CONFIDENTIAL
Project Identification Note (PIN)

Part A: Project Proponent Details

Project Title

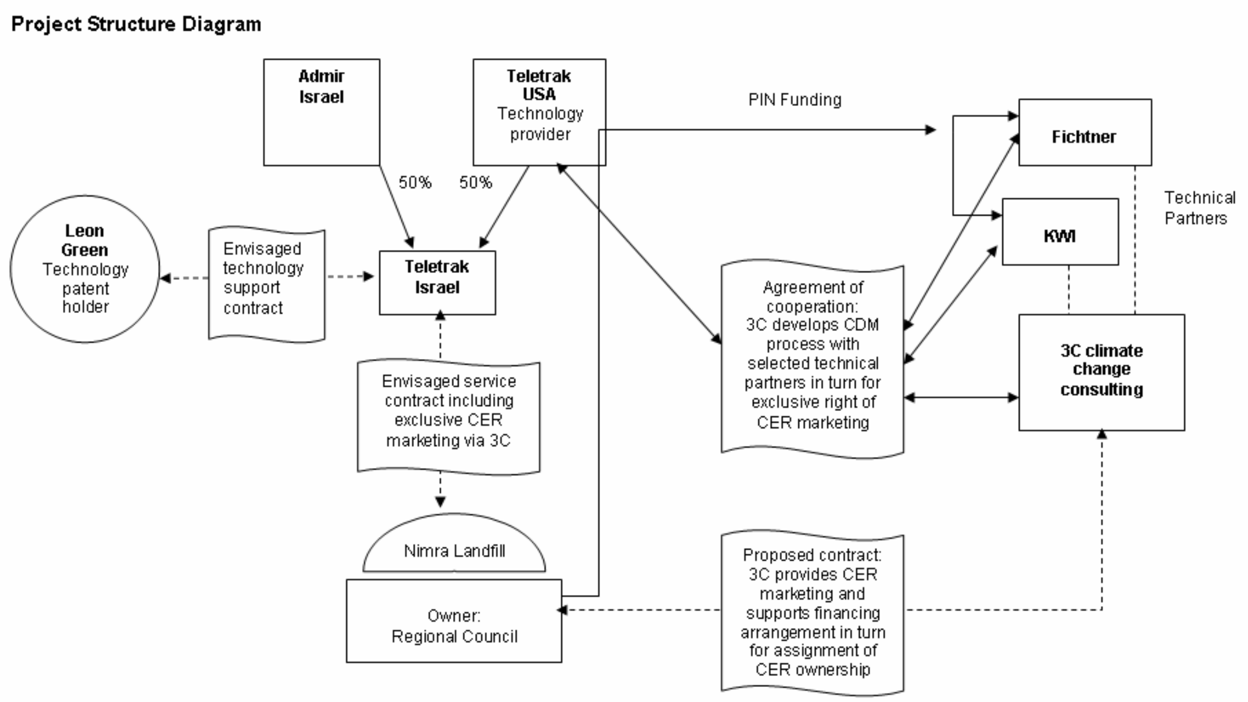
Methane reduction at the Nimra Landfill, Regional Economic Council of Eilot, Israel, using the "In-Situ" Aerobic Bioreactor Process

Location of Project

The host country of the project is Israel. The project is located at the landfill site Nimra near the City of Eilot.

Date of version of PIN	30th of May, 2006
Author of PIN (name, position, company)	Andrea Fuchs – Fichtner Consulting & IT AG Martin Hammer – KWI Management Consultants GmbH Jutta Rothe, 3C climate change consulting Leon Green – Teletrak Israel Gerd Reinig - Teletrak Environmental Systems, Inc. Baker & McKenzie LLP

Project Structure



Project Partners – Contact and References

Project owner: Economic Council of Eilot	
Function/s within project (specify): Eilot Regional Council is the owner of the landfill site	
Name of the project partner:	Nimra Landfill, Eilot regional council
Legal status	Public enterprise
Street Address (include web address, if any)	88820 Israel
Contact person	Amnon Shimoni, Dorit Dvidovich Banet
Telephone / fax	Tel: 972-8-6355832/3 Fax: 972-8-6355800 email: hevcal-maneger@ardom.ardom.co.il
Main activities	
Experience/References for services provided to this project:	
Summary of financial performance in last fiscal year	

Project Developer: 3C climate change consulting GmbH	
Function/s within project (specify):	
Technical	CDM process development
Financial	CER marketing, supports financing arrangement
Project participant	Yes
Name of the project partner:	3C climate change consulting GmbH
Legal status	Privately held company
Street Address (include web address, if any)	Hanauer Landstr. 521 60386 Frankfurt am Main/Germany
Contact person	Dr. Sascha Lafeld Managing Director Tel.: 0049-(0)69-420 88 98 11 Fax.: 0049-(0)69-420 88 98-9 Mob.: 0049-(0)160-969 53 293 sascha.lafeld@3c-company.com
Main activities	Consultancy on Emissions Trading and Project Based Mechanisms
Experience/References for services provided to this project:	
Summary of financial performance in last fiscal year	

Technology Provider: Teletrak Israel	
Function/s within project (specify):	
Technical	Provider of technology, supplier of proprietary equipment, installation of the aerobic treatment system into the landfill, implementation and monitoring of system.
Financial	Teletrak Israel is a newly established 50:50 Joint Venture between Teletrak Environmental Systems Inc, Whitinsville MA USA and Admir Technologies, Tel Aviv, Israel.
Project participant	Yes
Name of the project partner:	Teletrak Environmental Systems, Israel (Tel Israel)

Legal status	Private/public company - limited partnership
Street Address (include web address, if any)	24 Hata'Asiya St Yehud, 56218 Israel
Contact person	Mr. Leon Green, Tel.: 001 803-292-9106 Fax: 001 803-644-0900 e-mail: lcgreenjr@bellsouth.net Mr. Amir Auerbach Tel # 972 3 5366646 Fax # 972 3 5368088 e-mail: admir2@netvision.net.il Mr. Gerd Reinig CEO / Chariman Tel.: 001 508 234 7300 Fax.: 001 508 234 7337 FAX e-mail: greinig@verizon.net
Main activities	Main Activities of Admir Technologies and Teletrak Environmental Systems : **Admir Technologies Ltd.** has been engaged for the past 15 years in supplying soil engineering technologies to Israel. Beginning with the application of geotechnical and geosynthetic products. Admir specialized over the years in integrating innovative technologies to a variety of infrastructure sectors. Admir today is the leading company in Israel for providing geosynthetic and geotechnical products such as Geomembranes, geotextiles, and piping for collecting gas and leachate from waste for the landfills in Israel. Most active waste landfills in Israel purchase geotechnical products from Admir. Admir also performs contracting work for some 50% of all active waste landfills in Israel. **Teletrak Environmental Systems** manufactures industrial jet pumps and related equipment. The pumps are based on jet pump technology used for the removal of granular, wet or dry material. The equipment can be used in various applications across many industries, including environmental clean up of hazardous matter, such as lead and nuclear contaminants and as general maintenance tools. The products are sold under the trade names HAZVAC and ENVIROVAC. Customers include power plants, oil refineries, chemical and petrochemical plants, shipyards, and water treatment plants.
Experience/References for services provided to this project:	Teletrak's experience and expertise were developed in the United States during the late 1990's by inventors Dr. Michael Markels and Leon Green, both of whom are US Patent holders for the application of the aerobic process within the landfill environment. Both individuals currently serve as Teletrak consultants, and a long-term commitment is anticipated as business opportunities develop. Of special note is the experience of Leon Green, who has

	successfully applied his knowledge and expertise to some major aerobic bioreactor projects in the United States. He is internationally accepted as an expert and innovator in the field. His experience, combined with the business and collegial associations he has developed during the past decade, are keys to the successful establishment of an organization capable of applying aerobic bioreactor technology in this burgeoning industry.
Summary of financial performance in last fiscal year	Basic capital provided U.S. $300,000

Part B: Technical Summary of the Project

B1: Project Overview, Timetable and Status

Project Overview

The project purpose is the methane reduction at the Nimra Landfill, Israel using the "In-situ" aerobic process (see B2, technology). The aim is the aeration of the existing Nimra Landfill over 3 to 5 years until the landfill material is stabilized and landfill gas and leachate production are reduced to a minimum. The landfill material will not be removed and treated further, but will remain in the landfill.

Type of project activity: Waste Management (Methane Avoidance)
The Nimra Landfill consists of two cells. Cell 1 is already in operation and almost full. This will be the first cell that will be equipped with "In-situ" bioreactor technology, where anaerobic conditions will be turned to aerobic. Methane production under anaerobic conditions will be reduced for the most part. As from 2006 on, waste will be placed in cell 2 (around 100,000 tons / year – increasing at 5% / year), the process will be extended to aerobically degrade the new waste.

Project Category
Please select:

- Modernisation of existing structures ("retrofit"),
- Expansion of existing plant ("brownfield"),
- **New construction ("greenfield"),**
- Other (specify)

Describe in short the technical purpose of the project and its objectives.

The project purpose is the methane reduction at the Nimra Landfill, City of Eilot, Israel using the "In-situ" aerobic process. The aim is the aeration of the existing Nimra Landfill over 3 to 5 years until the landfill material is stabilized and landfill gas and leachate production are reduced to a minimum. The landfill material will not be removed and treated further, but will remain in the landfill. In addition the aerobic process will be applied on an annual basis to the newly landfilled waste.

Project Description:
Provide a brief description of the project (appr. ½ page A4).
Identify the main processes and activities involved in the project. A flow diagram showing the processes/materials and/or products involved may be attached to complement the description. Include information on planned capacity in MW. Please point out if the project consists of different project parts or extension phases.

The project at the Nimra landfill will consist of aerobically degrading the Municipal Solid Waste (MSW) in a phased approach over seven years (2007 – 2013). There will be a total of 5 treatment phases: Phase 1 will degrade the waste in Cell 1 and the aerobic system will be extended each year to the additional waste landfilled (Phase 2-5). The waste quantities to be treated are set out in the following:

Treatment phases	Start of phase	Cells treated	Tons of waste treated
1	1/1/2007	Cell 1	599 503
2	1/1/2008	Cell 2	198 058
3	1/1/2009	Cell 2	130 361
4	1/1/2010	Cell 2	136 879
5	1/1/2011	Cell 2	143 723
		Total	1 208 520

The main technical process is the controlled injection of air and water into the landfill mass that will allow aerobic degradation to occur. The process will require electrical power to inject the air into the waste mass. Additionally water as well as diesel for on-site generation of electricity will have to be trucked to the site.

Description of Nimra landfill
The Nimra Landfill has been in operation since 1999. Cell 1 of the Nimra Landfill will finish its initial filling in early 2006. It will have a total Waste-in-Place of about 600,000 tons. Cell 2 will open and receive waste over the next four years of an additional 600,000 tons Municipal Solid Waste (MSW). It is assumed that the Municipal Solid Waste (MSW) placement rate will grow at about 5% per year for the foreseeable future. The MSW is estimated to be highly organic of nearly 50%.

The total waste quantities and types for cell 1 accumulated for the years 1999 – 2006 and the estimated organic content are set out in the following table (for more details and the estimation for the following phases see Attachment 1):

Total Waste Quantities for Cell 1, years 1999 – 2006:

Waste types	tons	%	Estimated % of organic solids
Household waste	339,434	57 %	55 %
Yard (lop of trees)	6,939	1 %	100 %
Mixed / inert	200,027	33 %	35 %
Other / inert	278	0 %	0 %
Other / sludge	52,826	9 %	50 %
Total	**599,503**	**100 %**	**48 % average**

Cell 1 does not have any type of gas collection system. The cell is lined and has a leachate collection system in place.

Cell 1 on the Nimra Landfill has a surface area of about 5 hectares with an average depth of about 15 meters. The compaction of the waste is estimated to be about 0.75 tons / m3.

For the waste composition in cell 2 and the landfill construction for cell 2 no changes are expected compared to cell 1.

Nimra is an arid region with very high temperature during the summer months.

Approach
The “In-situ” Aerobic Process turns the normally anaerobic condition of the landfill to an aerobic state by aeration of the landfilled waste. The main results are:

1. Rapid aerobic degradation of the organic content of the MSW
2. Retardation of anaerobic activity (methane generation)

In three (3) to five (5) years over 85% of the organic content of the MSW shall be rendered inert by aeration of the waste and adding moisture as required for the aerobic process, thereby largely eliminating the methane production potential. Methane generation will be reduced by 75% - 90% during the processing period. At the end of the processing period the methane production potential will be reduced by about 85%.

The “In-situ” Aerobic Process shall be used as a part of the normal operation of the landfill . The process will be initiated first on cell 1 (approx. 600,000 tons) and expanded on a yearly basis to the additional MSW placed in cell 2. This approach will maximize the elimination of methane and produce the maximum amount of credits. The process will be non-intrusive to the existing methods and operation of waste placement already in use. Along with new waste being landfilled, the process will be extended to the new waste on an annual basis, thereby eliminating the methane in the new waste on a continuous basis.

Estimate the expected amount of emission reductions by the project in tons of CO_2e/year.

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	Years	Estimated CERs in tCO_2e
1st crediting period	7	472.728
2nd crediting period	7	391.363
3rd crediting period	7	275.821
Total	21	1.139.913

Emission reductions assumptions have been estimated as baseline emissions minus project emissions using the following assumptions: Cells 1+2, L_0 ~ 150, k = 0,05, including a 10% discount to consider potential methane oxidation/uncertainty.

Provide estimation of project-specific GHG-emissions in tons of CO_2e.

Project specific GHG emissions will result from on-site fuel demand (blowers) and transport emissions. Besides, it is estimated that about 15% of the baseline methane emission occur in the project scenario as anaerobic conditions in the landfill cannot be completely avoided. Also, N_2O project emissions have to be considered. Project emissions have been estimated for the PIN. The exact calculation of project-specific GHG-emissions will be part of the PDD.

Which greenhouses gases will be reduced by the project?

The project will reduce methane (CH_4).

Please describe in short how these greenhouse gases will be reduced by the project (appr. 3-5 lines).

The project foresees the implementation of an “In-Situ”- process at the Nimra Landfill. This process turns anaerobic conditions in the waste to aerobic. Organic material degraded under anaerobic conditions is related to methane emissions. Thus methane emissions will be avoided in the project scenario compared to the baseline scenario.

Please provide brief description of the location of the project site (appr. 3-5 lines)

The Nimra Landfill is located in the southernmost region of Israel near the City of Eilot.

At the Nimra Landfill about 100,000 tons of Municipal Solid Waste (MSW) have been placed in cell 1 for the past 5 years for a total amount of Waste-In-Place of about 600,000 tons. Cell 2 will be set into operation this year (2006) and the MSW placement rate will grow at about 5% year for the foreseeable future. The MWS is estimated to be highly organic of nearly 50%. Cell 1 does not have any type of gas collection system. The cell is lined and has a leachate collection system in place.

Please provide background information on project history (project idea proposed by…, project supporters, successful/unsuccessful applications for funding e.g.).

The project was first presented to The Economic Council of Eilot on January 2005. Initial discussion included the Environmental Ministry since this was the first project using this technology. PIN contract was initiated in January 2006.

Project Timetable and Status

Earliest Project Commissioning Date (year/month):
early 2007 (precondition: approval of methodology deviation).

Estimate of time required before becoming operational after finalisation of the PIN:
One year. (Once a methodology is approved, time required for further projects from PIN finalisation to operationality is estimated to be shorter).

Project Lifetime (years)
7-9 years (Treatment period including phases 1-5)

Project End Date (year/month) 2014-2016

Expected first year of CER delivery
2008

Crediting period—if determined
(Note: There are two options 10 years or three times 7 years with reassessment of baseline for each 7 year renewal)
The crediting period should be three times 7 years with reassessment of baseline for each 7 year renewal.

Current Status (please select from choices):

- ***Under Discussion****/Planning/Preparation/Under construction/Other (please explain)*

The results of the PIN and associated methodology discussion will determine the future status of the project.

- *pre/post financial closure*

None.

- *Pre-Feasibility/Feasibility Study available/under preparation*

Not yet under preparation.

Please provide a time schedule for the project, including: milestones, current status of implementation, key permits and expected dates of approval.

Preliminary Schedule

Milestones	*Date*	*Status*
PIN finalisation	May 2006	PIN finalised
Decision to proceed in project process	May/June 2006	not yet
Submitting PIN to Environmental Ministry	June 2006	not yet
PIN approval by Environmental Ministry	July/August 2006	not yet
PDD funding	June/July 2006	not yet
On-site measurements	June/July 2006	not yet
Start of development of methodology deviation or new methodology	June/July 2006	not yet, preparatory work done during PIN development
PDD development	along with methodology	not yet
Legal environmental and construction permits	?	not yet
Methodology approval	June/July 2007 (New methodology – 10-14 months) Sept/October 2006 (Deviation – 3 months)	not yet
PDD validation	2 weeks after methodology approval	not yet
Registration	3,5-4 months after meth approval	not yet
Financial closure	needs to be checked!	not yet
Start of construction	early 2007 if methodology deviation	not yet

	methodology	

What is the position of Host Country with regard to the Kyoto Protocol?

Israel has signed the Kyoto Protocol in December 1998 and the Israeli government has ratified the Kyoto Protocol on February 12th, 2004.

Israel qualifies under the primary requirements for implementing Clean Development Mechanism ("CDM") projects:

- Israel is a party to the Kyoto Protocol
- Israel is classified as a non-Annex I country under the UNFCCC and therefore is not obligated by the Kyoto Protocol to achieve a quantified emission limitation and to reach reduction commitments
- Israel has created a Designated National Authority ("DNA") for CDM projects

<u>The position of the Ministry of Environment:</u>

- The Ministry of the Environment considers the CDM to be an effective economic-environmental tool for promoting projects, which bring about a reduction in greenhouse gasses emissions to the atmosphere and respond to the criteria of sustainable development.
- Though various opportunities for the implementation of CDM projects in Israel exist, the Ministry of the Environment considers the Waste Management and Energy Sectors as worth emphasizing (as stated in the Ministry of Environment website).

Is there a CDM Contact Point or Office in the Host country? (please specify).

Yes.

Israel's Designated National Authority ("DNA") for CDM projects:

Ministry of the Environment
P. O. Box 34033,
Jerusalem, Israel 95464

Division of Air Quality, Ministry of the Environment
Phone: (972-2) 6553 935
Fax: (972-2) 6553 763
http://www.sviva.gov.il/bin/e_sviva.jsp?z=cdm2&o=Articals^l3083

Please specify status of DNA approval of the project (not yet submitted/date of submittance to DNA/expected date of approval).

The project has not been submitted to the DNA yet.

Please specify: Has the DNA already commented on this project? Are there risks of non-approval? Is the project in line with national policy objectives of the host country?

The DNA has not yet commented the project. Up to now there are no risks expected that the PIN would not be approved by Israeli DNA.
The project aims to improve waste management. It is therefore in line with the national policy of the host country. The Israeli Ministry of Environment also highlights CDM-potential of waste management projects. (Refer:
http://www.sviva.gov.il/bin/en.jsp?enPage=e_BlankPage&enDisplay=view&enDispWhat=Zone&enDispWho=cdm_israel&enZone=cdm_israel)

B2: Detailed Project Information

Methodology / Additionality

Which methodology is the project going to use? Please select:
- *New Methodology (specify status)*
- *Approved Methodology (indicate No. of approved methodology/ies)*

There is no approved methodology existing that is exactly applicable to the project. ACM0001 refers to "on-site" landfill projects (e.g. landfill gas capture), while AM0025 refers to "off-site" organic waste treatment (e.g. composting).

The principal of methane avoidance of the proposed project activity corresponds with AM0025. The difference is that the organic material will be treated on the existing landfill and not off-site in a special plant like a composting plant. In addition the project will treat existing organic waste and not fresh organic waste. AM0025 uses default values for degradable organic content of different types of fresh organic materials. The amount of different types is determined by sampling the fresh waste that will be treated. For this project, a new approach has to be found to define the parameters (methane potential L_0, decay rate k,...) of the already landfilled waste in the project.

ACM0001 refers to "on-site" project activity where methane of existing landfills will be destroyed (e.g. landfill gas flaring). This approved methodology foresees the measurement of the destroyed landfill gas (project) that would have been otherwise emitted to atmosphere (baseline), however as this project avoids methane production in the first place, the amount of methane emissions reduced can not directly be measured.

In conclusion the proposed project cannot apply directly one of these two approved methodologies. That means there are two possibilities:

1. Request for deviation: A request of deviation can be submitted to the EB to extend an existing methodology to include also in-situ project activities. For this purpose, a proposal for deviation would have to be elaborated.

2. Submission of a new methodology: If deviation will be denied a new methodology has to be developed and submitted to the EB.

Define the project boundary (approx. 1 paragraph, flow chart can be added).

(Note: A project boundary refers to all emissions which are under the control or directly affected by the project activity. Such a boundary can encompass equipment, processes, and process flows.)

Following GHG emissions sources are within the project boundary:

	Source	Gas
Baseline	Emissions from anaerobic decomposition of waste at the landfill site	CH_4
Project	Onsite fossil fuel consumption due to the project activity	CO_2
	Emissions from additional on-site electricity use	CO_2
	Direct emissions from the aerobic process	CH_4, N_2O

Please indicate project emissions outside the project boundary (Leakage). (*Note: Significant and measurable net emissions of GHG that are attributable to the project outside of the project boundary.)* In order to ensure optimal aerobic conditions in the project, water has to be injected and blowers need to be operated on-site. As there is no water available at the landfill site, the water as well as fuel for blowers have to be transported to the project site. Transportation of water/fuel will result in CO_2 emissions outside of the project boundary. It is estimated that this emissions source is minor, but it will be discussed in detail in the PDD. *Is the project going to apply any used equipment?* No.
Who calculated the expected emission reductions of the project? *Please explain if and how the expected amount of emissions reductions represents a conservative estimation.* IPPC guidelines states that the value of methane potential (L_0) may range from less than 100 to over 200 m³ CH4/t waste. Based on the average value in this range and the expected high organic content of the landfilled material, a L0 of about 150 m³/t waste is assumed. According to IPPC guidelines the value of the decay rate (k) may range from 0.005 to 0.4 per year. Associated with the presence of rapidly degradable material such as food waste and sewage sludge but with dry climate conditions for the decay rate a value of 0.05 is assumed. This corresponds also with the IPPC guidelines, where a default value of 0.05 is suggested if no data on types of waste are available. The baseline emissions were therefore estimated by Leon Green using the 1st Order Decay Model (US EPA) using a theoretical methane potential (L_0) of the fresh waste of 153 m³/t and a decay rate (k) of 0.05. In order to apply a conservative bias the estimated baseline emission were calculated with 10% discount (correction for methane oxidation, uncertainty of assumed parameters etc.). Project emissions were also estimated by Leon Green. 15% of the baseline methane was estimated to be also emitted in the project scenario, as a full aerobic degradation can not be ensured in the landfill. N_2O emissions were conservatively estimated by application of N_2O default values from AM0025. CO_2 emissions from diesel burning for production of electricity were estimated based on the planned installed blower capacities (see Attachment 4). Methane potential Lo and the decay rate are the most important assumptions in the emission reduction estimation. Therefore the sensitivity of these parameters on the estimated emission reductions was analysed (compare chapter D).
Please list possible baseline scenarios for this project and indicate the most probable. Baseline scenarios suggested for discussion by AM0025 include: • Landfill gas capture and generation of electricity • Landfill gas capture with delivery to nearby industry for heat supply • Landfill gas capture and flaring at the landfill site • **<u>No gas capture</u>** • Construction of a waste incineration plant • Project (Teletrak technology) not implemented as CDM project • Construction of a composting plant The most probable baseline scenario will be “No gas capture”. For Nimra Landfill gas capture is not enforced by the authorities.
Please summarize in 3-5 lines the main argumentation how this project is additional as defined under the

Kyoto Protocol.

Additionality arguments:

- Without the CDM credits the project would not be implemented as CERs are the major source of income.

- As it is shown in Part A, the CERs play the major role in financing the project. They help to overcome the financing barrier.

- The technology used in the project is the “first of its kind” in Israel. There is currently no “In-Situ” process at Israeli landfills operational.

The PDD will include a more sophisticated additionality argumentation with transparent evidences.

Is there regulation in place in the host country that requires or makes necessary the implementation of this project/reduction of GHG emissions?

Although Israeli law contains a number of environmental / anti pollution laws and regulations, regarding air emissions, none of which are relevant to the planned project activity, specifically, Israeli legislation (sub-legislation) and regulation, at present time, does not require methane reduction in Israeli landfills. Although it is possible that in individual environmental licenses certain requirements have been imposed, they are widely not enforced in Israel.

Does the project receive official development assistance (ODA)?

No

Technology

Describe in short the technology or resources to be employed in the project.

The “In-Situ” Aerobic Process system consists of a grid of air injection wells, moisture or water injection wells, gas vent wells and monitoring wells throughout the landfill. A typical grid layout for an example landfill is set out in **Attachment 2** and a scheme of well arrangement in the grid in **Attachment 3.**

A substantially automated system controls the amount of water and oxygen (in the form of compressed air) injected into the landfill mass in response to a monitoring system that monitors temperature (continuously) and moisture content (by sampling & water balance) in the waste body as well as temperature, moisture, O_2, CH_4 and CO_2 content in the vented gas (continuously on certain wells and manually on others). The wells are divided into zones with each zone being independently controlled. The air flow rate in each injection well will be determined by the aerobic conversion rate and heat dissipation and will be adjusted based on the temperature and O_2 content in the vent air. The temperature will be maintained at about 55 °C by aeration and the moisture content between 40 to 60% by add of water, if required. All wells may be monitored (every well will be capable of providing temperature data), certain wells will be designated as monitoring wells which will be monitored for critical control parameters (CH_4, O_2, CO_2, temperature, moisture) and emission gases. All wells can be used to add water, air or function as a monitoring well depending upon the circumstances of the process.

Diffuse CH_4 emissions at the surface of the landfill will be measured periodically for identification of undesired diffuse CH_4 emissions from the landfill as well as for contribution to the monitoring of the effectively reduced GHG emissions during operation. For this purpose the results of the surface measurements will be compared to the baseline measurements before the process starts.

The spacing between injection points as well as the vent well spacing will be about 15 m, depending on the compaction of the infilled waste. The maximum pressure of the aeration system will be about 15 psi (approx. 1 bar) and the air flow rate in the injection wells of the aeration system is designed to 20 to 50 cfm (approx. 34 to 85 m^3/h). Typically passive venting is foreseen, but the system will be designed to include

extraction equipment if needed for heat dissipation. Any active extraction system energy requirements would be offset by a reduced air injection rate. The energy demand is determined by the demand for the blowers for air injection and gas extraction (if needed), for several 1 HP water (liquid) pumps and for the monitoring equipment. For air injection of cell 1 (Phase 1) four (4) 50 HP (approx. 37,3 kW) blowers are assumed, supplying a minimum of 5000 cfm (approx. 8500 m^3/h). For the Phases 2-5 in Cell 2 a maximum of nine (9) blowers will be required. For gas extraction if needed for heat dissipation, a maximum of three (3) 25 HP (approx. 18.7 kW) blowers are assumed. In average 739 MWh/a will be required for the project. For further details see **Attachment 4**. A source of moisture will be provided in the event that the leachate collection system does not generate adequate leachate to maintain the moisture content in the landfill within the desired range. Water need will be about 0.5 m3 per m3 of waste respectively about 250,000 m3 for phase 1 (cell 1) less any leachate re-circulated. At Nimra Landfill a lined pond for leachate storage exists. As there is no water supply at Nimra landfill additionally water will have to be trucked at the place. The complete or stabilized degradation of the waste body will be indicated by sampling the waste mass and determining the actual amount of degradation by established laboratory analysis (organic and moisture content). The process measurement of air flow rate, temperature, gas emissions concentration and volume will provide the necessary data to determine that the aerobic process is proceeding as designed. Air channelling will be detected by high levels of O2 at the vent wells and adjustment will have to be made accordingly. The building of water lakes (ponding) will be avoided by an increased number of water injection points which can be monitored and selectively used or isolated if a saturation condition is detected (determination of water balance in each zone). Relevant emission in the vent air can be odour. The other main gases emitted are Nitrogen, CO2 and water vapour. Odour in the vent air can be minimized by establishing a bio filter system, if needed.
Are there any constraints affecting project operations or commissioning? *(Note: for example energy supply, infrastructure, other resources.)* The energy supply will most likely have to be supplied by diesel generators. Limited power is available at the site, but its remote location will most likely require a secondary power source. Diesel will thus have to be trucked to the project site. There is no water supply at the landfill site. Water will have to be trucked to the place.
Is the technology one that has been previously tried and tested in the host country? (If yes, provide brief details). The "In-Situ" Aerobic Process has not been applied up to now in Israel.
Is the technology one that has been previously tried and tested internationally? (If yes, provide brief details). Yes. Various projects have been implemented internationally that use aerobic in-situ technologies. They differ especially in view of the technical and monitoring design. There are none that have been implemented by Teletrak, but by the company's business associate Leon Green, Environmental Control Systems, Inc. (ECS) who is one of the US Patent holders for the application of the aerobic process within the landfill environment. Leon Green's ability is to control and maintain the process. The "In-situ" Aerobic Process has been successfully implemented for example in the following projects in the United States: • Williamson County Landfill, Tennessee, U.S.A. • New River Landfill, Raiford, Florida, U.S.A.

- Baker Place Landfill, Augusta, Georgia, U.S.A.
- Yolo Landfill, California, U.S.A.
- Three River Landfill, Aiken, South Carolina, U.S.A.

Have the project operators had any previous experience or expertise with operating the technology? Will technology be licensed or owned by the project operator?

The project operator will be Teletrak Israel. Teletrak Israel has no previous experience or expertise with operating the technology. However, local Teletrak Israel representative Admir Technologies has strong 15 years experience working on landfills in Israel. The technology will be licensed by the project operator. The project operator will be trained by Teletrak USA adequately to ensure process operation.

Sustainable Development

Does the Host Country have sustainable development criteria for CDM projects? If so, list them and provide sources.

Israel has preliminary sustainable development criteria. They are published on the website of the Ministry of Environment (http://www1.sviva.gov.il/e_cdm/)

	Economic and technological impacts
Example of Indicators	• Development and transfer of technology and know-how • Infrastructure (construction) • Utilization of resources (efficiency)
	Social sustainability impacts
Example of Indicators	• Employment (net employment generation) • Living standards • Human and institutional capacity (i.e. skills development, education)
	Local/regional/global environmental impacts
Example of Indicators	• Air quality (emission other than GHGs) • Emission of other pollutants (i.e. hazardous substances, radiation, stratospheric ozone depleting gases) • Biodiversity (species and habitat conservation)

Please specify whether the project can be replicated in the area where it is located or in other regions or countries (multiplier effect).

The project is replicable to other Israeli landfill sites and other regions of the world.

Does the project contribute to social sustainability and development? (please consider positive and negative impacts)

Yes, it provides jobs onsite and offsite that otherwise would not be created.
It is estimated that the project will create additional:

- 20 jobs during the 24 month design/approval phase
- 40 jobs during the 18 month implementation phase
- 10 jobs during the operational phase

Does the project contribute to economic and technical development? (please consider positive and negative impacts)

Yes, the project extends the life of the landfill through volume reduction and minimizes the environmental impact of the landfill on the community.

Briefly describe potential environmental impacts (positive and negative) of the project. (e.g. impacts on

flora, fauna, waterways, air quality, noise …) The potential environmental impact is highly positive. Emissions from the anaerobic degradation process will be abated. The in-situ treatment method will include treatment of the liquid run-off within the landfill, thus reducing the contamination of the surrounding area. Air quality is increased by turning waste conditions to aerobic, remaining odour in the vent air could be minimized by establishing a bio filter system, if needed. There are no negative impacts but the use of additional power generators on-site which will be a minor source of noise, but the landfill is in a remote location. No adverse impact on flora, fauna or waterways will occur. *(Note: Consider both impacts which result in resource depletion and also the emission of pollutants that can damage the environment. Note how the negative environmental impacts will be minimised.)*
Does the project plan for Gold Standard validation and verification? (if yes, please provide details). This has not been decided yet.

C. Project Finance and Commercial Structure

Please complete the following table noting total amounts of investment and sources of investment.

Total project costs estimate *(Please provide a breakdown and/or explanation where appropriate)*	
Development cost	525.000 US $
Installed project cost	1.660.000 US $
Other costs	1.605.000 US $ (administration, closure, licensing)
Total project cost	3.790.000 US $
Operational costs	1,770,000 US $ over the treatment period
Sources of finance identified *(Please provide a breakdown and brief summary where appropriate)*	
Equity	Probably no.
Debt - Long-term	Probably yes.
Debt / Equity Ratio	The project should be financed without equity from the project owner, the Economic Council of Eilot.
Total CDM contribution sought	100%
CDM contribution expected in advance payments	a portion of upfront payment will be needed.
Project IRR *(Please provide a breakdown and brief summary where appropriate)*	
Indicate projected financial IRR for project with and without CER revenues. Please indicate CER price assumed in calculation	**No IRR has been calculated.**

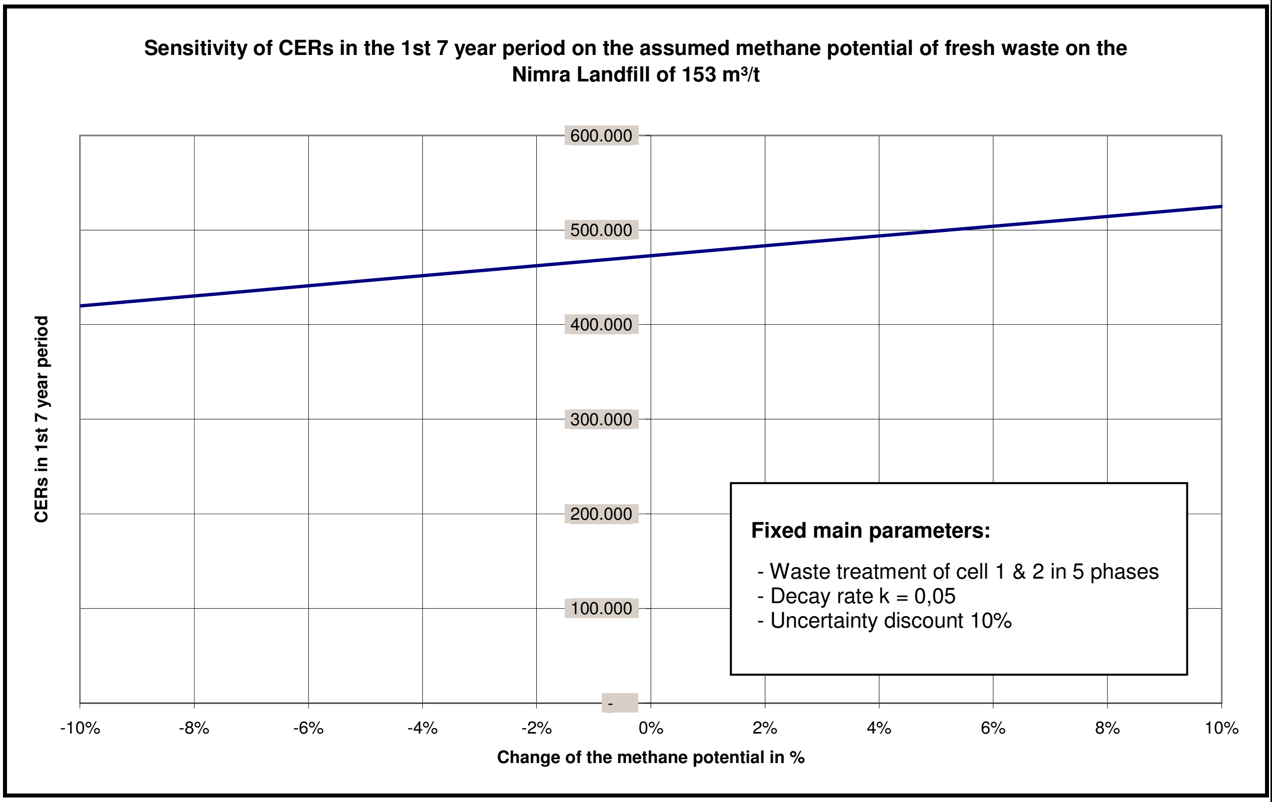
Have any commercial arrangements been made that may impact the tradability of the Carbon emission reductions? If yes, please define. Yes, marketing via 3C climate change consulting.
Has the project developer had any preliminary discussions with any potential purchasers of the carbon credits (CERs)? Not yet, credits available via marketing by 3C climate change consulting.

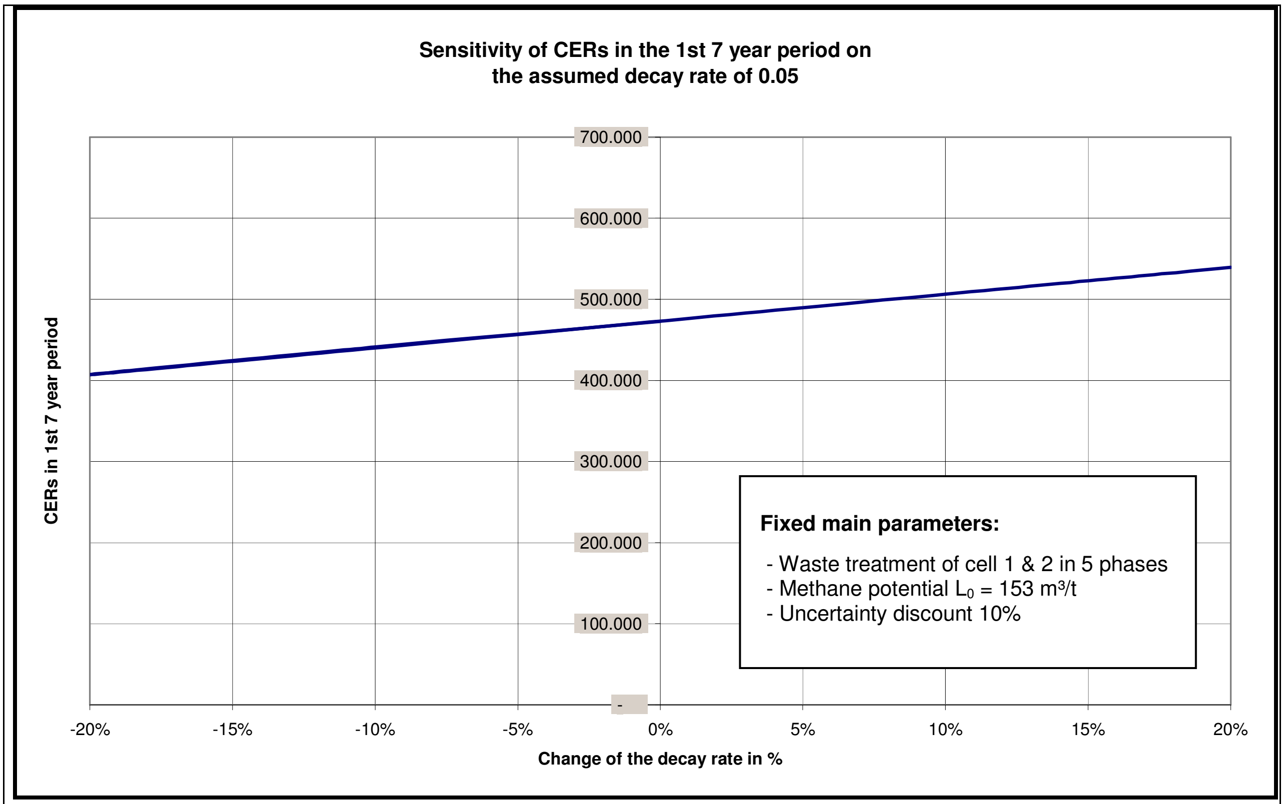
D. Project Risk

Please summarize: Which are the most important project risks that may affect the projected delivery of Certified Emission Reductions by the project, and how are these risks managed? (e.g. technological risk, supply risk, market risk, monitoring risk, DNA approval risk, financial risk …).

There are several uncertainties (especially inhomogenic compaction of the waste in the landfill body, unknown composition of the already infilled waste and climatic conditions in Israel with high temperature and no rain during the summer months) which could result in less emissions reduction than estimated or in a longer period which will be required until the landfill material is stabilized and landfill gas and leachate production are reduced to a minimum. The technical design might have to be adapted after having first results of the sampling of the infilled waste and in the beginning of the operation of the project.

As methane potential Lo and the decay rate are the most important assumptions in the emission reduction estimation, the current assumptions on these two values represent a risk on the amount of emission reductions by the project. In the next project phases analysis will be conducted to get more certainty on these important parameters. In order to show their effects on the estimated emission reductions their sensitivity on the estimated emission reductions was analysed. The next two figures represent the results of this analysis:





Please note that the range of change of the analysed parameter is assumed and that the effective values can also be outside of these range. The analysis of the landfill will give more certainty of this values.

Have risk assessments been conducted for this project, by whom?
A preliminary project risk assessment has been part of PIN development.

Attachment 1: Waste types, quantities and estimated organic content

Nimra Landfill, Eilot, Israel

Treatment phase 1 (Cell 1, closes April 15th 2006)

	Waste placed in Cell 1 (tons)									
Year	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**Total**	Estimated % organic solids
								estimated		
Household	484	56.230	51.133	51.025	49.784	53.512	55.438	21.829	339.434	55%
Yard (lop of trees)	0	750	419	927	1.093	718	2.176	857	6.939	100%
Mixed / inert	0	10.947	14.698	25.562	32.565	53.897	44.742	17.617	200.027	35%
Other - inert	0	0	0	0	0	58	158	62	278	0%
Other- Sludge	0	0	7.847	10.131	10.046	10.728	10.098	3.976	52.826	50%
(Sewer type)										
Total	484	67.927	74.096	87.645	93.488	118.912	112.611	44.340	**599.503**	Average: 48%

Percent Increase			9%	18%	7%	27%	-5%
Average Increase / 5 yr							11%
--> Use 5% increase per year							

Treatment phases 2-5 (Cell 2, opens April 2006)

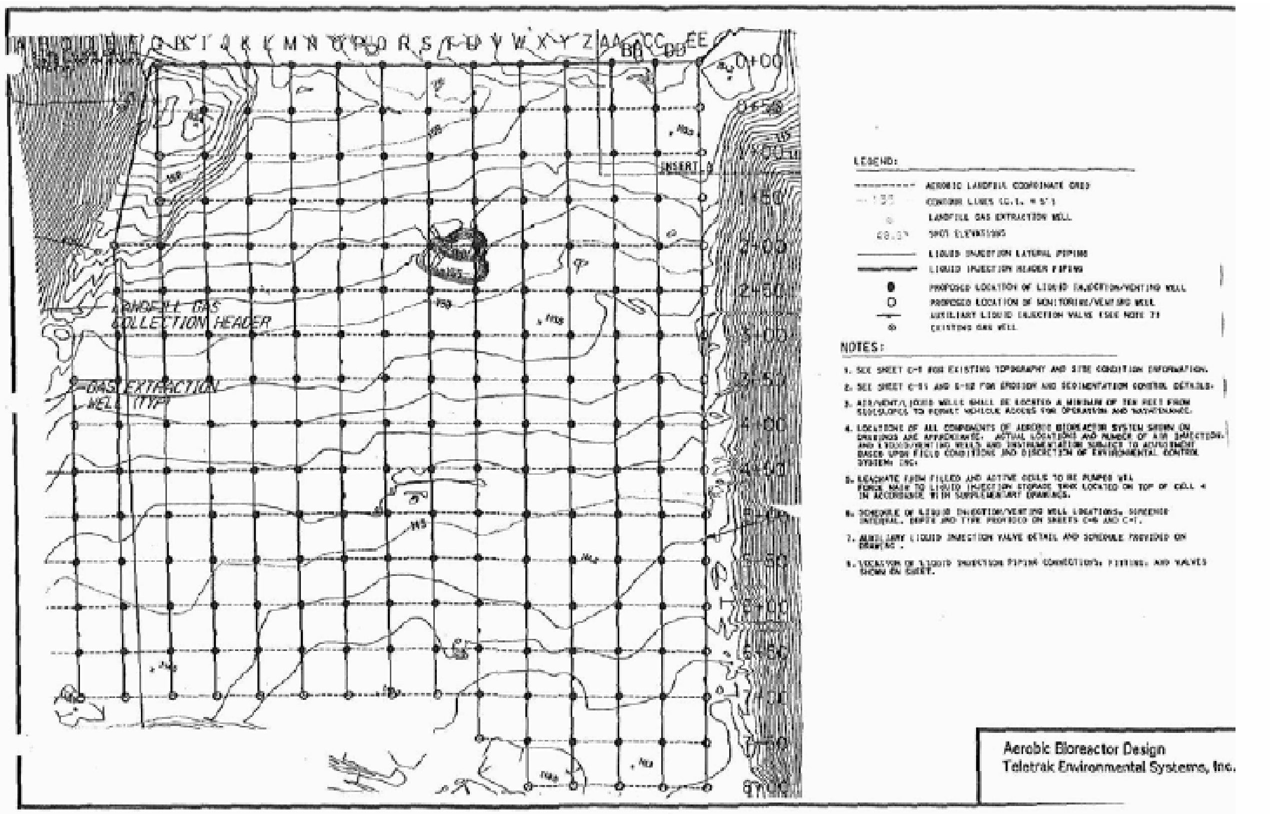
Phase 2	From 4.15.06		
Year	**2006**	**2007**	**Total**
Household	36.381	61.120	97.501
Yard (lop of trees)	1.428	2.399	3.826
Mixed / inert	29.362	49.328	78.689
Other - inert	104	174	278
Other- Sludge	6.627	11.133	17.760
(Sewer type)			
Total	73.901	124.153	**198.054**

Phase 3	
2007	**Total**
64.176	64.176
2.518	2.518
51.794	51.794
183	183
11.690	11.690
130.361	**130.361**

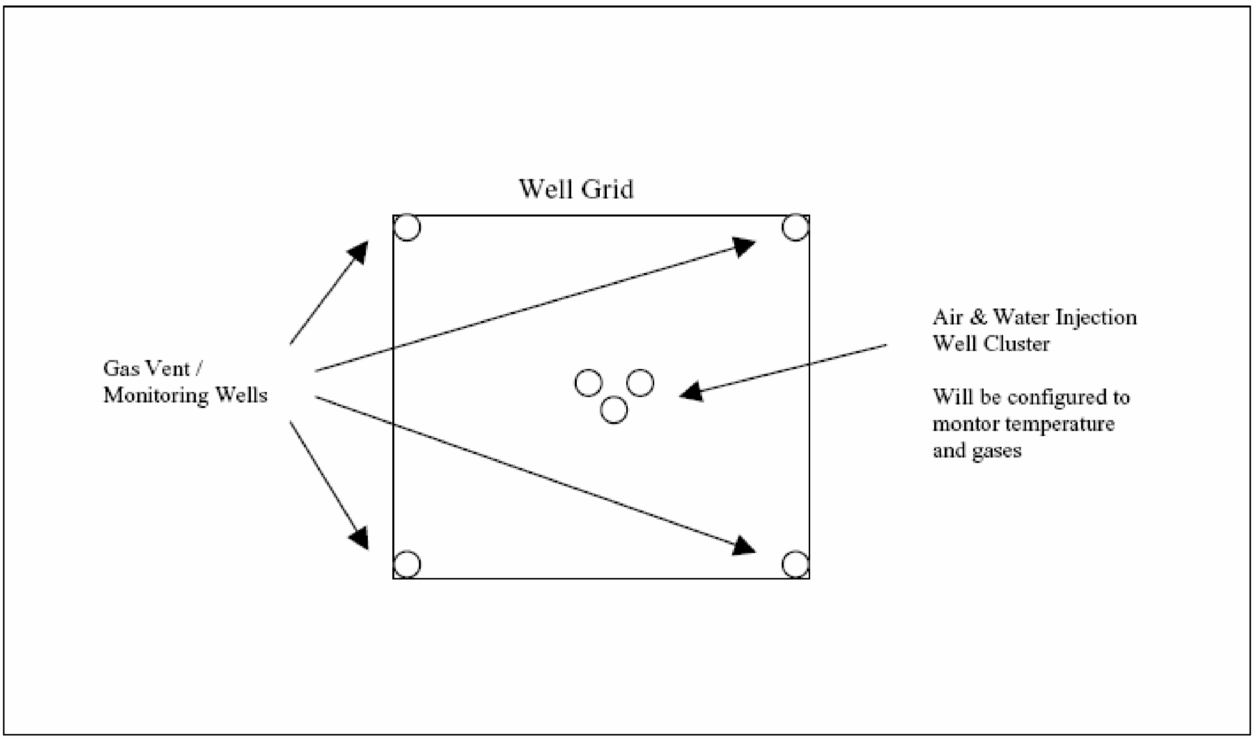
Phase 4	
2008	**Total**
67.385	67.385
2.644	2.644
54.384	54.384
192	192
12.274	12.274
136.879	**136.879**

Phase 5		
Year	**2009**	**Total**
Household	70.754	70.754
Yard (lop of trees)	2.777	2.777
Mixed / inert	57.103	57.103
Other - inert	201	201
Other- Sludge	12.888	12.888
(Sewer type)		
Total	143.723	**143.723**

Attachment 2: Example layout



Attachment 3: Principal scheme of well arrangement in grid (representing one grid cell)



Attachment 4: Energy requirements

	Energy Requirements		KW	Number	Total KW	Average Load	Annual KWh/a	Operations time		Purpose
1	Blowers	50 HP	37,3	6	223,68	30%	587.831	7	Years	Air Injection
2	Blowers	25 HP	18,6	3	55,875	25%	122.366	7	Years	Gas Extraction (if required)
3	Pumps	1HP	0,7	4	2,98	75%	19.579	7	Years	Liquid Injections
4	Monitoring				1,00	100%	8.760	7	Years	Monitoring devices computers , etc
5	Diesel Delivery		1 truck (2 times / week) (40 miles / trip)					7	Years	
6	Water Delivery		1 truck (4 times /week) (40 miles / trip)					7	Years	
						Total	738.536			

Blower Utilization

Phase	2007	2008	2009	2010	2011	2012	2013
1	3	4	4	4	4		
2		1	2	2			
3			1	2	2		
4				1	2	2	
5					1	2	2
Blowers Total	3	5	7	9	9	4	2
Average							5,6
Use in energy calculations							6,0

Blower (Extraction)Utilization

Phase	2007	2008	2009	2010	2011	2012	2013
1	0,5	1	2	2	2		
2		0,5	1	1			
3			0,5	1	1		
4				0,5	1	1	
5					0,5	1	1
Blowers Total	0,5	1,5	3,5	4,5	4,5	2	1
Average							2,5
Use in energy calculations							3,0