NIR may result in a CAR. Information or clarifications provided as a result of an NIR may also lead to a CAR.

**Observations** may be raised which are for the benefit of future projects and future verification or validation actors. These have no impact upon the completion of the validation or verification activity.

Corrective Action Requests and New Information Requests are raised in the draft validation protocol and detailed in a separate form (Annex 3). In this form, the Project Developer is given the opportunity to “close” outstanding CARs and respond to NIRs and Observations.

### **3.4 Internal Quality Control**

Following the completion of the assessment process and a recommendation by the Assessment team, all documentation will be forwarded to a Technical Reviewer. The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team.



## 4. Validation Findings

### 4.1 Participation Requirements

The host Party for this project is India. India has ratified the Kyoto Protocol on 26<sup>th</sup> August 2002 and is allowed to participate in CDM projects (Weblink: <http://maindb.unfccc.int/public/country.pl?country=IN>). Spain is the Annex 1 Party involved in this project. Spain has ratified the Kyoto Protocol on 31<sup>st</sup> May 2002 and is allowed to participate in CDM projects (Weblink: <http://maindb.unfccc.int/public/country.pl?country=ES>).

CAR 1 was raised as the Letter of Approval (LoA) had not been attached.

In response to CAR 1 the PP clarified that DNA of Spain requires the Draft Validation Report from DOE in order to issue the LoA. Once the Spanish DNA had provided the PP with the LoA it was submitted by the PP. The Spanish copy of the LoA was checked against the English translation obtained from the PP. The LoA letter dated 18-12-2008 was checked and verified by the assessment team as per the EB guidelines and was found to be satisfactory.

CAR 1 was closed.

CAR 2 was raised to provide the Host Country Approval from DNA of India. In response to CAR 2 the PP provided the HCA letter dated 29<sup>th</sup> September 2008, Ref. No: 4/7/2008-CCC given by Ministry of Environment & Forests (Indian DNA), Government of India. The LoA was verified by the assessment team and found to be acceptable.

CAR 2 was closed out.

CAR 3 was raised to get the modalities of communication. In response to CAR 3 the PP provided the modalities of communication dated 01-10-2008. The MoC was checked with Annex 1 of PDD by the assessment team and found to be correct.

CAR 3 was closed out.

### 4.2 Project Design

This is a small scale energy efficiency project which involves installation of five medium voltage Variable Frequency Drives (VFD) in the high pressure pumps used in the reverse osmosis (RO) process of a desalination plant that has a capacity of 100 MLD (Million litres per day). The installation of VFD will reduce the electrical energy consumed by these high pressure pumps. In the absence of the project activity the VFD's would not have been installed which in turn would have led to higher electrical energy consumption from the grid. Thus this saved electrical energy would have been otherwise generated in the Tamil nadu grid, which forms part of the southern regional grid of India. The southern regional grid predominantly uses fossil fuels for its generation of electricity thereby reducing the greenhouse gas emissions. The construction of the desalination plant was in progress when the site visit was conducted.

NIR 5 was raised to confirm that the project technology will not be substituted by other technologies within the crediting period. It was also raised to provide documentary evidence for the technical specification of the major equipment of the project activity as stated in section A.4.2 of PDD. In response to NIR 5 the PP provided the declaration letter dated 3/10/2008 submitted by CWDL stating that project technology will not be changed during the crediting period was provided. The letter was checked by the assessment team and found to be sufficient. To satisfy NIR 5 completely the PP submitted the technical specification for the pumps and VFD which were provided by Befesa who are the implementing agency of the desalination plant. These documents were verified by the assessment team and found to contain all the necessary information.

NIR 5 was then closed out.

NIR 6 was raised as the PDD does not mention about the initial training and maintenance efforts needed in order to work as presumed during the project period, the PDD was also missing information about provisions made for meeting future training and maintenance needs of the project activity. In response to NIR 6 the PP

provided the training plan for operation and maintenance works of VFD and also the Quality Control Plan of the desalination plant. This was checked by the assessment team and found to be satisfactory.

NIR 6 was closed.

NIR 7 was raised to know whether there are any public funding involved in the project activity. In response to NIR 7 the PP submitted a declaration letter, dated 3/10/2008 in which the PP confirmed that there is no public funding in the project activity. The declaration letter was verified by the assessment team and found to be acceptable.

NIR 7 was closed.

### **4.3 Eligibility as a Small Scale Project**

This is a small scale project which uses the approved methodology AMS IID, Version 11, EB35: Energy efficiency and fuel switching measures for industrial facilities. The type and category of the project activity is correctly identified as Type II and Category: II D as it is an energy efficiency project implemented at a single industrial facility. The VFD is being installed in a new desalination plant. Also in this project activity it is possible to directly measure and record the energy use within the project boundary. The electrical energy consumed with VFD can be measured using an energy meter in the ex-post during monitoring. Also the impact of the measures implemented (improvements in energy efficiency) by the project activity can be clearly distinguished from changes in energy use due to other variables not influenced by the project activity as the energy consumption of the high pressure pumps are directly metered and the same can be compared with plant production. As per the applicability criteria of this methodology in order to qualify as small scale "The aggregate energy savings of a single project may not exceed the equivalent of 60 GWhe per year." In this project activity the average annual energy savings is about 19.5 GWhe per year which is well within the limit specified by the methodology. Hence this project qualifies as a small scale project. The excel sheet showing the energy saving calculation is provided.

The small scale project activity is not a debundled component of a large scale project activity as there is no registered small scale CDM project or a request for registration by the same project participant in the same project category and technology/measure or registered within the previous two years; and whose project boundary is within 1 Km of the project boundary of the proposed small-scale activity at the closest point

### **4.4 Baseline Selection and Additionality**

The project boundary has been correctly identified as per the applicable project category. The southern grid of India has been correctly identified for calculation of electricity emission factor as the project displaces an equivalent amount of electrical energy from the Tamilnadu grid which comes under the Southern Grid. For the electricity displaced, the emission coefficient has been calculated in accordance with provisions under category I.D. The combined margin for the southern grid of India has been calculated using the published data by Central Electricity Authority of India. The latest data (CEA Version 04) available has been used for this purpose and as per this reference combined margin of the Southern Grid of India is 0.85197tCO<sub>2</sub>/MWh. The baseline data like water productive capacity, operation days energy consumption of the pump with and without VFD was added in Annex 3 of revised PDD. The energy consumption of the pump with and without VFD was checked from the technical specification of the pumps from pump manufacturer while operation days and plant capacity was confirmed by project proponent during validation.

As per the methodology "In the case of a new facility the energy baseline consists of the facility that would otherwise be built." For this project activity the baseline is the operation of the high pressure pumps without VFD and the electrical energy consumption of these high pressure pumps without VFD. CAR13 was raised as from PDD version 1 it was not clear how the energy consumption of the pumps in the baseline i.e. without VFD have been arrived at. In response to CAR 13 the PP submitted an excel spread sheet showing the energy consumption and savings calculations for the pumps both with and without VFD was provided. The input values used in the energy saving calculation of the high pressure pumps (Confidential Data Reference 21 as per communication from PP, not to be published on UNFCCC) have been provided by Befesa Agua, S.A.U of Spain, a technological company in charge of the engineering works for the project "Design, build, own, operate and transfer (DBOOT) of this desalination plant. The calculations and the input values of these pumps have been certified by the Desalination Director of Befesa in their letter dated 2/10/2008. The information submitted by the PP was verified by the assessment team and found to be acceptable.

CAR 13 was closed.

The start date of the project is 10/05/2007. NIR 17 was raised to provide proof of start date. In response to NIR 17 the PP provided Purchase order number 2007/16 dated 10/5/2007 which is the date on which the purchase order for VFD was placed. The start date was checked by the assessment team and found to be consistent with the purchase order date.

NIR 17 was closed.

CAR 21 was raised to provide proof of serious CDM consideration for the project as per EB41 Annex 46 guidelines. In response to CAR 21 the PP provided the "Note related to the consideration of the CDM decision by the Director of CWDL dated 6<sup>th</sup> November 2006. In addition to this in order to justify that continuing and real actions were taken to secure CDM status for the project in parallel with the project activity implementation, evidence of negotiations with other DOEs (DNV and AENOR) for Validation services of this project was provided. A copy of the proposal submitted by these DOEs (DNV proposal dated 07/03/2007, AENOR proposal dated 02/03/2007) were checked by the assessment team and found to be correct (Confidential Data reference 11 as per communication with PP, these documents are not to be published on UNFCCC website). The purchase order for the VFD was placed on 10-05-2007. In between the negotiations with DOE's were going on for validation services. The PDD was finalized in early February 2008 and at the same time the contract with DOE for validation was signed on 16-01-2008. The PDD was webhosted for international stake holder from 13-02-2008 to 13-03-2008. From the above evidences it can be concluded that serious CDM consideration is available before the start date of the project activity. All the evidence was verified by the assessment team and found to be correct.

CAR 21 was closed.

As per the Attachment A to Appendix B of the simplified modalities and procedures for small scale CDM project activities the PP has demonstrated that the project activity would not have occurred due to (1) Technological Barrier (2) Barrier due to prevailing practice (3) Other barriers. Among all the barriers the most important barrier that has been considered for this project activity is the "Barrier due to prevailing practice in which it has been demonstrated that the project activity is "first-of-its-kind" in India. NIR 4 was raised to substantiate this "first-of-its-kind" barrier. In response to NIR 4 the PP provided some extracts from the International Desalination Association (IDA) ([www.idadesal.org](http://www.idadesal.org)) year book 2007-2008. From page 105 of the report it was verified that the desalination plant which is constructed at Minjur, Chennai in this project activity that has a capacity of 100 MLD is the largest desalination plant in India in terms of capacity among all types of desalination technologies used in India. IDA also maintains a database of major desalination plants in the world. The database is available at [www.desaldata.com](http://www.desaldata.com) but registration is required in order to access the information. The PP provided a screen shot of the IDA database for reference, from which it was verified that in India the Minjur Desalination plant is the largest in terms of capacity (1,00,000 m3/day) and employing the process of reverse osmosis (RO). The second (96,000 m3/day) and third (48,000 m3/day) largest in terms of capacity are located at Jamnagar and both employ Multi Effect Distillation Technology (MED). The next highest plant using RO technology has a capacity of 26,000 m3/day. The use of MED technology doesn't require very high pressure pumps in comparison to RO technology. Hence this is the first desalination plant in India of this capacity to use RO process and also to install VFD to it's high pressure pumps (design capacity of 892 m3/hr and power of 2200 kW). Hence installation of VFD to very high pressure pumps in a desalination plant in India is not a common practice as the technology of this size / scale is not available in India. This was checked from the following websites;

1. <http://www.unep.or.jp/ietc/Publications/techpublications/TechPub-8d/desalination.asp>
2. <http://www.ide-tech.com/> and
3. <http://www.wwdmag.com/Seawater-Desalination-With-Reverse-Osmosis-article2207>

In addition to this a letter dated 20/05/2008 given by ABB (Confidential as per communication with PP & ABB, not to be published on UNFCCC website) the VFD supplier was checked and it is clear from the letter of ABB that the VFD of this capacity is being installed for the first time in India for a desalination plant. This was checked from the websites mentioned above. In addition to this a letter dated 30<sup>th</sup> July 2008 given by International Desalination Association ([www.idadesal.org](http://www.idadesal.org) & [http://www.idadesal.org/t-board\\_001.aspx](http://www.idadesal.org/t-board_001.aspx)) and signed by its President was provided in which it has been certified that the installation of VFD to the high pressure pumps of capacity 2200 kW is a pioneering activity in the RO process of a desalination plant and

can be counted as “first of its kind in India”. IDA ([www.idadesal.org](http://www.idadesal.org)) is a professional body with wide representation from different stakeholders related to desalination technology around the world as referred from the website. The name of the President was checked from the website ([http://www.idadesal.org/t-board\\_001.aspx](http://www.idadesal.org/t-board_001.aspx)) and found consistent with the letter. The letter dated 30<sup>th</sup> July 2008 will be uploaded as proof of additionality with this report. All the evidence presented was verified by the assessment team and found to be correct.

NIR 4 was then closed out.

Hence as per the Meth Panel 34<sup>th</sup> meeting report annex 10 guidance “Note on the barrier first of its kind” if a project activity is first of its kind, no additional steps are required to confirm additionality. Hence as per the guidance available it has been demonstrated that

- (1) The project technology of this scale is not in commercial operation in India as explained above in the clarification of NIR 4.
- (2) The project technology of this scale has not been proposed in other Desalination plants as a CDM project activity in India or published in CDM-PDD by a DOE for public comments as referred from [www.cdm.unfccc.int](http://www.cdm.unfccc.int). Therefore confirming that this is the first project of its kind.
- (3) For this project activity the Validation process was started before the commercial operation of the plant had begun, hence the assessment has been completed based on the information available at the time when the project was published for stakeholder comments. There are no similar project activities in India of this scale either registered or submitted for validation at the time when the project was published for stakeholder comments.
- (4) The project technology involved in this project follows methodology AMS IID (version 11) which is an energy efficiency measure for an industrial facility. But the installation of VFD to high pressure pump of this scale in a desalination plant is not available in India.
- (5) Host Country i.e. India has been considered as the applicable geographical area.

In addition to this technological barriers and other barriers have been listed. For the technological barrier as explained above in NIR 4 these VFDs are coupled to very high pressure pumps. The high pressure pumps are one of the most critical equipment in the RO process. The RO process was discussed during site visit by the assessor. Any failure or fault in the VFD can affect the whole process and hence can result in major failure. This means the operational team needs to be trained to handle the process with utmost care and also be able to deal with any problems that may arise. There is no regulatory or legal requirement to install VFD in order to improve the energy efficiency. The Energy Conservation Act, 2001 which has been enacted in India does not apply to the project activity as it is not in the list of designated consumers listed under the act.

In the PDD (version 1) the Investment Barrier was listed as one of the barriers. NIR 8 was raised as the investment barrier was not seen as a real barrier. The project looked like a financially attractive project even without CDM as it was mentioned that the payback period calculated based on the projected energy savings with the installation of VFD as 4 years. In response to NIR 8 the PP provided some justification but it was not convincing to the assessment team; thus project proponent removed the investment barrier and the additionality has been proven based on ‘barrier due to prevailing practice’ in the project activity region. As per CDM guidelines project participants are required to provide a qualitative explanation to show that the project activity would not have occurred anyway due to at least one of the barriers as provided in attachment A to appendix B document of “indicative simplified baseline and monitoring methodologies for selected small scale CDM project activity categories”. Thus the decision to remove investment barrier was found to be acceptable..

NIR 8 was closed.

The additionality of the project was verified on the basis of “first of its kind in India” (see ref./9/ under section 7 of this report) in any of the desalination plants.

#### **4.5 Application of Baseline Methodology and Calculation of Emission Factors**

The project uses the approved methodology AMS IID, version 11. As per the methodology “In the case of a new facility the energy baseline consists of the facility that would otherwise be built. Each energy form in the emission baseline is multiplied by an emission coefficient (in kg CO<sub>2</sub>e/kWh). For the electricity displaced, the emission coefficient is calculated in accordance with provisions under category I.D. The baseline grid emission factor has been calculated as the combined margin consisting of operating margin and the build margin using the recent data available from the Central Electricity Authority (CEA) of India. The same has been calculated as 0.85197 tCO<sub>2</sub>/MWh and is fixed ex-ante which is in line with the version 04 of CEA data which is the most recent data available as of now.

CAR 9 was raised as the energy consumption of the high pressure pumps that would have been installed in the absence of the project activity (i.e. the energy consumption without the VFD being installed) was not provided. In response to CAR 9 the PP submitted the excel spread sheet showing the energy consumption of the high pressure pumps with and without the installation of VFD. The input data and assumptions used in the energy saving calculation of the high pressure pumps (Confidential Data as per communication with PP, not to be published on UNFCCC website) have been provided by Befesa Agua, S.A.U of Spain a technological company in charge of the engineering works for the project “Design, build, own, operate and transfer (DBOOT) of this desalination plant. The ex-ante estimation of energy consumption of the high pressure pumps with and without VFD and hence the resultant energy saving has been done using their proprietary software. The calculations and the input values of these pumps used in the calculation have been certified by the Desalination Director of Befesa in their letter dated 2/10/2008. In the annual average energy consumption of the pump with VFD the energy consumption is gradually increasing because of the ageing of the membranes used in the RO process. After taking all this into consideration and verifying the documents the assessment team found the evidence to be sufficient.

CAR 9 was then closed.

CAR 10 was raised due to the fact in Section B.6.3 of PDD (version 1) it was mentioned that there are no project emissions associated with the project activity but in the table under section B.6.4, project emissions were given. In response to CAR 10 the PP Submitted a revised PDD (version 2) which included the requested information in section B.6.3. The revised PDD was checked by the assessment team and was found to be consistent.

CAR 10 was then closed.

CAR 11 was raised due to the fact in section B.6.1 of PDD (version 1), the methodology AMS IID provides many options and which option was chosen and why that option was chosen are not clearly described. In response to CAR 11 the PP submitted a revised PDD (version 2) which included the requested information regarding the methodology options mentioned in section B.6.1. The revised PDD was checked by the assessment team and found to be consistent.

CAR 11 was then closed.

CAR 12 was raised as the uncertainties in the emission estimation are not mentioned in the PDD version 1. In response to CAR 12 the PP clarified that same has been included in the energy consumption calculation of the high pressure pumps and due care has been taken to consider the ageing of the membranes and hence resultant increase in the energy consumption during later years even with VFD. The clarification submitted by the PP was verified by the assessment team and found to be acceptable.

CAR 12 was then closed.

#### **4.6 Application of Monitoring Methodology and Monitoring Plan**

As per the applicable methodology AMS II D version 11 the monitoring shall consist of, “Metering the energy use of the equipment installed and calculating the energy savings due to the equipment installed”. In line with this requirement monitoring plan includes monitoring of the energy consumption of the high pressure pump with VFD using energy meters.

CAR14 was raised as nothing was mentioned about the calibration of the energy meter in the PDD (version 1). In response to CAR 14 the PP submitted a revised PDD (version 2) in which the calibration details of the



energy meter were then included. The revised PDD was verified by the assessment team and found to be sufficient.

CAR14 was then closed.

NIR15 was raised as uncertainty of data is not discussed for the data parameter that is monitored. In response to NIR 15 the PP clarified that data uncertainty is low as the energy consumption is directly metered and the energy meter will be calibrated annually. The assessment team verified the PP's clarification and found it to be acceptable.

NIR15 was closed.

QA/QC procedures are defined as it is an ISO 9001 company. A quality control plan has been prepared (UNE-EN-ISO 9001). NIR16 was raised as the monitoring plan was not detailed enough and procedures for calibration, archiving procedure were missing. In response to NIR 16 the PP submitted a revised PDD (version 2) which included the missing data in the monitoring plan. The revised PDD was checked by the assessment team and found to be sufficient.

NIR16 was then closed.

#### **4.7 Choice of the Crediting Period**

The project has chosen a fixed crediting period of ten years. NIR 18 was raised to confirm that the start date of the crediting period will only start after the date of registration of the proposed activity as a CDM project activity. In response to NIR 18 the PP clarified that the start date of the crediting period will be 01/04/2009 or the date of registration with UNFCCC whichever is later. This clarification was checked by the assessment team and found to be correct.

NIR 18 was closed.

The operational life of the project activity is 25 years. The contract between the operating company and CMWSSB was checked. The initial contract was for a period of 25 years and found ok.

#### **4.8 Environmental Impacts**

As per the regulations in the Host Country EIA study has been conducted for the Desalination plant. Since the desalination plant is mainly concerned with marine life a marine EIA study has been conducted. Apart from this Terrestrial Environmental Management Report has been prepared. NIR 19 was raised as it is mentioned in section D.1 of PDD that EIA report and "Terrestrial Environmental Management Report" are provided in Enclosure II. But enclosure II was missing. In response to NIR 19 the PP provided the copy of the both the EIA reports. Both the studies have been conducted by INDOMER COASTAL HYDRAULICS (P) LTD. Chennai, India. For Rapid Marine EIA – Project No. IND-148-0506 with ref. no. IVRCL/CWDL/MH/001/05-6 dated 30.10.05 and for environmental study relating to the terrestrial aspects project no. IND-148-0506 dated 13.1.2006 was checked by the assessment team and found to be correct.

NIR19 was then closed out.

#### **4.9 Local Stakeholder Comments**

The project is an energy efficiency measure implemented in a desalination plant and doesn't have much impact on the local stakeholders other than their own employees. The views of the employees have been taken through questionnaire in a meeting held on 11/3/2008. NIR 20 was raised to provide copies of these completed questionnaires. In response to NIR 20 the PP provided the completed questionnaires as checked during the site visit by the assessor while interviewing the persons. The employees don't have any negative concerns on the project as checked during site visit.

NIR20 was closed.

## 5. Comments by Parties, Stakeholders and NGOs

In accordance with sub-paragraphs 40 (b) and (c) of the CDM modalities and procedures, the project design document of a proposed CDM project activity shall be made publicly available and the DOE shall invite comments on the validation requirements from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available. This chapter describes this process for this project.

### 5.1 Description of How and When the PDD was Made Publicly Available

The Project Design Document for this project was made available on the SGS website <http://www.sgsqualitynetwork.com/tradeassurance/ccp/projects/project.php?id=451> and was open for comments from 13 Feb 08 - 13 Mar 08. Comments were invited through the UNFCCC CDM webpage <http://cdm.unfccc.int/Projects/Validation/DB/8JNW7EH9YA61L2QHVC4X6QVD0MMSI/view.html>

### 5.2 Compilation of all Comments Received

Comment Number	Date Received	Submitter	Comment
1	11-03-2008	Babu jegageevanram	<p>The PP should explain how it could be justified/confirmed that 22 MW VFD is not common in Indian condition.</p> <p>How the brine solution will get in contact with VFD.</p> <p>The technological barrier is not appropriate with respect to size etc.</p> <p>How the failure of VFD affects the pumpoperation needs further information,why not it can be assumed that during those time the power is directly connected to the pumps.</p> <p>What would have been installed in the absence of the project is entirely missing in the PDD.</p> <p>what is the gurantee that any other frequency/speed control devices would not have installed in the absence of this project needs to be elaborated.</p> <p>How would be the variation in the RO plant requirement would have been met in the absence of VFD needs justification.</p> <p>The project activity is not about desalination plant but about installation of VFD.</p> <p>It is to be confimed that there are no other industrial process pumps of above 22 MW have installed VFD.</p>

Comment Number	Date Received	Submitter	Comment
			<p>The sancity of the statement on first of its kind in the world require further justification.</p> <p>The subcidised cost of electricity for indusrial consumer in tamilnadu needs further justification and it should also provide documents that the PP has got a lesser tariff than other industrial units.</p> <p>The BASELINE EQUIPMENT IN THE ABSENCE OF THE VFD IS MISSING DOES IT IMLIES NO DRIVES WOULD HAVE BEEN THERE.</p> <p>there is no information how the emission reductions are computed and what basis that has been estimated.</p> <p>Why there is a change in estimated emission reduction per annum.</p>

### 5.3 Explanation of How Comments Have Been Taken into Account

SNo	Comment	PP Response	DoE Response
1	<p>a. The PP should explain how it could be justified/confirmed that 22 MW VFD is not common in Indian condition.</p> <p>b. How the brine solution will get in contact with VFD.</p> <p>c. The technological barrier is not appropriate with respect to size etc.</p>	<p>It has been demonstrated that the project activity is not a common practice in section B.5 of PDD and sufficient documentary evidence has been submitted.</p> <p>Brine solution will not get into contact with VFD.</p> <p>Technology is a barrier as this technology is not in commercial operation in India as verified from the documents submitted.</p> <p>High pressure pump is one of the critical equipment in a RO process of desalination plant. The VFD is being coupled to these pumps and hence any</p>	<p>The letter from supplier (Reference 20) on installation of VFD is not common practice in Indian condition was demonstrated. Hence this was accepted and close out.</p> <p>This was discussed on site visit with the operating engineer. Hence close out.</p> <p>The letter from IDA &amp; supplier demonstrates (Reference 9, 20 that the technology is not in commercial operation in india. Hence this was accepted and close out.</p> <p>This was discussed on site visit with the engineer. The operation would have affected to make it direct coupled Hence close out.</p>



SNo	Comment	PP Response	DoE Response
d.	How the failure of VFD affects the pump operation needs further information, why not it can be assumed that during those time the power is directly connected to the pumps.	failure of VFD does affect the pump operation.  In the absence of the project the pump would be run without VFD and is addressed in PDD  In the absence of CDM the pump would have run without any speed control device as it faces barriers as described in section B.5 of PDD.	The revised PDD was checked and accepted. Comment closed  The revised PDD and discussion during site visit proved that the PP would not installed any other frequency/speed control devices as the investment has attracted the barriers as mentioned in PDD. Hence closed.
e.	What would have been installed in the absence of the project is entirely missing in the PDD.		The discussion during site visit with engineer confirmed that system would have operated. Hence closed.
f.	What is the guarantee that any other frequency/speed control devices would not have installed in the absence of this project needs to be elaborated.	Even without VFD an RO system can be operated as it is technically feasible.  Yes the project is about installation of VFD and not desalination plant and the same is reflecting in PDD.	Revised PDD checked and found to be OK. Hence closed.  The letter from IDA (Reference 9, 20) & supplier demonstrates that the desalination plants of this scale in which VFD has been installed. This is first of its kind. Hence this was accepted and close out.
g.	How would be the variation in the RO plant requirement would have been met in the absence of VFD needs justification.	It has been demonstrated that there are no other desalination plants of this scale in which VFD has been installed before and this is 1 <sup>st</sup> of its kind.	The revised PDD and IDA letter (Reference 9) justifies first of its kind. This was checked from meth panel 34 <sup>th</sup> meeting Annex 10. hence closed.
h.	The project activity is not about desalination plant but about installation of VFD.	As per the Meth Panel 34 <sup>th</sup> meeting report annex 10 guidance "Note on the barrier first of its kind" if a project activity is first of its kind, no additional steps are required to confirm additionality.	Revised PDD checked and discussed with client and checked that it is in order now. Hence closed.
i.	It is to be confirmed that there are no other industrial process pumps of above 22 MW have installed VFD.	Please refer B.5 of PDD	Baseline is OK. Hence closed.  Spread sheet checked and

SNo	Comment	PP Response	DoE Response
	j. The sancity of the statement on first of its kind in the world require further justification.	Baseline is operation of pumps without VFD  Excel spread sheet for emission reduction calculation has been provided	found to be OK. Hence closed  This was discussed and found to be conservative hence accepted and closed.
	k. The subcidised cost of electricity for indusrial consumer in tamilnadu needs further justification and it should also provide documents that the PP has got a lesser tariff than other industrial units.	The reason for annual change in emission reduction values is because PP has taken into consideration the ageing of the membranes used in RO process. This is conservative.	
	l. The BASELINE EQUIPMENT IN THE ABSENCE OF THE VFD IS MISSING DOES IT IMLIES NO DRIVES WOULD HAVE BEEN THERE.		
	m. There is no information how the emission reductions are computed and what basis that has been estimated.		
	n. Why there is a change in estimated emission reduction per annum.		

PP has justified successfully the comments raised by stakeholders so these were closed out.

## 6. List of Persons Interviewed

Date	Name	Position	Short Description of Subject Discussed
23/4/2008	Elena Fernandez / Daniel Garcia	Consultants, Zero Emissions Technologies SA	CDM Consideration, Baseline, Additionality, Environmental Impacts, Emission reduction Calculations, Stakeholder Consultation
23/4/2008	Mohamed Yunus	Senior Project Engineer, Befesa Infrastructure India (P) Ltd	Technology Barriers, Monitoring Plan, Environmental Impacts, Stakeholder Consultation

## 7. Document References

Category 1 Documents (documents provided by the Client that relate directly to the GHG components of the project, (i.e. the CDM Project Design Document, confirmation by the host Party on contribution to sustainable development and written approval of voluntary participation from the designated national authority):

- /1/ PDD version 01 dated 02/01/2008 (Used for International Stakeholder Consultation)
- /2/ PDD version 02 dated 01/05/2008
- /3/ PDD version 03 dated 01/10/2008
- /4/ PDD version 04 dated 18/12/2008 (Request for registration)
- /5/ HCA letter dated 29<sup>th</sup> September 2008, Ref. No: 4/7/2008-CCC given by Ministry of Environment & Forests, Government of India
- /6/ Letter for the Modalities of Communication dated 01-10-2008
- /7/ Emission Reduction Calculation Sheet
- /8/ CDM Consideration: Note related to the consideration of the CDM decision by the Director of CWDL dated 6<sup>th</sup> November 2006 (confidential)
- /9/ Proof for 1<sup>st</sup> of its kind barrier:
  - a. Extracts from International Desalination Association (IDA) Year Book 2007-2008
  - b. Screenshot from IDA Database (Desalination Plants in India)
  - c. Letter dated 30 July 2008 given by IDA and signed by its President.
- /10/ Annex 01 (Spanish DNA) letter dated 18<sup>th</sup> December 2008

Category 2 Documents (background documents used to check project assumptions and confirm the validity of information given in the Category 1 documents and in validation interviews):

- /11/ Additional documents for CDM Consideration: DNV proposal dated 7/3/2007, AENOR proposal dated 2/3/2007 for CDM Validation (confidential documents)
- /12/ Proof of Start Date:  
Purchase order number 2007/16 dated 10/5/2007 for VFD
- /13/ CEA Grid Emission Factor Database version 04
- /14/ Website of IDA [www.idadesal.org](http://www.idadesal.org)
- /15/ Letter dated 3/10/2008 given by CWDL for not changing the Project Technology during crediting period
- /16/ Technical specification of pump and VFD:  
Pump (Doc.No.Appendix-2-MMS-1300.HPP.001.01) and VFD (Doc. No. Attachment 1-ELS-1300-SWPS.811.00) Technical Specification from UTE Construcción Desaladora, Chennai
- /17/ Quality Control Plan
- /18/ Training Plan for O & M works of VFD
- /19/ Declaration letter dated 3/10/2008 for no public funding
- /20/ ABB letter dated 20/05/2008 (Confidential document)
- /21/ Pump data input values for estimation of energy consumption by high pressure pumps given by Befesa agua, S.A.U certified by the Desalination Director of Befesa in their letter dated 2/10/2008 (Confidential document)

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## A.1 Annex 1: Local Assessment

This checklist is designed to provide confirmation of in-country data and information provided in the Project Design Document for “Energy Efficiency measures at Desalination Plant in Chennai”.

It serves as a “**reality check**” on the project that is completed by a local assessor from SGS India

Issue	Findings	Source/Mean of Verification	Further Action / Clarification / Information Required?
Description of the project activity as given in the PDD needs to be checked.	During site visit the construction of the desalination plant was undergoing. The VFD's have landed at the site but the same was not unpacked at the time of site visit.	Physical verification during site visit	Y
Ownership or licenses for implementation and operation of the project at that site will be checked during site visit.	The construction of the desalination plant has been awarded by the Government of Tamilnadu on DBOOT (Design, Build, Own, Operate and Transfer) basis.	Request for proposal (RFP)	Y
Schedule available on the implementation of the project and are there any risks for delays needs to be checked	As per the Plan the desalination plant project has to start operation by October 2008.	Chennai Planning Review 52 (April monthly report0 with Baseline R39	Y
Monitoring Plan (Correct implementation of the monitoring concept as well as the verifiability of monitoring data and its accuracy will be checked	The desalination plant project was under construction when the site visit was undertaken. The VFD's have landed at the site but it was not even unpacked at the time of site visit.	Physical verification during site visit	Y

Issue	Findings	Source/Mean of Verification	Further Action / Clarification / Information Required?
during the site visit.)			
QA/QC procedures needs to be checked.	A detailed quality control plan (UNE-EN-ISO 9001) prepared for this project activity was provided.	Quality Control Plan - Minjur (Chennai, India) Sea Water Desalination Plant (Annex 21: Quality Control Plan)	Y
Compliance with Environmental Regulations (The projects compliance with the environmental regulations will be verified)	The project does comply with the environmental regulations in the Host country.  Rapid Marine Environmental Assessment study has been carried out for this project. Also an environmental study relating to the terrestrial aspects, viz., i) socio-economic aspects, ii) air environment, iii)water environment, iv) noise environment, v) flora & fauna, vi) risk analysis, and vii) environmental management plan has been carried out.	Both the studies have been conducted by INDOMER COASTAL HYDRAULICS (P) LTD. Chennai, India. For Rapid Marine EIA – Project No. IND-148-0506 with ref.no. IVRCL/CWDL/MH/001/05-6 dated 30.10.05 and for environmental study relating to the terrestrial aspects project no. IND-148-0506 dated 13.1.2006 was checked.	Y
Stakeholder comments	No negative feedback from employees who are the main stakeholders	Stakeholder Comments-Filled Questionnaire	Y

## A.2 Annex 2: Validation Protocol

**Table 1 Participation Requirements for Clean Development Mechanism (CDM) Project Activities (Ref PDD, Letters of Approval and UNFCCC website)**

Requirement	Reference	Comments	Conclusion
1. All Parties (listed in Section A3 of the PDD) have ratified the Kyoto protocol and are allowed to participate in CDM projects	Marrakech Accords, CDM Modalities §30	Spain has ratified the Kyoto Protocol on 31 <sup>st</sup> May 2002 and is allowed to participate. <a href="http://maindb.unfccc.int/public/country.pl?country=ES">http://maindb.unfccc.int/public/country.pl?country=ES</a>  India has ratified the Kyoto Protocol on 26 <sup>th</sup> August 2002 and is allowed to participate. <a href="http://maindb.unfccc.int/public/country.pl?country=IN">http://maindb.unfccc.int/public/country.pl?country=IN</a>	Y
2. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3 and be entered into voluntarily.	Marrakech Accords, CDM Modalities §29 and §30	The project is likely to assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment. The letter of approval from the DNA of the Annex I party (Spain) has submitted by the PP.	CAR01 CAR01 closed Y
3. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof, and be entered into voluntarily	Marrakech Accords, CDM Modalities §29 and §30  Kyoto Protocol Art. 12.2, Marrakech Accords, CDM Modalities §40a	The project is likely to contribute to the sustainable development of the non-Annex I party (India). The letter of approval from the DNA of the non-Annex I party has to be submitted by the PP.	CAR02 CAR02 closed Y

Requirement	Reference	Comments	Conclusion
4. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available	Marrakech Accords, CDM Modalities, §40	<p>Yes, the project was listed on UNFCCC website from 13 Feb 08 - 13 Mar 08 at <a href="http://cdm.unfccc.int/Projects/Validation/DB/8JNW7EH9YA61L2QHVVC4X6QVD0MMSI/view.html">http://cdm.unfccc.int/Projects/Validation/DB/8JNW7EH9YA61L2QHVVC4X6QVD0MMSI/view.html</a></p> <p>The project was also listed on SGS climate change website from 13 Feb 08 - 13 Mar 08 at <a href="http://www.sgsqualitynetwork.com/tradeassurance/ccp/projects/project.php?id=451">http://www.sgsqualitynetwork.com/tradeassurance/ccp/projects/project.php?id=451</a></p> <p>One comment was received. Response of the PP has to be obtained for the comment received during site visit.</p>	<p>Pending.</p> <p>Y</p>
5. The project design document shall be in conformance with the UNFCCC CDM-PDD format	Marrakech Accords, CDM Modalities, Appendix B, EB Decisions	Project has used current version (version 3) of PDD applicable. The PDD is in conformance with the UNFCCC SSC PDD format.	Y
6. The project participants shall submit a letter on the modalities of communication (MoC) before submitting a request for registration	EB-09 F_CDM_REG form	Letter on the MOC to be submitted by the project proponent.	<p>CAR03</p> <p>CAR03 closed</p> <p>Y</p>
7. For AR projects, the host country shall have issued a communication providing a single definition of minimum tree cover, minimum land area value and minimum tree height. Has such a letter been issued and are the definitions consistently applied throughout the PDD?		Not Applicable	Not Applicable



**Table 2 PDD**

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
<b>A. General Description of Project Activity</b>					
<b>A.1. Project Title</b>					
A.1.1. Does the used project title clearly enable to identify the unique CDM activity?	1	DR	The title of the project activity is “Energy Efficiency measures at Desalination Plant in Chennai” and is able to identify the unique CDM project activity.	Y	Y
A.1.2. Are there an indication of a revision number and the date of the revision?	1	DR	The version number of the PDD used for ISHC is version01 dated 02/01/2008	Y	Y
A.1.3. Is this in consistency with the time line of the project’s history?	1	DR	The time line of the project history is consistent.	Y	Y
<b>A.2. Description of the Project Activity</b>					
A.2.1. Is the description delivering a transparent overview of the project activities?	1	DR	The project description is giving a good overview of the project activities. The project activity, an energy efficiency measure is an application of the variable frequency drive (VFD) with the high pressure pumps used in the Reverse Osmosis process of a desalination plant. Totally five VFD’s will be installed for the project activity.	Y	Y
A.2.2. Is all information provided in compliance with actual situation or planning?	1	SV	This will be verified during the site visit.	Pending Site visit	Y
A.2.3. Is all information provided consistent with details provided in further chapters of the PDD?	1	DR	Pending for closure of CAR / NIR	Pending	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
<b>A.3. Project Participants</b>					
A.3.1. Is the table required for the indication of project participants correctly applied?	1	DR	Yes the section A.3 of the PDD has been correctly applied.	Y	Y
A.3.2. Is all information provided in consistency with details provided by further chapters of the PDD (in particular annex 1)?	1	DR	It is consistent with the details provided in Annex-1 of PDD	Y	Y
<b>A.4. Technical Description of the Project Activity</b>					
A.4.1. Does the information provided on the location of the project activity allow for a clear identification of the site(s)? Are the latitude and longitude of the site indicated (decimal points)	1	DR	The information provided is sufficient to locate the project activity.	Y	Y
A.4.2. Do the project participants possess ownership or licenses which will allow the implementation of the project at that site / those sites?	1	DR/SV	This will be checked during site visit.	Pending Site Visit	Y
A.4.3. Does the project design engineering reflect current good practices?	1	DR	Yes the project design does reflect good practice.	Y	Y
A.4.4. Does the description of the technology to be applied provide sufficient and transparent input to evaluate its impact on the greenhouse gas balance and is the explanation how the project will reduce greenhouse gas emission transparent and suitable?	1	DR/SV	It is an energy efficiency improvement project wherein VFD's are fitted to high pressure pumps used in the reverse osmosis process of the desalination plant. Thus without this project activity the energy saved would have been taken by the grid connected power plants which predominantly uses fossil fuels for its generation.	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
A.4.5. Is all information provided in compliance with actual situation or planning as available by the project participants?	1	DR	This will be checked during site visit	Pending Site visit	Y
A.4.6. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	1	DR	The project employs the state of the art technology as per PDD. The desalination plant is put up on a DBOOT basis by Spanish Company.	Y	Y
A.4.7. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	1	DR	PP has to clarify whether the project technology is likely to be substituted by other or more efficient technologies within the project period.	NIR-5	Y NIR 5 closed
A.4.8. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	1	DR	The PDD does not mention about the initial training and maintenance efforts needed in order to work as presumed during the project period, evidence for the same is to be submitted by the project proponent.	NIR-6	NIR06 closed Y
A.4.9. Does the project make provisions for meeting training and maintenance needs?	1	DR/SV	Provisions made for meeting the training and maintenance needs of the project activity is not mentioned in PDD.	Pending NIR-6	Y
A.4.10. Is a schedule available on the implementation of the project and are there any risks for delays?	1	DR	This will be discussed during site visit.	Pending Site visit	Y
A.4.11. Is the table required for the indication of projected emission reductions correctly applied?	1	DR	The table for the indication of projected emission reduction has been correctly applied.	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
<b>A.5. Public Funding</b>					
A.5.1. Does the information on public funding provided conform with the actual situation or planning as presented by the project participants?	1	DR	As per the PDD, there is no public funding involved in the project activity. Proof in this regard needs to be provided by the project participant.	NIR-7	NIR07 closed Y
A.5.2. Is all information provided consist with details provided by further chapters of the PDD (in particular annex 2)?	1	DR	Yes the information is consistent in Annex 2 of PDD	Y	Y
A.5.3. In case of public funding from Annex I Parties is it confirmed that such funding does not result in a diversion of official development assistance	1	DR	Not Applicable	Y	Y
<b>A.6. Debundling</b>					
A.6.1. Is the small-scale project activity a debundled component of a large scale project activity	1	DR	This project activity is not a de-bundled component of a large scale project activity as none of the conditions to be considered for de bundling is applicable to this project activity as verified from the UNFCCC website	Y	Y
A.6.2. If the project is a debundled component of a larger project, does the larger project fall within the limits for small-scale CDM project activities	1	DR	Not Applicable	Not Applicable	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
<b>B. Baseline and Monitoring Methodology</b>					
<b>B.1. Choice and Applicability</b>					
B.1.1. Is the project using an approved simplified methodology?	1,3	DR	The project uses the approved methodology AMS IID, Version 11: Energy efficiency and fuel switching measures for industrial facilities and the version of the methodology is active.	Y	Y
B.1.2. Does the project activity qualify as small scale project?	1,3	DR	As per the PDD, the annual energy reduction from the project activity is 19.5 GWhe per year which is well within the limit of 60 GWhe per year applicable for type II projects.  Hence the project activity qualifies as a small scale project activity.	Y	Y
B.1.3. Is the category(ies) of the project activity correctly identified in accordance with Appendix B to the simplified modalities and procedures for small-scale CDM project activities?	1	DR	The type and categories of the project activities has been correctly identified as IID as per the appendix B to the simplified modalities and procedures for small-scale CDM project activities.	Y	Y
B.1.4. Is the project activity a bundle of several small scale activities and if so does it contain any sub-bundles	1	DR	The project activity is not a bundle of small scale activities.	Y	Y
B.1.5. If the project activity is a bundle of several small scale activities, does the sum of the total bundle (including any subbundles) fall within the limits for small scale projects	1	DR	Not Applicable	Not Applicable	Y
B.1.6. If the project activity is a bundle of several small scale activities, has the form with information related to the bundle been submitted and is it correctly used	1	DR	Not Applicable	Not Applicable	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
<b>B.2. Project Boundary</b>					
B.2.1. Are all emission sources and gasses related to the baseline scenario, project scenario and leakage clearly identified and described in a complete manner?	1	DR	The project boundary has been correctly identified as per the applicable project category	Y	Y
B.2.2. In case of grid connected electricity projects: Is the relevant grid correctly identified in accordance with EB guidance and the underlying methodology?	1	DR	The southern grid of India has been correctly identified for calculation of electricity emission factor as the project displaces an equivalent amount of energy from the Tamilnadu grid which comes under the Southern Grid	Y	Y
B.2.3. Are the project's spatial boundaries (geographical) and the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	1	DR	Project's spatial boundaries and the project's system boundaries have been clearly defined.	Y	Y
<b>B.3. Identification of the Baseline Scenario</b>					
B.3.1. Does the PDD discuss the identification of the most likely baseline?	1,3	DR	As per the PDD, the most likely baseline in the absence of the project activity would be the operation of these high pressure pumps without the VFD's. This extra energy consumed would have been provided by the grid which predominantly uses fossil fuels for its generation.	Y	Y
B.3.2. Is the discussion and determination of the chosen baseline transparent and supported by the available data?	1	DR	How the values of the baseline emissions is arrived is not clearly described	CAR-13	CAR13 closed Y
B.3.3. Is conservativeness addressed in the way of identifying the baseline?	1	DR	Refer B.3.3 above	Pending CAR-13	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
<b>B.4. Additionality</b>					
B.4.1. Is the discussion on additionality and the evidence provided consistent with the starting date of the project	1	DR	As per section C.1.1 the starting date of the project activity is August 2008. Additionality arguments as provided in PDD will be verified during site visit.  Proof of serious CDM consideration for the project activity needs to be provided.	Pending Site visit/ CAR 21	Y
B.4.2. Is the discussion on additionality based on a comparison with realistic and credible alternatives?	1	DR	The PDD mentions that the project activity is the First of its kind in India and also the installation of VFD is a pioneering activity in the reverse osmosis desalination plant all over the world. Evidence needs to be provided to substantiate this fact.	NIR04	NIR04 closed Y
B.4.3. Does the discussion on additionality take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations??	1	DR	The PDD mentions that there is no legal requirement on the part of the PP to adopt this energy efficient measure. The same will be verified during site visit.	Pending site visit	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.4.4. Has it been shown that the proposed project activity faces barriers that prevent the implementation of this type of proposed project activity but would not have prevented the implementation of at least one of the alternatives?	1	DR	Five types of barriers have been identified as per the options provided under attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities. The investment barrier doesn't seem to be a real barrier.  The PDD mentions that the project activity is the First of its kind in India and also the installation of VFD is a pioneering activity in the reverse osmosis desalination plant all over the world. Evidence needs to be provided to substantiate this fact.	NIR-8  Pending NIR04	NIR08 closed Y
B.4.5. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario	1	DR	Pending closure of CAR / NIR	Pending	Y
<b>B.5. Application of the Simplified Methodology</b>					
B.5.1. Has the Simplified methodology been applied correctly for determining <b>baseline emissions</b> ?	1	DR	The baseline electricity emission factor used in the calculation of baseline emissions for the project activity has been calculated as per the guidance in AMS ID. The combined margin has been calculated from the Operating Margin and Build Margin using the data taken from the Central Electricity Authority (CEA) values. The most recent data available i.e. Version 03 has been used. The energy consumption of the high pressure pumps that would have been installed in the absence of the VFD has been given reference as enclosure-I. But enclosure-I is not there in the PDD.	CAR-9	CAR09 closed Y



Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.5.2. Has the Simplified methodology been applied correctly for determining <b>project emissions</b> ?	1	DR	As per the section B.6.3 of PDD there are no project emissions associated with the project activity but in the section B.6.4, in the table project emissions are given.	CAR-10	CAR10 closed Y
B.5.3. Has the Simplified methodology been applied correctly for determining <b>leakage</b> ?	1	DR	As per the PDD there are no leakages associated with the project activity. The same will be verified during the site visit.	Pending Site visit.	Y
B.5.4. Have all the methodological choices been explained, have they been properly justified and are they correct	1	DR	In the section B.6.1 of PDD, the methodology AMS IID provides many options and which option was chosen and why that option was chosen are not clearly described.	CAR-11	CAR11 closed Y
B.5.5. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	1	DR	The uncertainties in the emission estimation are not mentioned in the PDD.	CAR-12	CAR 12 closed Y
<b>B.6. Ex-ante Data and Parameters Used</b>					
B.6.1. Are the data provided in compliance with the simplified methodology?	1	DR	The ex-ante data provided are in compliance with the simplified methodology. The energy consumption of the high pressure pumps that would have been installed in the absence of the VFD has been given reference as enclosure-I. But enclosure-I is not there in the PDD.	Pending CAR-9	Y
B.6.2. Is all the data derived from official data sources or replicable records and have these been correctly quoted?	1	DR/SV	The data used for electricity emission factor has been taken from Central Electricity Authority (CEA) which is an official data of the Government of India. The energy consumption of the high pressure pumps that would have been installed in the absence of the VFD has been calculated by the PP. The calculation and the data will be verified during the site visit.	Pending site visit	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.6.3. Is the vintage of the baseline data correct?	1	DR	The most recent data has been used for the calculation.	Y	Y
<b>B.7. Calculation of Emissions Reductions</b>					
B.7.1. Has the approved methodology been applied correctly for determining <b>emission reductions</b> ?	1	DR	The approved methodology AMS IID version 11 has been correctly applied.	Y	Y
B.7.2. Are the emission reduction calculations documented in a complete and transparent manner?	1	DR	How the values of the baseline emissions and project activity emissions as given in section B.6.4 of PDD are arrived is not clearly described.	CAR-13	CAR13 closed Y
B.7.3. Have conservative assumptions been used to calculate emission reductions?	1	DR/SV	Refer B.7.2 above	Pending CAR-13	Y
B.7.4. Is the projection based on provable input parameter?	1	DR	Refer B.7.2 above	Pending CAR-13	Y
B.7.5. Is the projection based on same procedures as used for later monitoring or acceptable alternative models?	1	DR	Refer B.7.2 above	Pending CAR-13	Y
B.7.6. Is the calculation of the emission reduction correct?	1	DR	Refer B.7.2 above	Pending CAR-13	Y
<b>B.8. Emission Reductions</b>					
B.8.1. Will the project result in fewer GHG emissions than the baseline scenario?	1	DR	Yes, project result in fewer GHG emissions than the baseline scenario.	Y	Y
B.8.2. Is the form/table required for the indication of projected emission reductions correctly applied?	1	DR	The table required for the indication of projected emission reductions has been correctly applied	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.8.3. Is the projection in line with the envisioned time schedule for the project's implementation and the indicated crediting period?	1	DR	The projection is in line with the envisioned time schedule for the project's implementation and the indicated crediting period	Y	Y
<b>B.9. Monitoring Methodology</b>					
B.9.1. Does the monitoring methodology provide a consistent approach in the context of all parameter to be monitored and further information provided by the PDD?	1	DR	Yes the monitoring methodology provides a consistent approach for monitoring all the parameters required.	Y	Y
B.9.2. Does the monitoring methodology apply consistently the choice of the option selected for monitoring both of project and baseline emissions?	1	DR	Yes the monitoring methodology consistently applies the choice of the option selected for monitoring both the project and baseline emissions.	Y	Y
<b>B.10. Data and Parameters Monitored</b>					
B.10.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary during the crediting period?	1	DR	Yes the monitoring plan does provide for collection and archiving of all the necessary data for estimation of emission reductions.	Y	Y
B.10.2. Are the choices of project GHG indicators reasonable and in conformance with the requirements set by the approved methodology applied?	1	DR	The project GHG indicators are reasonable and according to approved methodology.	Y	Y
B.10.3. Will it be possible to determine the specified project GHG indicators?	1	DR/SV	Yes, the correct implementation of the monitoring concept as well as the verifiability of monitoring data and its accuracy will be checked during the site visit.	Pending Site Visit	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.10.4. Is the information given for each monitoring variable by the presented table sufficient to ensure the verification of a proper implementation of the monitoring plan?	1	DR	Yes the information given in the table under section B.7.1 of PDD is sufficient to ensure verification of the proper implementation of the monitoring plan.	Y	Y
B.10.5. Is the information given for each monitoring variable by the presented table sufficient to ensure the delivery of high quality data free of potential for biases or intended or unintended changes in data records?	1	DR	The information is sufficient to ensure high quality of data as the parameter is going to be metered using an energy meter.	Y	Y
B.10.6. Is the monitoring approach in line with current good practice, i.e. will it deliver data in a reliable and reasonably acceptable accuracy?	1	DR	The parameter is being metered using an energy meter but nothing has been mentioned regarding the calibration of the energy meter in the PDD.	CAR-14	CAR14 closed Y
B.10.7. Are all formulae used to determine project emission clearly indicated and in compliance with the monitoring methodology.	1	DR	Pending CAR-13	Pending	Y
<b>B.11. Quality Control (QC) and Quality Assurance (QA) Procedures</b>					
B.11.1. Is the selection of data undergoing quality control and quality assurance procedures complete?	1	DR	Yes the data is undergoing QA/QC procedures as per their ISO procedures	Y	Y
B.11.2. Is the belonging determination of uncertainty levels done correctly for each ID in a correct and reliable manner?	1	DR	Uncertainty of data is not discussed for the data parameter that is monitored.	NIR-15	NIR15 closed Y
B.11.3. Are quality control procedures and quality assurance procedures sufficiently described to ensure the delivery of high quality data?	1	DR	QA/QC procedures are defined as it is an ISO 9001 company. A quality control plan has been prepared (UNE-EN-ISO 9001). The same will be verified during site visit.	Pending Site Visit	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.11.4. Is it ensured that data will be bound to national or internal reference standards?	1	DR	Yes the data will be bound to national standards as the parameter is going to be metered using standard energy meters.	Y	Y
B.11.5. Is it ensured that data provisions will be free of potential conflicts of interests resulting in a tendency of overestimating emission reductions?	1	DR	Will be checked during site visit	Pending	Y
<b>B.12. Operational and Management Structure</b>					
B.12.1. Is the authority and responsibility of project management clearly described?	1	DR	Yes the authority and responsibility of project management has been clearly described and has been given as a flow chart.	Y	Y
B.12.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	1	DR	The responsibilities for each of the personnel involved in this project activity have been clearly defined.	Y	Y
B.12.3. Are procedures identified for training of monitoring personnel?	1	DR	As per PDD, the training for the monitoring personnel will be carried out as per Quality control plan.	Y	Y
<b>B.13. Monitoring Plan (Annex 4)</b>					
B.13.1. Is the monitoring plan developed in a project specific manner clearly addressing the unique features of the CDM activity?	1	DR	Monitoring plan is not included	NIR-16	NIR16 closed Y
B.13.2. Does the monitoring plan completely describes all measures to be implemented for monitoring all parameter required, including measures to be implemented for ensuring data quality?	1	DR	Refer B.13.1 above	Pending NIR-16	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.13.3. Does the monitoring plan provide information on monitoring equipment and respective positioning in order to safeguard a proper installation?	1	DR	Refer B.13.1 above	Pending NIR-16	Y
B.13.4. Are procedures identified for calibration of monitoring equipment?	1	DR	Refer B.13.1 above	Pending NIR-16	Y
B.13.5. Are procedures identified for maintenance of monitoring equipment and installations?	1	DR	Refer B.13.1 above	Pending NIR-16	Y
B.13.6. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	1	DR	Refer B.13.1 above	Pending NIR-16	Y
B.13.7. Are procedures identified for dealing with possible monitoring data adjustments and missing data allowing redundant reconstruction of data in case of monitoring problems??	1	DR	Refer B.13.1 above	Pending NIR-16	Y
B.13.8. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	1	DR	Refer B.13.1 above	Pending NIR-16	Y
B.13.9. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	1	DR	Refer B.13.1 above	Pending NIR-16	Y
<b>B.14. Baseline Details</b>					
B.14.1. Is there any indication of a date when determine the baseline?	1	DR	As per the section B.8 of PDD, the date of completion of the current version of the baseline is 07/12/2007	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.14.2. Is this in consistency with the time line of the PDD history?	1	DR	The start date of the project activity as per section C.1.1 of PDD is August 2008. The date of baseline determination is 7/12/2007.	Y	Y
B.14.3. Is all data required provided in a complete manner by annex 3 of the PDD?	1	DR	All the data required have been provided in a complete manner in the annex-3 of PDD	Y	Y
<b>C. Duration of the Project / Crediting Period</b>					
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	1	DR	Starting date as per PDD is August 2008 and the operational lifetime has been given as 25 years. Proof for the starting date and operational life time is to be submitted by the project proponent.	NIR-17	NIR17 closed Y
C.1.2. Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max 7 years with potential for 2 renewals or fixed crediting period of max. 10 years)?	1	DR	Project proponent has chosen a fixed crediting period of ten years. The start date of the crediting period is given as October 2008. The length of the crediting period is reasonable. PP has to assure that the start date of the crediting period will only start after the date of registration of the proposed activity as a CDM project activity	NIR-18	NIR18 closed Y
C.1.3. Does the project's operational lifetime exceed the crediting period	1	DR	Yes the projects operational life time is more than the crediting period.	Y	Y
<b>D. Environmental Impacts</b>					
D.1.1. Does the project comply with environmental legislation in the host country?	1	DR	Yes the project does comply with the environmental legislation in the host country. The same will be verified during site visit.	Pending site visit	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
D.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	1	DR	EIA is required as per the host country requirements. The project activity mainly relates to marine environment. Hence a marine EIA study has been conducted by the PP. The same will be verified during site visit.  It is mentioned that EIA report and "Terrestrial Environmental Management Report" are provided in Enclosure II. But enclosure II is not there.	NIR-19 / Pending site visit	NIR19 closed Y
<b>E. Stakeholder Comments</b>					
E.1.1. Have relevant stakeholders been consulted?	1	DR	As per the PDD, the only stake holders are the management representatives and the employees of the organization. They have been consulted.	Y	Y
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	1	DR	As per PDD, a questionnaire has been prepared and distributed to invite stake holder comments. The same will be verified during site visit.	Pending Site visit	Y
E.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	1	DR	Stakeholder consultation process is not required as per regulation/laws in host country.	Y	Y
E.1.4. Is the undertaken stakeholder process described in a complete and transparent manner?	1	DR	Stake holder process described is not complete and transparent.	NIR-20	NIR20 closed Y
E.1.5. Is a summary of the stakeholder comments received provided?	1	DR	Comments received are not provided.	Pending NIR-20	Y





Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
E.1.6. Has due account been taken of any stakeholder comments received?	1	DR	No negative comments have been received. The same will be verified during site visit.	Pending site visit.	Y

## References

Reference ID	Title / Description	Comments
1	PDD version 01 dated 02/01/2008	Web hosted for International Stakeholder Consultation
2	PDD version 04dated 18/12/2008	Submitted with Request for Registration
3	AMS II D version 11 valid from 02 November 2007	Approve Small scale methodology AMS II D version 11 valid from 02 November 2007

## A.3 Annex 3: Overview of Findings

### Findings Overview

Findings from validation of “Energy Efficiency measures at Desalination Plant in Chennai”.

Each Table below represents a finding from the validation assessment. The findings are numbered consecutively, approximately in the order that they have been identified.

Description of Table:

Type	Findings are either New Information Requests (NIR) or Corrective Action Requests (CAR). CARs are items that must be addressed before a project can receive a recommendation for registration. NIRs may lead to the raising of CARs. Observations are included at the end and may or may not be addressed. They are primarily to act as signposts for the verifying DOE.
Issue	Details the content of the finding
Ref	Refers to the item number in the Validation Protocol
Response	Please insert response to finding, starting with the date of entry.

Rows for comments and further response will be appended to the table until the Findings has been addressed to the satisfaction of the Lead Assessor.

**Please Note:** This is an open list and more findings may be added as validation progresses.

Date:	31/03/2008			Raised by:	Pankaj Mohan		
No.:	1.	Type:	CAR	Issue :	Participation requirement for CDM	Ref.:	Table 1, Item No.2
Lead Assessor Comment					Date: 31/03/2008		
Please provide the LOA from the DNA of the Annex I country (Spain)							
Project Participant Response:					Date: 15/05/2008		
- Spanish DNA required the Draft Validation Report to provide the LOA							
Acceptance and Close out by Lead Assessor:					Date: 26/06/2008		
Information Provided: LOA will be provided by the Spanish DNA only on the submission of Draft Validation Report and LOA from the Host Country. Information Verified:					Verified Document Reference:		
Reasoning for not acceptance or acceptance and close out: CAR 1 will be open till the LOA from Spanish DNA is submitted.							
Project Participant Response:					Date: 09/10/2008		
- No actions from last response. This is pending until we provide the Draft Validation Report to the Spanish DNA. Unfortunately, this is a legal requirement by the Spanish DNA and the CAR cannot be close until the Draft Validation Report is issued.							
Acceptance and Close out by Lead Assessor:					Date: 20/10/2008		
Information Provided:  Information Verified:					Verified Document Reference:		
Reasoning for not acceptance or acceptance and close out: CAR01 will be open till LOA from DNA of Spain is submitted.							
Project Participant Response:					Date: 12/12/2008		
Spanish LOA provided							

Acceptance and Close out by Lead Assessor:	Date: 20/12/2008
Information Provided: Spanish LOA Information Verified: Spanish LOA dated 18-12-2008	Verified Document Reference: Spanish LOA dated 18-12-2008
Reasoning for not acceptance or acceptance and close out: CAR01 closed as LOA from DNA of Spain is submitted.	

Date:	31/03/2008			Raised by:	Pankaj Mohan		
No.:	2.	Type:	CAR	Issue :	Participation requirement for CDM	Ref.:	Table 1, Item No.3
Lead Assessor Comment					Date: 31/03/2008		
Please provide the LOA from the DNA of the non-Annex I country (India)							
Project Participant Response:					Date: 15/05/2008		
- It has been made the required presentation in the Indian National CDM Authority and we have to provide some additional documentation. We expect to get the LoA soon.							
Acceptance and Close out by Lead Assessor:					Date: 26/06/2008		
Information Provided: Indian DNA has asked for additional documentation to provide the LOA for the project. Information Verified:					Verified Document Reference:		
Reasoning for not acceptance or acceptance and close out: CAR will be open till the LOA from Indian DNA is submitted.							
Project Participant Response:					Date: 09/10/2008		
- Please find the LOA from the Indian DNA (attached documentation under folder CAR_2)							
Acceptance and Close out by Lead Assessor:					Date: 20/10/2008		
Information Provided: LOA from Indian DNA Information Verified: The LOA from Indian DNA was checked					Verified Document Reference: HCA letter dated 29 <sup>th</sup> September 2008, Ref. No: 4/7/2008-CCC given by Ministry of Environment & Forests, Government of India		
Reasoning for not acceptance or acceptance and close out: CAR02 is closed as the HCA provided was found in compliance with CDM guidelines.							

Date:	31/03/2008			Raised by:	Pankaj Mohan		
No.:	3.	Type:	CAR	Issue :	Participation requirement for CDM	Ref.:	Table 1, Item No.6
Lead Assessor Comment					Date: 31/03/2008		
Please provide the letter on the modalities of communication (MOC)							
Project Participant Response:					Date: 15/05/2008		
- It hasn't signed the letter on MOC yet.							
Acceptance and Close out by Lead Assessor:					Date: 26/06/2008		
Information Provided: The PP has not signed the MOC yet. Information Verified:						Verified Document Reference:	

Reasoning for not acceptance or acceptance and close out: CAR will be open till the MOC is submitted.	
Project Participant Response:	Date: 09/10/2008
- Please find the letter representing the MOC signed by the project participants (attached documentation under folder CAR_3)	
Acceptance and Close out by Lead Assessor:	Date: 20/10/2008
Information Provided: MoC was provided Information Verified: MoC was checked for Project Title, Project Participants	Verified Document Reference: Modalities of Communication
Reasoning for not acceptance or acceptance and close out: CAR03 is closed as the MoC has been submitted.	

Date:	31/03/2008			Raised by:	Pankaj Mohan		
No.:	4.	Type:	NIR	Issue:	First of its kind project activity	Ref.:	B.4.4
Lead Assessor Comment					Date: 31/03/2008		
Section B.5 of the PDD states that the project activity is a first of its kind in India and also a pioneer activity in Reverse Osmosis Desalination Plants all over the world. Evidence in this regard needs to be provided.							
Project Participant Response:					Date: 15/05/2008		
- It has been applied a declaration from external-International Organism in which is being shown the evidence that the project activity is the "First of its Kind in India and also a pioneer activity in RO Desalination Plants all over the world"							
Acceptance and Close out by Lead Assessor:					Date: 26/06/2008		
Information Provided: The information provided is not clear. Information Verified:					Verified Document Reference:		
Reasoning for not acceptance or acceptance and close out: NIR is open as the response provided is not clear. Documentary evidence is missing. Provide documentary evidence justifying that the project activity is a first of its kind in India and also a pioneer activity in Reverse Osmosis Desalination Plants all over the world.							
Project Participant Response:					Date: 21/08/2008		
- Please find attachment the main proof for the additionality: declaration from IDA, International Desalination Association ( <a href="http://www.idadesal.org">www.idadesal.org</a> ), where it is declaring that the "installation of VDF can be counted as "first of its kind" in India, and it is a pioneer activity in Reverse Osmosis Desalination Plants all over the world."							
Acceptance and Close out by Lead Assessor:					Date:		
Information Provided: Declaration given by International Desalination Association (IDA) dated 30 July 2008 that the project activity is a first of its kind activity in India. Information Verified: The letter and the website of IDA ( <a href="http://www.idadesal.org">www.idadesal.org</a> ) was checked. IDA seems to be a professional body with wide representation from desalination technology experts as referred from the website. The name of the President was checked from the website ( <a href="http://www.idadesal.org/t-board_001.aspx">http://www.idadesal.org/t-board_001.aspx</a> ) and found consistent with the letter.					Verified Document Reference: Letter dated 30 July 2008 given by IDA and signed by its President. Website of IDA <a href="http://www.idadesal.org">www.idadesal.org</a>		

Reasoning for not acceptance or acceptance and close out: NIR is open as the document submitted mentions "installation of VDF can be counted as "first of its kind" in India, and it is a pioneer activity in Reverse Osmosis Desalination Plants all over the world." The data on which basis this statement is mentioned is not provided. Please provide the same.		
Project Participant Response:		Date: 09/10/2008
<p>- The official statement from IDA (International Desalination Association) is based on the last IDA Desalination Yearbook 2007-2008. As it can be seen in its page 105, the 100,000 m<sup>3</sup>/day Desalination Plant at Minjur in Chennai is at the top position of the plants list sorted by capacity in India (please find attached document under folder NIR_4: "IDA Desalination Yearbook 2007-08")</p> <p>- At the same time, the plant browser in the website: <a href="http://www.desaldata.com">www.desaldata.com</a> (registration is necessary) can be consulted. This browser incorporates the IDA Desalination Plants Inventory. In the website, the Chennai at Minjur Desalination Plant is positioned at the first position in India by capacity. Notice that this classification is not only for plants implementing Reverse Osmosis technology, but also for all types of available technologies, fact that reinforces our evidence. Because the registration is necessary, we have extracted the attached document to evidence this NIR. (attached documentation under folder NIR_4)</p>		
Acceptance and Close out by Lead Assessor:		Date: 20/10/2008
<p>Information Provided: Extract from the IDA Desalination year book 2007-2008</p> <p>Information Verified: The extract from the IDA Desalination year book 2007-2008 was checked. From the document it is evident that the Minjur plant is in top position in terms of the capacity. But whether VFD are part of the other desalination plants or not is not clear from the documents provided.</p>		<p>Verified Document Reference: IDA Desalination Year Book 2007-2008.</p>
Reasoning for not acceptance or acceptance and close out: NIR04 is open as whether VFD's are used in other desalination plants or not is not clear from the document provided. Provide documentary evidence that VFD installed in the project activity is first of its kind.		
Project Participant Response:		Date: 29/10/2008
<p>- In addition to the previous statement, Minjur plant is the only large scale Desalination plant bigger than 30,000 m<sup>3</sup>/day implanting Reverse Osmosis (RO) technology, because the follows two plants in Jamnagar use Multi-Effect Distillation (MED) technology, and do not use VFD because do not exist HP-pumps. So this is the first large-scale desalination plant project in Indian implanting VFD technology.</p> <p>- In the other hand, please find attached the main references for this kind of technology in all over the world from the most important manufacturer of this type of equipments, ABB, S.A. In the document can be noted that Chennai Water Desalination Ltd. is installing the biggest VFD in Seawater Reverse Osmosis Desalination Plant. (folder NIR_4)</p>		
Acceptance and Close out by Lead Assessor:		Date: 31/10/2008
<p>Information Provided: Documentary evidence that VFD installed in the project activity is first of its kind was provided.</p> <p>Information Verified: From the Screenshot from the website <a href="http://desaldata.com/plants">http://desaldata.com/plants</a> and IDA Desalination Year Book 2007-2008 it is clear that the project activity is the largest in terms of capacity (100,000 m<sup>3</sup>/day )among the desalination plants in India. The project employs reverse osmosis (RO) technology. The next bigger plants are of the capacity 96,000 m<sup>3</sup>/day and 48,000 m<sup>3</sup>/day located in Jamnagar, India. Both these plants employ Multi-Effect Distillation Technology (MED). They don't require very high pressure pumps as compared to RO technology. Installation of VFD to these high pressure pumps is not a common practice.</p> <p>In addition to this a letter dated 20/05/2008 given by ABB the supplier was checked and it is clear that the VFD of this capacity is being installed for the first time in India for a desalination plant.</p>		<p>Verified Document Reference: ABB letter dated 20/05/2008 Desalination Plants in India along with their capacity and technology as on 25/09/2008 employed (Screenshot from the website <a href="http://desaldata.com/plants">http://desaldata.com/plants</a> ) was provided as the website requires registration to view information. IDA Desalination Year Book 2007-2008</p>

Reasoning for not acceptance or acceptance and close out:

NIR is closed as necessary supporting documents have been provided to substantiate the fact that VFD installed is first of its kind in India. Other than the information provided by PP, some more websites were checked to ascertain the various technologies followed in desalination plants and the common practices followed. Some of the websites referred are

<http://www.unep.or.jp/ietc/Publications/techpublications/TechPub-8d/desalination.asp>

<http://www.ide-tech.com/>

<http://www.wwdmag.com/Seawater-Desalination-With-Reverse-Osmosis-article2207>

Date:	31/03/2008			Raised by:	Pankaj Mohan		
No.:	5.	Type:	NIR	Issue :	Project Technology	Ref.:	A.4.7
Lead Assessor Comment					Date: 31/03/2008		
Please clarify whether the project technology is likely to be substituted by other or more efficient technologies within the project period. Provide documentary evidence for the technical specification of VFD and Pump as given in section A.4.2 of PDD							
Project Participant Response:					Date: 15/05/2008		
- We are waiting a declaration from the project owner who will operate the plant within the project period. In this declaration it is justified that "the project technology will not be substituted by other or more efficient technologies" in all the project period.							
Acceptance and Close out by Lead Assessor:					Date: 26/06/2008		
Information Provided:					Verified Document Reference:		
Information Verified:							
Reasoning for not acceptance or acceptance and close out:							
NIR is open as the documentary evidence that the project technology is not likely to be substituted by other or more efficient technologies within the project period is not provided. Also provide documentary evidence for the technical specification of VFD and Pump as given in section A.4.2 of PDD							
Project Participant Response:					Date: 09/10/2008		
- Please find in the attachment documentation declaration from the project owner about the "no substitution of current technology" during the crediting period.							
- For the technical specification of VFD and Pumps as given in section A.4.2 of PDD, please find attached the documentation provided from the technologist.							
Acceptance and Close out by Lead Assessor:					Date: 20/10/2008		
Information Provided:					Verified Document Reference:		
Declaration letter stating that project technology will not be changed.					Letter dated 3/10/2008 given by		
Technical specification details for High pressure pumps and VFD were provided.					CWDL for not changing the		
Information Verified:					Technology		
The declaration letter and the technical specification of pump and VFD were checked					Pump (Doc.No.Appendix-2-MMS-1300.HPP.001.01) and VFD (Doc. No. Attachment 1-ELS-1300-SWPS.811.00) Technical Specification from UTE		
					Construccion Desaladora, Chennai		
Reasoning for not acceptance or acceptance and close out:							
NIR is closed as the necessary supporting documents have been provided.							

Date:	31/03/2008			Raised by:	Pankaj Mohan		
No.:	6.	Type:	NIR	Issue :	Training Requirement	Ref.:	A.4.8
Lead Assessor Comment					Date: 31/03/2008		

The PDD does not mention about the initial training and maintenance efforts needed in order to work as presumed during the project period, evidence for the same is to be submitted by the project proponent. Also please provide the provisions made for meeting future training and maintenance needs of the project activity.	
Project Participant Response:	Date: 15/05/2008
- Please, in the B.7.2. of PDD (ver. 2) we have mentioned the necessary training plan to implement in the project activity in order to assure a correct monitoring of the required data. - In the annex documentation, you can find the detailed training plan.	
Acceptance and Close out by Lead Assessor:	Date: 26/06/2008
Information Provided: The procedure for training has been included in the revised PDD version 02 and also it is part of the over all Quality Control Plan as part of the ISO 9001. Information Verified: The revised PDD version 02, the Quality Control Plan and the Training Plan for O & M of VFD in the desalination plant was checked and found training programme included.	Verified Document Reference: Revised PDD version 02 dated 01/05/2008 Quality Control Plan Training Plan for O & M works of VFD
Reasoning for not acceptance or acceptance and close out: NIR is closed as the training has been included.	

Date:	31/03/2008	Raised by:	Pankaj Mohan
No.:	7.	Type:	NIR
Issue :	Public funding	Ref.:	A.5.1
Lead Assessor Comment	Date: 31/03/2008		
Provide evidence that no public funding is involved in the project activity.			
Project Participant Response:	Date: 15/05/2008		
- We are waiting a declaration from the project owner ratifying about the subject "no public funding is involved in the implementation of the project"			
Acceptance and Close out by Lead Assessor:	Date: 26/06/2008		
Information Provided: Information Verified:	Verified Document Reference:		
Reasoning for not acceptance or acceptance and close out: NIR is open as the documentary evidence that no public funding has been involved is not submitted.			
Project Participant Response:	Date: 09/10/2008		
- Please find the declaration from the project owner regarding "no public funding" involved in the project (attached documentation under folder NIR_7)			
Acceptance and Close out by Lead Assessor:	Date: 20/10/2008		
Information Provided: Declaration letter dated 3/10/2008 for no public funding Information Verified: The letter was checked for the usage of public funding	Verified Document Reference: Declaration letter dated 3/10/2008 for no public funding		
Reasoning for not acceptance or acceptance and close out: NIR07 is closed as the PP has given a declaration that there is no public funding in the project activity.			

Date:	31/03/2008	Raised by:	Pankaj Mohan
No.:	8.	Type:	NIR
Issue :	Additionality	Ref.:	B.4.4
Lead Assessor Comment	Date: 31/03/2008		



The investment barrier doesn't seem to be a real barrier. The project seems to be a financially attractive project even without CDM as it is mentioned that the payback period calculated based on the projected energy savings with the installation of VFD is 4 years. Normally in industries payback period of 4 years is considered as a good project to invest. Kindly clarify why it has been considered as a barrier and why CDM fund is required for the viability of the project.					
Project Participant Response:			Date: 15/05/2008		
- The investment barrier of the project must be considered as an inversion that would not happen in the event of the project activity would not been carry out. - In any case, we are basing our additionality in the 'barrier due to prevailing practice'					
Acceptance and Close out by Lead Assessor:			Date: 26/06/2008		
Information Provided: The response provided is not clear. Information Verified:			Verified Document Reference: Revised PDD version 02 dated 01/05/2008		
Reasoning for not acceptance or acceptance and close out: NIR is open. Provide proper justification for the investment barrier to be considered as a barrier.					
Project Participant Response:			Date: 21/08/2008		
- As the theoretical pay-back is only 4 years, according to the PDD, it must be considered that the investment in this type of technology is quite new and risky in the host country and could generate some troubles in the management of the plant so that could involves additional operation cost.					
Acceptance and Close out by Lead Assessor:			Date:		
Information Provided:  Information Verified:			Verified Document Reference:		
Reasoning for not acceptance or acceptance and close out: NIR is open as documentary evidence is not provided. Barriers listed in section B.5 of PDD should be supported with documentary evidence.					
Project Participant Response:			Date: 09/10/2008		
- Due to the evidence that the investment barrier can not be considered as a real barrier, it has been taken the decision of remove this barrier from the PDD. Barriers listed in section B.5 of PDD are now supported in the PDD.					
Acceptance and Close out by Lead Assessor:			Date: 20/10/2008		
Information Provided: Investment Barrier has been removed Information Verified: The section B.5 of PDD version 03 was checked.			Verified Document Reference: PDD version 03 dated 01/10/2008		
Reasoning for not acceptance or acceptance and close out: NIR is closed as Additionality has been demonstrated using Technological Barrier, Barriers Due to prevailing Practice, Other Barriers. As per CDM guidelines it is sufficient if additionality can be demonstrated using at least one of the barriers as given in Attachment A to Appendix B of "indicative simplified baseline and monitoring methodologies for selected small scale CDM project activity categories					

Date:	31/03/2008			Raised by:	Pankaj Mohan	
No.:	9.	Type:	CAR	Issue :	Baseline emission calculation	Ref.: B.5.1
Lead Assessor Comment				Date: 31/03/2008		
In the section B.6.2 of PDD, the energy consumption of the high pressure pumps that would have been installed in the absence of the VFD has been given reference as enclosure-I. But enclosure-I is not there in the PDD.						
Project Participant Response:				Date: 15/05/2008		
- Please find the Enclosure-I in the attachment data.						
Acceptance and Close out by Lead Assessor:				Date: 26/06/2008		

Information Provided: Enclosure I is attached. Information Verified: The excel spread sheet provided in the Enclosure I was checked.				Verified Document Reference: Enclosure I EE Desalination Plant spread sheet.			
Reasoning for not acceptance or acceptance and close out: CAR is open. The spread sheet does not contain the links and equations to cross check. Part of the spread sheet is not in English language and hence not able to comprehend the information provided. In the annual average energy consumption of the pump with VFD the energy consumption is gradually increasing because of the ageing of the membranes. But in the tenth year the energy consumption has decreased than the previous two years. The reason for this is not clear. Please justify.							
Project Participant Response:				Date: 21/08/2008			
- The links and equations have been included in the spread sheet, as well as the entire spread sheet is expressed in English language. - The decreased energy consumption in the tenth year is a consequence of a conservative estimation of the consumption in the total period by means of mathematic approximation of the data.							
Acceptance and Close out by Lead Assessor:				Date:			
Information Provided: The links and equations are provided in the excel sheet now. The decrease in the energy consumption in the tenth year is because of the conservative estimation based on mathematical approximation of data. Information Verified: The energy consumption has been estimated using their proprietary software. Since it is an ex-ante estimation and the difference is negligible (<1%) in the tenth year compared to the previous year it was accepted. The Befesa Pumps Data (confidential) was also checked used in software. During monitoring the actual energy consumption that is measured using energy meter will be used.				Verified Document Reference: Emission Reduction calculation spread sheet. Befesa Pumps Data (Confidential)			
Reasoning for not acceptance or acceptance and close out: CAR is closed as the ex-ante estimation and the difference is negligible (<1%) in the tenth year compared to the previous year it was accepted. During monitoring the actual energy consumption that is measured using energy meter will be used.							
Date:	31/03/2008			Raised by:	Pankaj Mohan		
No.:	10.	Type:	CAR	Issue :	Project emissions	Ref.:	B.5.2
Lead Assessor Comment				Date: 31/03/2008			
As per the section B.6.3 of PDD there are no project emissions associated with the project activity but in the section B.6.4, in the table project emissions are given. Please clarify							
Project Participant Response:				Date: 15/05/2008			
- It has been clarified in the section B.6.3 of PDD							
Acceptance and Close out by Lead Assessor:				Date: 26/06/2008			
Information Provided: The same has been corrected in the revised PDD version 02. Information Verified: The revised PDD version 02 was checked. The section B.6.3 and B.6.4 of PDD and the excel spread sheet for ER calculation was checked. The section B.6.3 and B.6.4 of PDD are now consistent but it is not consistent with spreadsheet.				Verified Document Reference: Revised PDD version 02 Excel Spread Sheet ER calculation			
Reasoning for not acceptance or acceptance and close out: CAR is open as the ex-ante estimation of emission reduction given under B.6.4 of PDD and the excel spread sheet showing the ER calculation are not consistent.							
Project Participant Response:				Date: 21/08/2008			

- The Enclosure I EE Desalination Plant excel spread sheet includes now the enough decimal number in order to be consistent with the section B.6.4 in the PDD		
Acceptance and Close out by Lead Assessor:		Date:
Information Provided: The ex-ante estimation of emission reduction is now consistent both in PDD and the excel spread sheet. Information Verified: The revised PDD and the excel spread sheet was checked. The emission reduction values are now consistent.		Verified Document Reference: Revised PDD ER calculation excel sheet
Reasoning for not acceptance or acceptance and close out: CAR is open as the emission factor is wrongly mentioned in spreadsheet.		
Project Participant Response:		Date: 09/10/2008
<ul style="list-style-type: none"><li>- The emission factor has been corrected in Enclosure-I spreadsheet (attached folder CAR_10: "Enclosure I_10.10.08")</li><li>- Please find attached all the necessary data to calculate the emissions reductions confirmed by the technologist. (folder CAR_10, documents: "pumps data Befesa_ver03" and "pumps data_confirmed by Befesa") [confidential data]</li><li>- Declaration from the technology provider regarding "all data are according to the data from the manufacturer" is provided in the attachment (folder CAR_10: "Befesa_declaration manufacturer") [confidential data]</li></ul>		
Acceptance and Close out by Lead Assessor:		Date: 20/10/2008
Information Provided: Supporting documents for the High pressure pumps energy consumption for both with and without VFD and revised excel spread sheet. Information Verified: The excel spread sheet and the revised PDD were checked. Pumps data and energy consumption of the pumps with and without VFD were checked.		Verified Document Reference: ER calculation excel spread sheet 10.10.08 Letter dated 2/10/08 given by Befesa confirming the pump data Letter given by Befesa confirming the calculation for pump energy consumption with and without VFD PDD version 03 dated 1/10/2008
Reasoning for not acceptance or acceptance and close out: CAR is open since as per EB41 annex 12 guidelines "The presentation of values in the CDM-PDD, including those used for the calculation of emission reductions, should be in international standard format e.g 1,000 representing one thousand and 1.0 representing one. But in PDD in section A.4.3 and B.6.4 the emission reduction values given are not as per international standard format.		
Project Participant Response:		Date: 27/10/2008
<ul style="list-style-type: none"><li>- Emissions Reductions values in section A.4.3 and B.6.4 of PDD are now according to the international standard format as per EB41 annex 12 guidelines.</li></ul>		
Acceptance and Close out by Lead Assessor:		Date: 31/10/2008
Information Provided: Revised PDD Information Verified: The section A.4.3 and B.6.4 of PDD were checked.		Verified Document Reference: Revised PDD
Reasoning for not acceptance or acceptance and close out: CAR is closed as the ER values are now according to the international standard format as per EB41 annex 12 guidelines.		

Date:	31/03/2008			Raised by:	Pankaj Mohan	
No.:	11.	Type:	CAR	Issue :	Methodological Choices	Ref.: B.5.4
Lead Assessor Comment				Date: 31/03/2008		

The methodology AMS IID provides many options. Please provide details in the section B.6.1 of PDD which option was chosen and why that option was chosen and also why the other options are not suitable for the project activity.	
Project Participant Response:	Date: 15/05/2008
- The details about the chosen option of the AMSIID have been introduced in the section B.6.1 of PDD	
Acceptance and Close out by Lead Assessor:	Date: 26/06/2008
Information Provided: The same has been included in the revised PDD version 02. Information Verified: The revised PDD version 02 was checked. The calculation has been included in the revised PDD.	Verified Document Reference: Revised PDD version 02.
Reasoning for not acceptance or acceptance and close out: The CAR is closed as the calculation is now included in the revised PDD.	

Date:	31/03/2008			Raised by:	Pankaj Mohan		
No.:	12.	Type:	CAR	Issue :	Uncertainties in the emission estimation.	Ref.:	B.5.5
Lead Assessor Comment				Date: 31/03/2008			
The uncertainties in the emission estimation are not mentioned in the PDD.							
Project Participant Response:				Date: 15/05/2008			
- It is included in the Emissions Reductions calculations (Enclosure-I)							
Acceptance and Close out by Lead Assessor:				Date: 26/06/2008			
Information Provided: The uncertainties in the emission reduction has been included in the calculation. Information Verified: The excel spread sheet with ER calculation was checked. As per the enclosure there will be less uncertainty in the emission reductions.						Verified Document Reference: Enclosure 1 EE Desalination Plant excel spread sheet	
Reasoning for not acceptance or acceptance and close out: CAR 12 will be open till CAR 09 is open.							
Project Participant Response:				Date: 21/08/2008			
- The CAR 09 has been answered							
Acceptance and Close out by Lead Assessor:				Date: 26/08/2008			
Information Provided:						Verified Document Reference:	
Information Verified:							
Reasoning for not acceptance or acceptance and close out: CAR 12 is closed as CAR 9 has been closed.							

Date:	31/03/2008			Raised by:	Pankaj Mohan		
No.:	13.	Type:	CAR	Issue :	Baseline and Project activity emissions	Ref.:	B.7.2
Lead Assessor Comment				Date: 31/03/2008			
How the values of the baseline emissions and project activity emissions as given in section B.6.4 of PDD is arrived is not clearly described. Provide the formula or the equations used and also the excel spread sheet for ER calculation.							
Project Participant Response:				Date: 15/05/2008			
- Please you can find all the required values in the attachment documentation (Enclosure I)							

Acceptance and Close out by Lead Assessor:	Date: 26/06/2008
Information Provided: The excel spread sheet showing the ER calculation is attached. Information Verified: The excel spread sheet was checked. The baseline and the project emission calculation are provided.	Verified Document Reference: Enclosure I EE Desalination Plant Excel spread sheet
Reasoning for not acceptance or acceptance and close out: CAR is Open as the calculations showing the baseline and the project emissions are provided but not consistent with PDD.	
Project Participant Response:	Date: 21/08/2008
- The Enclosure I EE Desalination Plant excel spread sheet includes now the enough decimal number in order to be consistent with the section B.6.4 in the PDD	
Acceptance and Close out by Lead Assessor:	Date: 26/08/2008
Information Provided:  Information Verified:	Verified Document Reference: Revised PDD
Reasoning for not acceptance or acceptance and close out: CAR is open as the equations for the calculation of baseline emission, project emissions are to be described in PDD.	
Project Participant Response:	Date: 09/10/2008
- The required equations are now included in PDD version 3, section B.6.3	
Acceptance and Close out by Lead Assessor:	Date: 20/10/2008
Information Provided: The emission reduction calculation is provided in section B.6.3 of PDD Information Verified: The revised PDD was checked.	Verified Document Reference: PDD version 03 dated 1/10/2008
Reasoning for not acceptance or acceptance and close out: CAR is open as in section B.6.3 in the calculation of emission reductions for baseline emission it is given as "Please refer section B" which is not clear.	
Project Participant Response:	Date: 27/10/2008
- The exact reference for the baseline emission ("Enclosure-I") is now included in the PDD instead of "Section B"	
Acceptance and Close out by Lead Assessor:	Date: 31/10/2008
Information Provided: Revised PDD Information Verified: The section B.6.3 of PDD was checked and the ER calculation is now corrected	Verified Document Reference: Revised PDD
Reasoning for not acceptance or acceptance and close out: CAR is closed as the ER calculation is corrected and found correct.	

Date:	31/03/2008				Raised by:	Pankaj Mohan		
No.:	14.	Type:	CAR	Issue :	Calibration of Monitoring Equipment	Ref.:	B.10.7	
Lead Assessor Comment					Date: 31/03/2008			

The energy consumption of the high pressure pump with VFD is being measured using an energy meter. But nothing has been mentioned about the calibration of the energy meter in order to ensure high quality of data.	
Project Participant Response:	Date: 15/05/2008
- The details about the calibration of the energy meters have been introduced in the section B.7.1 of PDD	
Acceptance and Close out by Lead Assessor:	Date: 26/06/2008
Information Provided: Calibration details are now included in the revised PDD Information Verified: The revised PDD was checked. The calibration details are now included in the section B.7.1 of PDD.	Verified Document Reference: Revised PDD version 02.
Reasoning for not acceptance or acceptance and close out: The CAR is closed as the calibration details are now included in the revised PDD.	

Date:	31/03/2008			Raised by:	Pankaj Mohan		
No.:	15.	Type:	NIR	Issue :	Data Uncertainty	Ref.:	B.11.2
Lead Assessor Comment					Date: 31/03/2008		
Uncertainty of data is not discussed for the data parameters that are monitored.							
Project Participant Response:					Date: 15/05/2008		
Included in the PDD, section B.7.1							
Acceptance and Close out by Lead Assessor:					Date: 26/06/2008		
Information Provided: Uncertainty of data monitored is now included in the revised PDD. Information Verified: The uncertainty involved will be less as the data will be measured using calibrated meter.					Verified Document Reference: Revised PDD version 02.		
Reasoning for not acceptance or acceptance and close out: NIR is closed as the data uncertainty is included in the revised PDD							

Date:	31/03/2008			Raised by:	Pankaj Mohan		
No.:	16.	Type:	NIR	Issue :	Monitoring Information (Annex-4)	Ref.:	B.13.1
Lead Assessor Comment					Date: 31/03/2008		

Please provide a monitoring plan developed in a project specific manner clearly addressing the unique features of the CDM activity such as	
<ul style="list-style-type: none"> <li>• measures to be implemented for monitoring all parameter required, including measures to be implemented for ensuring data quality</li> <li>• monitoring equipment and respective positioning in order to safeguard a proper installation</li> <li>• procedures identified for calibration of monitoring equipment</li> <li>• procedures identified for maintenance of monitoring equipment and installations</li> <li>• procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)</li> <li>• procedures identified for dealing with possible monitoring data adjustments and missing data allowing redundant reconstruction of data in case of monitoring problems</li> <li>• procedures identified for internal audits of GHG project compliance with operational requirements where applicable</li> <li>• procedures identified for project performance reviews before data is submitted for verification, internally or externally</li> </ul>	
Project Participant Response:	Date: 15/05/2008
- As per Section B.7	
Acceptance and Close out by Lead Assessor:	Date: 26/06/2008
Information Provided: Detailed monitoring plan is now included in the revised PDD. Information Verified: The monitoring plan as given in section B.7 of PDD was checked and found ok.	Verified Document Reference: Revised PDD version 02
Reasoning for not acceptance or acceptance and close out: The NIR is closed as the monitoring plan has been revised and includes requisite details.	

Date:	31/03/2008	Raised by:	Pankaj Mohan
No.:	17.	Type:	NIR
Issue :	Proof for Start Date of Project Activity	Ref.:	C.1.1
Lead Assessor Comment	Date: 31/03/2008		
Starting date as per PDD is August 2008 and the operational lifetime has been given as 25 years. Proof for the starting date and operational life time is to be submitted by the project proponent.			
Project Participant Response:	Date: 15/05/2008		
- As proof for the starting date, it has been included in the attachment documentation the chronogram for the plant, redacted by the promoter, where it can see the estimated date for the implementation of the VFD for HP pumps. (Note that this document must be processed as Confidential Document) - As proof for the operational life time is the part of the contract where is specified the length of the works for 25 years. (Note that this document must be processed as Confidential Document)			
Acceptance and Close out by Lead Assessor:	Date: 26/06/2008		



<p>Information Provided: The documentation chronogram for the plant is provided as proof of start date and operational contract is provided as proof of lifetime of the project.</p> <p>Information Verified: The documentation chronogram was checked but the date is not matching with the date as given in section C.1.1 of PDD. The contract between the operating company and CMWSSB was checked. The initial contract was for a period of 25 years and found ok.</p>		<p>Verified Document Reference: Revised PDD version 02 Documentation Chronogram of the Plant Contract between CMWSSB &amp; Operating Company.</p>
<p>Reasoning for not acceptance or acceptance and close out: NIR is open as the start date given in PDD and the supporting document are not consistent. Provide start date in DD/MM/YYYY format.</p>		
Project Participant Response:		Date: 21/08/2008
- The starting date of the project activity has been corrected in section C.1.1 of PDD to be according with the chronogram of the plant. The format is as required		
Acceptance and Close out by Lead Assessor:		Date:
<p>Information Provided: Start date in section C.1.1 has been corrected in the revised PDD in the DD/MM/YYYY format.</p> <p>Information Verified: Revised PDD was checked and the format of start date was found corrected.</p>		<p>Verified Document Reference: Revised PDD</p>
<p>Reasoning for not acceptance or acceptance and close out: NIR is open. Please provide a documentary evidence for the same.</p>		
Project Participant Response:		Date: 09/10/2008
- Starting date (DD/MM/YYYY) is according to the "purchase order" (please find the "Purchase Order" document in the attached folder NIR_17)		
Acceptance and Close out by Lead Assessor:		Date: 20/10/2008
<p>Information Provided: The purchase order for VFD was provided</p> <p>Information Verified: The date of placing the purchase order for VFD was checked</p>		<p>Verified Document Reference: Purchase order number 2007/16 dated 10/5/2007</p>
<p>Reasoning for not acceptance or acceptance and close out: NIR is closed as the start date is found consistent with the purchase order date of VFD.</p>		

Date:	31/03/2008				Raised by:	Pankaj Mohan			
No.:	18.	Type:	NIR	Issue	Start Date of Credit period			Ref.:	C.1.2
				:					
Lead Assessor Comment						Date: 31/03/2008			
Provide documentary evidence that the start date of the crediting period will only start after the date of registration of the proposed activity as a CDM project activity									
Project Participant Response:						Date: 15/05/2008			
- As per the forecast chronogram, the start up date for the Desalination will be on October 2008 (Note that this document must be processed as Confidential Document)									
Acceptance and Close out by Lead Assessor:						Date: 26/06/2008			



<b>Information Provided:</b> As per the forecast schedule the start up date will be October 2008. <b>Information Verified:</b> The chronology of program schedule was checked and found ok.		<b>Verified Document Reference:</b>
<b>Reasoning for not acceptance or acceptance and close out:</b> NIR is open as the start date of the crediting period is not as per CDM SSC PDD guidelines.		
<b>Project Participant Response:</b>		<b>Date:</b> 21/08/2008
- The start date of the crediting period has been modified in the PDD according to the CDM SSC PDD guidelines.		
<b>Acceptance and Close out by Lead Assessor:</b>		<b>Date:</b>
<b>Information Provided:</b> The start date of the crediting period has been corrected in revised PDD <b>Information Verified:</b> The revised PDD was checked and the start date of the crediting period is given as 15/10/2008.		<b>Verified Document Reference:</b> Revised PDD
<b>Reasoning for not acceptance or acceptance and close out:</b> NIR is closed as the start date of the crediting period has been corrected in revised PDD as per the CDM guidelines.		

<b>Date:</b>	31/03/2008			<b>Raised by:</b>	Pankaj Mohan		
<b>No.:</b>	19.	<b>Type:</b>	NIR	<b>Issue :</b>	EIA	<b>Ref.:</b>	D.1.2
<b>Lead Assessor Comment</b>					<b>Date:</b> 31/03/2008		
It is mentioned in section D.1 of PDD that EIA report and "Terrestrial Environmental Management Report" are provided in Enclosure II. But enclosure II is not there.							
<b>Project Participant Response:</b>					<b>Date:</b> 15/05/2008		
Please find the Enclosure II with the EIA report and the "Terrestrial Environmental Management Report" in the attachment documentation. It has been included in the PDD a link to the website where you can find the EIA report.							
<b>Acceptance and Close out by Lead Assessor:</b>					<b>Date:</b> 26/06/2008		
<b>Information Provided:</b> The EIA report and the "Terrestrial Environmental Management Report" are enclosed. <b>Information Verified:</b> The EIA report and "Terrestrial Environmental Management Report" conducted by Indomer Coastal Hydraulics Pvt Ltd was checked and found ok.					<b>Verified Document Reference:</b> EIA Report		
<b>Reasoning for not acceptance or acceptance and close out:</b> NIR is closed as the EIA report has been submitted and found ok.							

<b>Date:</b>	31/03/2008			<b>Raised by:</b>	Pankaj Mohan		
<b>No.:</b>	20.	<b>Type:</b>	NIR	<b>Issue :</b>	Stakeholder Comments	<b>Ref.:</b>	E.1.4
<b>Lead Assessor Comment</b>					<b>Date:</b> 31/03/2008		
Please provide summary of the comments received in the stakeholder consultation process							
<b>Project Participant Response:</b>					<b>Date:</b> 15/05/2008		
Please, find the scanned "summary of the comments received in the stakeholder consultation process" in the attachment documentation.							
<b>Acceptance and Close out by Lead Assessor:</b>					<b>Date:</b> 26/06/2008		

<p>Information Provided: The summary of the comments received in the stakeholder consultation process has been submitted.</p> <p>Information Verified: The local stake holder consultation questionnaire was checked and there were no negative comments.</p>	<p>Verified Document Reference: Stakeholder Comments-Filled Questionnaire</p>
<p>Reasoning for not acceptance or acceptance and close out: NIR is closed as stake holder comments received were provided and there are no negative comments.</p>	

Date:	27/06/2008	Raised by:	Pankaj Mohan				
No.:	21.	Type:	CAR	Issue :	CDM Consideration	Ref.:	B.4.1
Lead Assessor Comment					Date: 27/06/2008		
Provide proof of serious CDM consideration for the project activity.							
Project Participant Response:					Date: 21/08/2008		
<p>- As a result of the abrupt changes in the sea water salinity at the area of the desalination plant, and as solution to guarantee the correct results required by the contract with the company of Waters of Chennai, it was considered the introduction of VFDs as energy efficiency and environmental friendly measures.</p> <p>- Therefore, CWDL decided: i) the implantation of this type of leading technology despite of being a technology not utilized in other desalination plant in the country (first-of-its-kind) and it would increase the construction cost not covered in the original project, ii) to do the project as CDM project in order to balance these extra-cost with the incomes from the sale of obtained CERs.</p>							
Acceptance and Close out by Lead Assessor:					Date:		
Information Provided:					Verified Document Reference:		
Information Verified:							
Reasoning for not acceptance or acceptance and close out: CAR is open as documentary evidence needs to be provided for serious CDM consideration.							
Project Participant Response:					Date: 09/10/2008		
<p>- Please find attached a declaration from CWDL (project owner) as an evidence of their consideration of the CDM project activity. (attached folder CAR_21)</p>							
Acceptance and Close out by Lead Assessor:					Date: 20/10/2008		
Information Provided:					Verified Document Reference:		
Letter dated 6/11/2006 by CWDL was provided.					Letter dated 6/11/2006 given by		
Information Verified:					CWDL		
The letter was checked.							
Reasoning for not acceptance or acceptance and close out: CAR is open as documentary evidence needs to be provided to show that							
1. initial design does not contemplate VFD installation							
2. The board agreed to finance the VFD installation through CDM (as per EB41 Annex 46)							
3. Minutes of the meeting of the board (as per EB41 Annex 46)							
4. The project participant must indicate awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project (as per EB41 Annex 46).							
5. The project participant must indicate, by means of reliable evidence, that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation (as per EB41 Annex 46).							
Project Participant Response:					Date: 29/10/2008		

<p>- In order to prove that the initial design does not contemplate VFD installation, please find attached the first contract between Chennai Water Desalination Limited and Befesa (the supplier), dated on 07 November 2005, in which the VFD are not included. ["ECC chennai + anexos.pdf" (page 116 to 120)] (confidential information)</p> <p>- As per EB41 Annex 46,</p> <p>“(a) The project participant must indicate awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project. Evidence to support this would include, inter alia, minutes and/or <b>notes related to the consideration of the decision by the Board of Directors, or equivalent</b>, of the project participant, to undertake the project as a CDM project activity.”</p> <p>- Please find attached the note related to the consideration of the CDM decision by the Director of CWDL.</p> <p>“(b) The project participant must indicate, by means of reliable evidence, that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation. Evidence to support this should include, inter alia, contracts with consultants for CDM/PDD/methodology services, Emission Reduction Purchase Agreements or other documentation related to the sale of the potential CERs (including correspondence with multilateral financial institutions or carbon funds), <b>evidence of agreements or negotiations with a DOE for validation services</b>, submission of a new methodology to the CDM Executive Board, publication in newspaper, interviews with DNA, earlier correspondence on the project with the DNA or the UNFCCC secretariat;</p> <p>- Please find attached the evidence of agreements or negotiations with DOEs (DNV, AENOR and TUV-Rheinland) for validation services. [under DOE's proposal folder] (confidential information)</p>	
Acceptance and Close out by Lead Assessor:	Date: 31/10/2008
<p>Information Provided: Supporting Documents for Serious CDM Consideration Information Verified: From the Note dated 6<sup>th</sup> November 2006 related to the consideration of the CDM decision by the Director of CWDL, it is clear that the CDM has been considered for the project following which the PP has also negotiated with some of the DOE for Validation and verification of this project which was checked from the proposals submitted by the DOEs.</p>	<p>Verified Document Reference: Initial Contract Agreement between Chennai Water Desalination Limited and Befesa (the supplier), dated on 07 November 2005. Note related to the consideration of the CDM decision by the Director of CWDL dated 6<sup>th</sup> November 2006 Proposal given by Various DOE (DNV, AENOR and TUV-Rheinland) for Validation and Verification of this Project</p>
<p>Reasoning for not acceptance or acceptance and close out: CAR is closed as necessary supporting documents have been provided to substantiate serious CDM consideration for the project activity.</p>	

#### A.4 Annex 4: Team Members Statements of Competency

### Statement of Competence

Name: Pankaj Mohan

SGS Affiliate: SGS India Pvt. Ltd.

Status

- Product Co-ordinator ☐
- Operations Co-ordinator ☐

- Technical Reviewer ☐
- Expert ☒

Validation      Verification

- |                         |                                     |                                     |
|-------------------------|-------------------------------------|-------------------------------------|
| - Local Assessor        | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| - Lead Assessor         | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| - Assessor              | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| / Trainee Lead Assessor |                                     |                                     |

#### Scopes of Expertise

- |  |                                     |
|--|-------------------------------------|
| 1. Energy Industries (renewable / non-renewable)   | <input checked="" type="checkbox"/> |
| 2. Energy Distribution   | <input checked="" type="checkbox"/> |
| 3. Energy Demand   | <input checked="" type="checkbox"/> |
| 4. Manufacturing   | <input checked="" type="checkbox"/> |
| 5. Chemical Industry   | <input type="checkbox"/>            |
| 6. Construction  | <input type="checkbox"/>            |
| 7. Transport   | <input type="checkbox"/>            |
| 8. Mining/Mineral Production   | <input type="checkbox"/>            |
| 9. Metal Production  | <input type="checkbox"/>            |
| 10. Fugitive Emissions from Fuels (solid,oil and gas)  | <input type="checkbox"/>            |
| 11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride | <input type="checkbox"/>            |
| 12. Solvent Use  | <input type="checkbox"/>            |
| 13. Waste Handling and Disposal  | <input type="checkbox"/>            |
| 14. Afforestation and Reforestation  | <input type="checkbox"/>            |
| 15. Agriculture  | <input type="checkbox"/>            |

Approved Member of Staff by Marco van der Linden      Date: 03-04-07

## Statement of Competence

Name: S. Sathis Kumar

SGS Affiliate: SGS India Pvt. Ltd.

### Status

- Product Co-ordinator ☐
- Operations Co-ordinator ☐
- Technical Reviewer ☐
- Expert ☐

### Validation

### Verification

- Local Assessor ☒
- Lead Assessor ☐
- Assessor ☒
- / Trainee Lead Assessor ☒

### Scopes of Expertise

- 1. Energy Industries (renewable / non-renewable) ☒
- 2. Energy Distribution ☒
- 3. Energy Demand ☒
- 4. Manufacturing ☐
- 16. Chemical Industry ☐
- 17. Construction ☐
- 18. Transport ☐
- 19. Mining/Mineral Production ☐
- 20. Metal Production ☐
- 21. Fugitive Emissions from Fuels (solid,oil and gas) ☐
- 22. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride ☐
- 23. Solvent Use ☐
- 24. Waste Handling and Disposal ☐
- 25. Afforestation and Reforestation ☐
- 26. Agriculture ☐

Approved Member of Staff by Shivananda Shetty

Date: 9<sup>th</sup> July 2008