

EXECUTIVE SUMMARY

The Location and the Nature of the Project

The Lakdhanavi Limited proposes to build , own, operate and maintain a Combined Cycle 300 MW Thermal Power plant at the land filled reclaimed area site of Kerawalapitiya in the Gampaha District. The power generated by the plant will be transmitted through the national grid owned by the Ceylon Electricity Board.(CEB)

Construction of a thermal power plant exceeding 25 MW in capacity requires compliance with the procedure for approval of projects as per the National Environmental regulations No. 01 of 1993.

Establishment of thermal power projects of this magnitude requires the submission of an Environmental Impact Assessment (EIA) report to the Central Environmental Authority (CEA). The CEA is the Project Approving Agency (PAA) for this project.

The Environmental Impact Assessment has been conducted in accordance with the Terms of Reference provided by the CEA and in consistent with the Equator Principles for Financial Institutions: July 2006 (EPFI). The EIA has been conducted to study the compliance of the proposed project to the World Bank standards depicted in the Pollution Prevention and Abatement Handbook (PPAH), Guide Lines for New Thermal Power Plants of World Bank : July 1998, Environmental Guidelines of the Export –Import Bank of the United States and the associated Performance standards and guidelines on social and Environmental Sustainability of International Finance Corporation ; April 2006 (IFC).

EIA has thoroughly examined the compliance of the project to the applicable National Standards, laws and regulations and required mitigatory measures and an Environmental Management and Implementation Plan (EMIP) has been proposed.

The experts on relevant subject fields were employed for the EIA studies. Intensive interactions were established with community who are directly or indirectly affected by the project activities and the community who are even not affected by the project. The community interactions were established by means of structured group meetings, individual interviews and awareness presentations in accordance with world bank guide lines. All consultations were free of external manipulation, interference or intimidation. The consultations were done in the local language

and relevant information were provided with regard to the complete project description in an understandable manner.

The project is located in an Industrial Zone and the neighboring community is mostly industrialists. The industries located within the industrial zone are representing an Association called Kerawalapitiya Industrial Zone Association (KIZA). Project Awareness presentations and interactive discussions were arranged between the PP and all the members of the association.

The EIA report will be opened for the public comments by the CEA for minimum of 30 working days. The report will be made available in all English, Sinhala and Tamil languages at places identified by the CEA which has the free access to the public. Simultaneously the report will be made available at the site office throughout the project cycle. A public grievance mechanism will be established at site office and the main office of the PP.

Project Description

Although the proposed project will be located within a land of 13.7 hectares in extent, the power house foot print is confined to just an extent of 0.05 hectares. The balance large extent of the land is allocated as a buffer zone that will be planted with a suitable plant species to form a green cover.

The power generating block of the proposed combined cycle plant consists of 2+2+1 configuration and the major equipment is from General Electrics (GE) of USA. The configuration comprises of two gas turbines that have the ability to utilize Heavy Fuel Oil (HFO), Light Fuel Oil (LFO), Liquid Natural Gas (LNG), Naphtha, Residual Oil, or Crude Oil as the operating fuel, Two Heat Recovery Steam Generators (HRSG) that will produce steam from the exhaust flue gas of the gas turbines, and one Steam Turbine(ST) that will operate from the steam generated by the 2 HRSGs. Each turbine will be directly coupled with a generator to generate electrical power.

The power plant equipment has extensive operating experience in the world. 209E cycle has been selected for its high operational flexibility, high cycle efficiency, high reliability and availability.

The fuel requirement for full operation of the plant would be 1130 tons/day. Different fuel supply options are under discussions with the authorities concerned but use of 33000 liter bowser

trucks to transport fuel by road from Kolonnawa Ceylon Petroleum Corporation terminal to the plant site is considered as the initial option.

The plant will be equipped with a fuel oil treatment plant.

The power generated from the plant will be transmitted to the Gas Insulated Switchyard (GIS) which will be constructed at an identified location in the proposed site. GIS will have an interconnection to the Kotugoda Grid Substation.

The requirement of water for uninterrupted operation of the plant and for domestic uses within the power plant complex would be 1635 m³/hr which requirement will be drawn from the sea.. The water will be drawn by a sea water intake system, fitted with two 100% duty pumps, and a pipeline buried at a depth of over 2 m under the sea bed. The length of the pipeline will be 400 m.

The sea water will be filtered, desalinated and demineralized as necessary for the various uses of the plant. This water will also be used for the cooling of the plant and will be recycled. However, the loss of water due to evaporation will be compensated by drawing relatively small quantity of water from the sea.

The Alternatives

If the proposed combined cycle power plant is not established the physical and ecological conditions of the environment will remain as they are today. However, with the growing electricity demand if the power plant is not commissioned by the year 2008, Sri Lanka will face power shortages and resulting power cuts. This will reduce Sri Lanka's Gross Domestic Production (GDP) and as a result general public will have to face many inconveniences.

The other possible alternative considered is a coal fired thermal power plant at the same site. However, when the factors such as the available land area, transport of coal, disposal of fly ash and bottom ash, and the amount of solid waste generated are considered, the combined cycle power plant appears to be the better alternative. Besides, generally the gestation of constructing a coal fired power plant will be minimum 4 to 5 years.

Existing Environment

The proposed site is situated at the Southern tip of Muthurajawela marsh, which runs parallel to the coast up to the Negombo Lagoon. The site is about 1.5 m above the mean sea level (MSL)

The Ceylon Electricity Board has purchased a land area of 28.0084 hectares out of the 160 hectares of reclaimed (Filled up) land.

The Hamilton canal and the Old Dutch canal are situated in the vicinity of the proposed project area. In addition, there are many small water ways connecting these two canals..

The water in the Hamilton canal and the Old Dutch canal is considerably polluted. It is also evident that there is heavy metal contamination of the water possibly due to urban run-off and disposal of industrial waste waters.

Water in the Muthurajawela marshy is also heavily polluted due to discharge of industrial waste and sewage.

The area within a radius of 20 km from the proposed project site consists of many heavy industries including few major thermal power plants and industrial areas. The main fuel used for these power plants and industries is fossil fuel. Main sources of fugitive emission in the study area are vehicular traffic, vapour from petroleum tank farm and LP gas terminal.

Noise level in the area are in conformity with permissible level.

There are no natural habitats in the project site as it is a sand filled area. However, within 2 km from the boundary of the project site several natural habitats, both aquatic and terrestrial, are present.

Five species of turtles and five species of dolphins which are protected under the Fauna and Flora Protection Ordinance (Chapter 469) are present in the marine environment of the study area. The five species of turtles are listed in the IUCN global red list. None of the terrestrial plants including mangroves recorded in the study area are endemic, rare or threatened. None of the invertebrates recorded from the fresh water and marine habitats are endangered or endemic. One endemic amphibian species and one endemic reptile species are found in the area within 2 km from the project site. None of the bird species recorded from the study area are endemic or threatened. None of the mammal species recorded in the study area are also endemic. However, few threatened mammal species, some of which are listed in the IUCN global red list are also present within an area of 2 km radius from the project site.

The project site is located close to the birds migratory route of the west coast of Sri Lanka. A total of 9 species of migratory birds were recorded within the study area.

There are no protected areas within 2 km from the boundary of the project site.

Fishing is carried out in the marine environment within 2 km radius from the boundary of the project site. Gill nets and trawl nets are the main gear used in fishing activity. There is no commercial fishery in Hamilton canal, Old Dutch canal and associated fresh water bodies within the study area.

Socio Economic Considerations

The proposed project will be coming up at the Balagala Grama Niladari division of Wattala Divisional Secretaries Division (DSD).

The area within a radius of 2 km from the proposed site where the socio economic and environmental surveys were conducted, has 14 Grama Niladhari Divisions. The total population in the survey area is 63,444. About 84% of them are Sinhalese while the rest are Tamils, Musliums and Burghers. About 52% are Christians while the rest are Buddihists, Hindus and Muslims.

Access to pipe-borne drinking water in the surveyed area is high. 83% of the households are with electricity supply.

Anticipated Environmental Impacts

No significant environmental impacts are anticipated during the construction period. However, dredging of the sandy sea floor for the laying of water intake and discharge pipelines will have some adverse impacts on fauna and flora due to destruction of their habitats. However, this destruction is temporary and the impacts on marine fauna and flora are not significant.

During the period of dredging for laying pipelines resuspension of dredged material will take place resulting in an increase in turbidity in the pelagic environment. This increased turbidity will reduce the amount of light penetrating into the water thus reducing primary productivity of phytoplankton. However, this impact would be insignificant as the impacted area would be very small.

Transportation of heavy equipment along public roads to the site will have some adverse environmental impacts. However, these impacts could be mitigated by taking appropriate action.

As the sulphur content of the fuel oil to be used in the power plant is 1.5% or less stack emissions would be within the standards recommended by international organizations such as World Bank. The Gazetted Ambient Air Quality Standards are also complied with. Therefore, there are no significant impacts due to emissions.

The sludge generated in the oil treatment plant will be safely burnt at the cement plant kiln at Puttalam.

There is no significant amount of solid waste generated during the operational period.

Discharge of heated effluent into the marine environment will also not have significant adverse impacts as the temperature at the discharge point is only 32 ° C and the area impacted is very small.

Mitigatory Measures

Mitigatory measures were developed for impacts that would occur during constructional and operational periods of the project. Each and every impact of the project were taken into consideration when developing mitigatory measures.

All *in-situ* constructions are to be done in such a way to mitigate surface run-off which subsequently lead to an increase in turbidity.

All activity in the site to be carried out using manual labour to the maximum extent possible to avoid severe erosion problems and undue noise.

Stock piling of construction material near canals and marshy areas to be avoided in-order to prevent such material from entering these habitats by erosion, rains or any other means.

All necessary action to be taken to minimize any sort of public nuisance which is likely to occur during the constructional phase.

Solid waste including debris to be disposed under the direction of the relevant local government authority.

Emission of dust due to movements of vehicles to be mitigated by spraying adequate amount of water onto places where such vehicles move.

A professionally qualified environmental manager with adequate field experience to be appointed to supervise all mitigatory measures during the construction and operation periods, and given the task to function as the officer in-charge of environmental activities pertaining to the functioning of the plant.

Adverse environmental impacts with regard to the surface/ground/seawater pollution during the operational period are minimal. However, the sludge generated from the oil treatment plant should be transported to the Puttalam cement kiln to be burnt under the license of the CEA and the Provincial Environmental Authority of the North Western Province.

The project is in conformity with the existing gazetted Ambient Air Quality Standards because of the use of HFO with a sulphur content of 1.5% or less. A 80 m high stack to be constructed with built in continuous monitoring equipment.

An air quality dispersion model used has proved that the ambient levels of emissions in the atmosphere during the operation of the power plant are in conformity with existing air quality standards.

Monitoring program

A comprehensive monitoring program has been suggested in the EIA report to monitor effects during pre-construction, construction and post construction phases including the maintenance and operational aspects.

It has been suggested that the administration of the project should establish an Environmental division which will be stationed at the project site. Qualified staff have to be appointed to discharge duties pertaining to Environmental monitoring and other Environmental conservation and protection activities with regard to the project.

Adequate funds to be allocated for the establishment and management of the Environmental division by the PP.

The project management to employ a reputed and independent Research and Development Organization to support the environmental division for efficient Monitoring.

Total Monitoring Programme to be documented and made readily available to relevant Law enforcement organizations including CEA as and when required.

Project Categorization

According to the findings of the environmental and social impact assessment study conducted with respect to the establishment of 300 MW Combined Cycle Power Plant at Kerawalapitiya, no significant adverse effects are anticipated. The magnitude of the potential impacts on the environment and social considerations are negligible and the risk will be minimum when the proposed mitigation actions are implemented. The project will not cause any adverse social or environmental impact which will be irreversible or unprecedented. The identified minor impacts which are few in number are also largely reversible in nature and could be readily addressed through mitigation measures. Therefore the proposed project shall be categorized as **CATEGORY B** in accordance with the environmental and social screening criteria of the International Finance Corporation (IFC) (Exhibit 1).

Conclusion

The establishment of the 300 MW combined cycle thermal power plant will have numerous social benefits with little or no significant environmental costs.

There will be no significant adverse impacts on the environment due to the establishment of the proposed power plant.

The environmental cost benefit analysis indicates that the environmental benefits far exceed the environmental costs. Hence the EIA recommends the establishment of the 300 MW combined cycle thermal power plant at the land fill site at Kerawalapitiya.

Table 0.1 Summary Table of significant Impacts and Mitigatory measures

Impact	Mitigatory Measure
Constructional Phase	
1, Dust emission	-use of water sprinklers
2. Surface run-off	-soil conservation measures
3. Excessive Noise	-restrict unavoidable noise generating activities to the day time only
4. Generation of solid waste including debris	-disposal in consultation with the local authority
5. Vibration	-restrict activities to the day time
6. Damage to access roads	-use multi axel trailers to transport heavy equipment
Operational Phase	
1. Increase ambient levels of SO ₂ in the atmosphere	-use of HFO with sulfur content 1.5% or less
2. Increase in ambient temperature in marine water	-use of heat recovery steam generators and cooling tower
3. Translocation of people	-resettlement at an accepted location, under the
4. Noise Generation from the plant machines	Install the plant inside an acoustic enclosure and the main building where they will be placed would be insulated with sound attenuating walls.
5. Undue Noise from the exhaust chimney	-stack diameter should be about 5m.