

**Project Profile**

**Decommissioning of the  
Co-Combustion Pilot Plant at Tap Shek Kok**

**Green Island Cement Company Limited**

**April 2007**

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## **1. Basic Information**

### *1.1 Project Title*

Decommissioning of the Co-Combustion Pilot Plant at Green Island Cement Tap Shek Kok.

### *1.2 Purpose and Nature of the Project*

The Co-Combustion Pilot Plant (hereafter “CCPP”) was constructed at the Green Island Cement site in order to develop a new thermal treatment process for Municipal Solid Waste (hereafter “MSW”), whereby the incineration of the waste is integrated with the production of cement, thus delivering much improved environmental and financial performance.

As part of the research programme in collaboration with the Hong Kong University of Science and Technology (“HKUST”), the CCPP was operated as a trial for the purpose of technology verification. After completion of the pilot plant study, the CCPP has been permanently shutdown, and it is to be decommissioned and removed from the existing site.

### *1.3 Name of Project Proponent*

Green Island Cement Company Limited

### *1.4 Location and Scale of Project*

The site was granted by private treaty in 1978 for the construction and operation of a plant to manufacture cement and cement related products. The CCPP was constructed in 2004 after receiving approval from Lands Department, Environmental Protection Department and the Buildings Department. It occupies an area of 4,000m<sup>2</sup> and, as a pilot plant, it treated only 24 tonnes of MSW per day (i.e. 1 tonne per hour) during the continuous operation for purpose of data collection and analysis.

The site map of the CCPP is attached in Annex I.

### *1.5 Number and Types of Designated Project*

The captioned Project consists of one designated project under Item 3 of Part II of Schedule 2 of the EIA Ordinance, i.e. decommissioning of municipal, chemical or clinical waste incinerator.

### *1.6 Name and Telephone Number of Contact Person(s)*

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## **2. Outline of Planning and Implementation**

### *2.1 Project Implementation*

The decommissioning of the Co-Combustion Pilot Plant is part of an overall research programme, commenced in year 2000, which includes the design and construction of the pilot facility, process trials on municipal solid waste, monitoring of process and environmental parameters and the final decommissioning, dismantling and removal of the pilot plant.

The planning and implementation of the project is being carried out jointly by Green Island International (“GII”) and Green Island Cement Company (“GIC”) staff and members of the Chemical Engineering Department of the HKUST. The project team are assisted by specialist consultants and contractors where required. It is planned that the EIA report would be outsourced to an environmental consultant in Hong Kong.

The decommissioning of the CCPP involves demolishing of the existing structures; removal of used equipment and waste materials; clean up of the CCPP site. Throughout the project, appropriate mitigation measures will be implemented in order to avoid / minimize any potential adverse environmental impacts arising from the project activity.

### *2.2 Project Timetable*

The current programme envisages the shortlisting and selection of an environmental consultant and a project management consultant in May/ June 2007. The programme for the decommissioning will depend upon the progress of obtaining the necessary statutory approvals (including the Environmental Permit to be issued by the Environmental Protection Department and the Demolition Permit to be issued by the Buildings Department), but it is intended that the decommissioning, dismantling and site clearance should be completed by March 2009.

### *2.3 Interactions with Broader Programme Requirements*

The site on which the pilot plant is located is part of the Green Island Cement plant site, immediately adjacent to the cement kiln. It has always been planned that the pilot plant would be decommissioned, dismantled and removed once the operations necessary for the development programme were complete. The operations were concluded at the end of December 2005, following which the pilot plant was closed down awaiting decommissioning. It is undesirable for the pilot plant to stand vacant and unused any longer than absolutely necessary to obtain the necessary permits and approvals for its decommissioning and dismantling, because this is likely to impede the smooth functioning of the day-to-day operations of the cement plant.

## **3. Possible Impact on the Environment**

### *3.1 Overall*

The decommissioning of the pilot plant and its subsequent dismantling and removal is a process frequently undertaken by mechanical engineering contractors. It is planned that the majority of the plant would be recovered by the contractor as second-hand equipment or scrap. As with any plant which has been used for thermal processes, there is potential for contamination by hazardous materials, and care will be taken both before and during the dismantling work to investigate any potentially contaminated materials and surfaces. Any contaminated materials which are discovered would be wrapped, bagged, encapsulated, drummed, or otherwise appropriately isolated from the non-contaminated materials, and handled and disposed of separately as required by the Environmental Protection Department (EPD) under the Waste Disposal Ordinance (Cap 354).

The dismantling and removal of process plant from the site would be carried out during the period 0700 hours to 1900 hours on each day of the week, significantly less than the operating hours of the cement plant, which is in continuous operation on a 24 hour basis. Standard trucks would be used for the transport of scrap away from the site, and the loads would be well secured and covered with properly tied down tarpaulins. Any hazardous materials will be treated as chemical waste and removed from the site to authorized disposal points using vehicles licensed to carry chemical waste. The potential environmental impact of the transport of scrap materials and waste from the site would be examined in the EIA report and any necessary or appropriate mitigation measures developed and presented.

### 3.2 *Air Quality*

#### Dust

During the decommissioning stage of the CCPP, dust impact will potentially arise from the demolition of the existing structures, haul road emissions, as well as operations of the temporary stockpiling area. No significant adverse impact is predicted given the limited scale of the project activity.

#### Emission

Negligible level of gaseous emissions during the decommissioning stage of the CCPP is expected.

### 3.3 *Odour*

No significant odour is expected because the majority of waste materials involved in the project are not of a volatile nature, e.g. solid residues.

### 3.4 *Noisy Operations*

This decommissioning project will generate some noise during the dismantling of the CCPP when using air-powered wrenches, cutting torches, cranes and similar industrial equipment. The transport of scrap materials and waste from the site will also generate traffic noise. It is expected that the scale of any such

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noise will be less than the background noise; but this will be assessed and any appropriate mitigatory measures proposed in the EIA report. Also, the project site is remote and no sensitive receivers are found in the nearby environment; thereby noise impact from the project is not anticipated to be significant.

### 3.5 *Night-time Operation*

No night-time operations are proposed.

### 3.6 *Traffic Congestion*

It is envisaged that a small number of standard trucks will be needed to transport the mainly scrap materials away from the project site. Based on a Consultant's Traffic Survey carried out on the Lung Mun Road in June 2005 the traffic generated would have minimal impact. Nevertheless, the traffic generation and impact will be assessed in the EIA Report.

### 3.7 *Liquid Effluents, Discharge, or Contaminated Runoff*

There will be no liquid effluents. Discharges may arise from washing operations; but any contaminated materials will have been removed before washing commences. The cement plant is managed as a "zero discharge" site. These operations would be assessed in the EIA Report.

### 3.8 *Generation of Waste or By-Product*

This decommissioning project will generate only scrap process equipment and small quantities of mixed waste. The scrap process equipment will be sold by the dismantling contractor; and the mixed waste will be disposed of appropriately, with any chemical waste dealt with as prescribed by the Waste Disposal Ordinance (Cap. 354) and its subsidiary regulations.

### 3.9 *Hazardous Materials or Waste*

It is expected that this decommissioning project will generate only small amounts of hazardous materials or wastes; and that they will be handled, treated and disposed of properly according to the Waste Disposal Ordinance (Cap. 354) and its subsidiary regulations.

The decommissioning EIA report will contain a section concerned with the investigation of hazardous materials. This will develop protocols and specify methodologies for the examination of the following for possible contamination; process plant materials and surfaces; any remaining process products and by-products; and equipment and surfaces in the near vicinity of the CCPP which could have been subject to contamination.

### 3.10 *Risk of Accident which would result in Pollution or Hazard*

The dismantling of the CCPP and the transport of the scrap process equipment away from the project site will involve only standard industrial and construction

procedures which are not subject to the risk of major accident which would result in pollution or hazard. Appropriate procedures will be adopted to ensure that the occurrence of industrial and traffic accidents is as low as practicable. Potential risk of accidents, which will result in pollution or hazard, will be addressed in the decommissioning EIA report.

### *3.11 Disposal of Spoil Material, including Potentially Contaminated Material*

Any potentially contaminated material will be treated as if it were chemical waste unless investigation proves it to be non-hazardous. Chemical waste will be handled, treated and disposed of properly as prescribed by the Chemical Waste Regulation.

### *3.12 Disruption of Water Movement or Bottom Sediment*

Neither dredging nor reclamation will be anticipated in this decommissioning project. Therefore, no disruption to water movement or bottom sediment is expected.

### *3.13 Unsightly Visual Appearance*

The project site is remote and no sensitive receivers are found in the nearby environment. This decommissioning project will not result in unsightly visual appearance.

### *3.14 Ecological Impacts*

There is no nearby area of ecological and conservation value nearby the project site. This decommissioning project will not have any ecological impact.

## 4. Major Elements of the Surrounding Environment

### 4.1 Sensitive Receivers

There are no existing and planned sensitive receivers and sensitive parts of the natural environment which might be affected by the project activity. **NONE** of the following sensitive activities are found nearby the project area:

- residential developments (permanent or temporary);
- educational establishments;
- health care facilities;
- places of worship;
- agricultural areas;
- watercourses, nullahs or confined bodies of water;
- beaches;
- water catchment areas and gathering grounds;
- ground-water resources;
- marine water resources;
- industries which are sensitive to pollution;
- airsheds with limited capacity to disperse pollution;
- areas of conservation value;
- areas of high visual value; and
- sites of cultural heritage.

### 4.2 Major Elements of the Surrounding Environment

The decommissioning project activity is NOT near any existing pollution blackspot.

The decommissioning project activity is near existing industrial operations, as described below in the section on “existing and past land use of the project site and environs”.

The decommissioning project is NOT near any trunk road, but is fairly close to Lung Mun Road.

The decommissioning project is NOT near any noisy commercial, community or recreational activities.

The pilot plant site is NOT near a flight path or a railway.

The site is NOT close to the existing or planned waste facilities.

The site is NOT close to any potentially hazardous installation.

The site is NOT affected by noisy or dusty open storage uses.

### 4.3 Existing and Past Land Uses of the Project Site and Environs

The CCPP is located at Tap Shek Kok, Tuen Mun, which is an area currently gone for industrial land use. The existing use of the decommissioning site is for the construction and operation of a temporary pilot plant for the co-combustion

of MSW. The site is surrounded by the Green Island Cement plant. The immediate neighbours of the cement plant are the Castle Peak Power Station of CLP Power Limited, the Shiu Wing Steel Company steel manufacturing plant, Lung Mun Road and the sea.

## **5. Environmental Protection Measures**

### *5.1 Pollution Control Technology*

The project will require only simple housekeeping measures to separate any potentially contaminated materials, and to prevent the escape of dust or liquids during the dismantling of the pilot plant and the removal and transport of scrap from the site.

### *5.2 Source Control*

There are no point sources of pollution from the project.

### *5.3 Waste Management Systems and Practices*

Any contaminated materials or waste which is suspected to be chemical waste will be investigated and analysed. All chemical waste and contaminated materials will be dealt with as required by the Waste Disposal Ordinance (Cap. 354) and its subsidiary regulations, and removed from the site for appropriate treatment and disposal by a properly licenced contractor using licenced vehicles as required under the Ordinance. The transport of any chemical waste away from the project site will be subject to monitoring by the trip ticket system specified in the Ordinance. Any non-hazardous waste will be placed in suitable containers and taken to appropriate disposal sites using standard waste collection vehicles. Dismantled process equipment will be checked to ensure it is free of contamination before being removed from the project site.

### *5.4 Potential for Waste and Wastewater Minimization*

The CCPP received MSW for processing during the trials; but no waste remains on site. It is expected that the project will produce very little waste other than the dismantled process equipment, which will be sold by the dismantling contractor as either used equipment or scrap materials. Water will be used only for housekeeping purposes, for example general washdown of process equipment and hardstandings. Every effort will be taken to minimize the quantity of water used, and wherever practicable to recycle it.

### *5.5 Risk Mitigation Measures and Accidents Emergency Response Plans*

This decommissioning project poses no major risks and accordingly no emergency response plan is required.

### *5.6 Acoustic Barriers and Insulation*

The dismantling of the CCPP will require the use of air-powered tools, cutting torches, cranes and other common industrial mechanical tools. There are relatively few areas of concrete that will need to be broken out. In view of the relatively short duration of the project, the quite moderate nature of the proposed

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work and the lack of nearby sensitive receivers, it is not envisaged that the installation of acoustic barriers and insulation will be justified.

5.7 *Buffer Zones and Landscaping*

It is considered that buffer zones and landscaping are neither needed nor appropriate for this temporary project which is concerned with decommissioning.

5.8 *Different Siting of Activities*

This is a decommissioning project so alternative sites are neither appropriate nor available.

5.9 *Site Layout and Building Design*

This is a decommissioning project so alternative site layout and building design is not possible.

5.10 *Retention of Nature Environment Features*

There are no natural environmental features within and surrounding the project site.

5.11 *Control of Construction Work Practices*

Every effort will be made to adopt quiet techniques and methods of dismantling and removal of the pilot plant.

5.12 *Application of the Deep Bay Guidelines for Dredging, Reclamation & Drainage*

This project does not involve dredging, reclamation or drainage works.

5.13 *Application of Chapters 9 and 10 of the Hong Kong Planning Standards & Guidelines*

The beneficial effect is that a demonstration co-combustion facility is being demolished in accordance with both public and regulatory expectations. There are no material adverse effects.

5.14 *Comment on Any Further Implications*

History of Similar Projects

There are no similar projects apart from the decommissioning of municipal incineration plants at Kwai Chung, Lai Chi Kok and Kennedy Town, and crematoria at several locations.

### Public Consultation To Date

During the operation of the pilot plant, 21 groups (see attached list) visited the site and were made aware of the temporary nature of the plant and the intent to decommission it in 2006. No objections were received and in fact some groups encouraged demolition.

### Public Interest and Political Sensitivity

Permits and licences issued under the Buildings Ordinance and the environmental-related ordinances require the CCPP to be decommissioned and removed after the trials have been completed. It is in the public interest that has to be done as soon as practicable.

### Use of Previously Approved EIA Reports

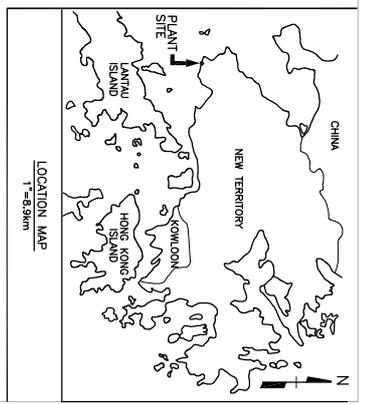
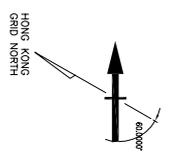
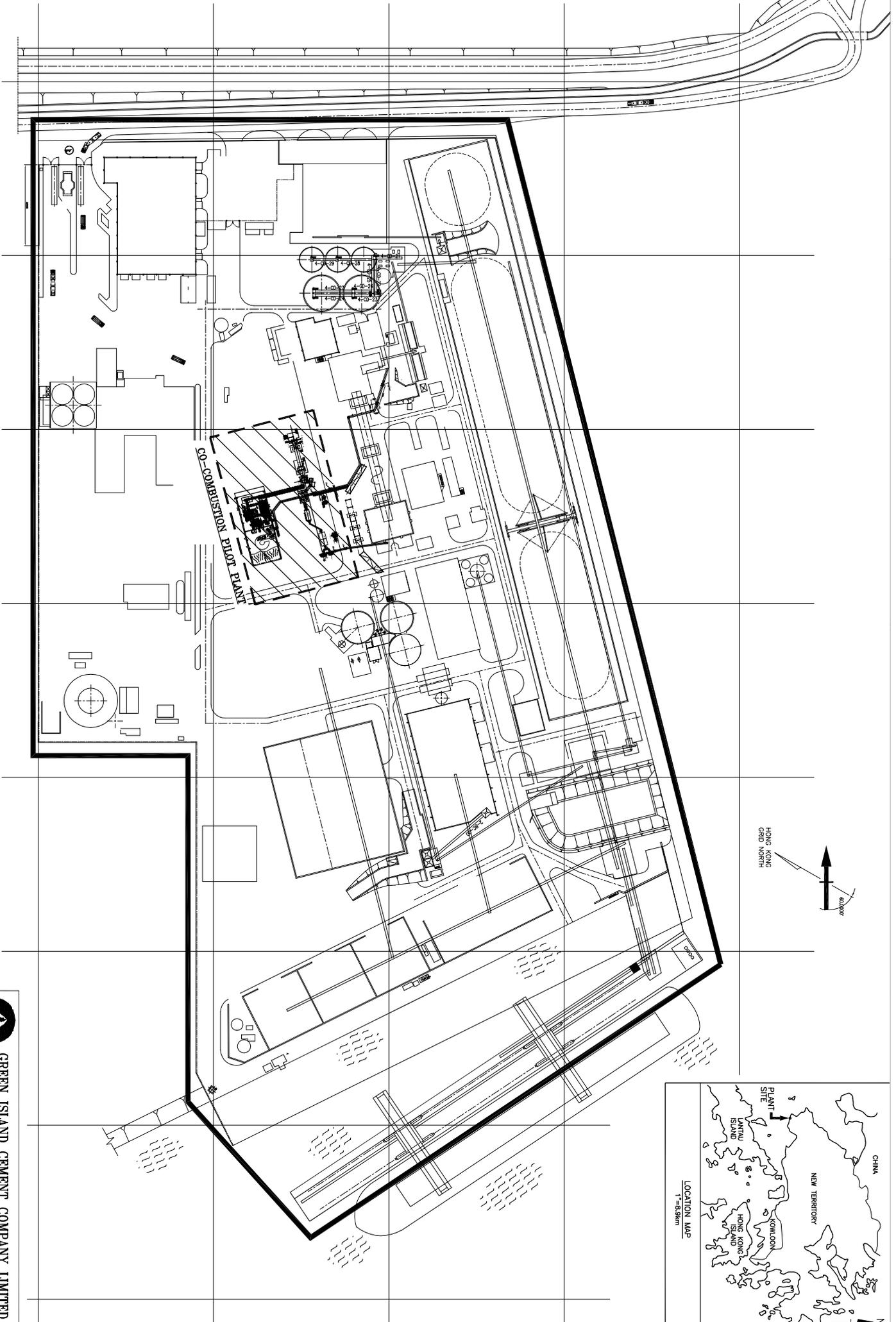
It is not proposed to make reference to the content of any previous EIA Report.

## **6. Conclusion**

Given the small size of the CCPP, decommissioning of the facility is not expected to generate any significant adverse impact on the environment. The key focus from the environmental perspective is to avoid any contamination during the decommissioning as well as to implement standard environmental control measures as practicable as possible to control any potential environmental impacts. Comprehensive evaluation of the potential environmental impacts and the appropriate mitigation measures will be addressed in the decommissioning EIA report.

**Annex I**

**Site map of the Co-combustion Pilot Plant (CCPP)**



NO.	DATE	REVISION	BY	APP.	REFERENCE DRAWINGS	NUMBER	DATE	ISSUED FOR	BY	CLIENT APPROVAL	APPROVED	SCALE	DATE
2	17-3-08	GENERAL REVISION	GC									1 : 1000	6-9-06
1	8-3-08	GENERAL REVISION	GC									GC	

APPROVED BY	DATE	SCALE	DATE
DRAWN		GC	6-9-06
DESIGNED			
CHECKED			
APPROVED			

LAST EDITED:	SHEET SIZE	FILE NAME	DWG	TSK	REV.
17-3-08	A1	TSK-0-G-100-ALMG No.	0	0	A

**GREEN ISLAND CEMENT COMPANY LIMITED**  
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**TAP SHEK KOK CEMENT PLANT GENERAL LAYOUT**

**CO-COMBUSTION PILOT PLANT LAYOUT**