1.0 INTRODUCTION

The Barbados Light and Power Company Limited (BLPC) is the primary supplier of electrical energy in Barbados. BLPC has a developed infrastructure, comprising generation stations, transmission and distribution systems, maintenance facilities and offices. Presently, BLPC operates three generating stations:

- The Garrison Hill Generating Station provides peak-load power via a single gas turbine generator;
- The Seawell Generating Station provides peak-load power with several gas turbine generators; and,
- The Spring Garden Generating Station, which is the main base-load plant and has recently undergone expansion.

Each of the above sites is essentially developed to its full potential and there is insufficient space for expansion to meet future needs. The development of a new site as a base-load facility is therefore key to providing additional generation to meet growth requirements. This second base-load generating facility will also provide additional security for the Islands power supply relating to hurricane and flooding conditions. BLPC specified that the site area should ultimately be capable of accommodating at least 240 MW of new capacity.

To provide for future capacity and system reliability, BLPC is embarking on the development of a new site in the Parish of St. Lucy. The lands are part of the Trents Plantation in St. Lucy located approximately 3 km inland of the Arawak Cement Plant situated along the Barbados western seacoast.

Two new generation options have been identified by recent studies. One option is to install gas turbine-based combined cycle plants since there is a possibility that natural gas from Trinidad could be made available in Barbados in commercial quantities within the next few years. The other option is to use low speed diesel generators similar to those in service at the Spring Garden Generating Station.

The combined cycle option will be constructed in stages with the following installation sequence:

- Phase 1 plant total output of 60 MW, using 2 gas turbine generators (GTG) and 1 steam turbine generator (STG);
- Phase 2 plant total output of 80 MW, using 2 GTG and 1 STG; and then,
- Phase 3 plant total output of 100 MW, using 2 GTG and 1 STG.

The development of the 240 MW low speed diesel generating (LSDG) option will be comprised of the following:

- Two units with a capacity of 30 MW each;
- Two units with a capacity of 40 MW each; and,
- Two units with a capacity of 50 MW each.

Should a natural gas pipeline be installed from Trinidad, it is expected that it will come ashore at Checker Hall and terminate at a gas transfer station on BLPC property. A buried pipeline will follow the road corridor from the Checker Hall transfer station to deliver gas to the Trents Generating Station.

The low speed diesel option will use heavy fuel oil delivered by sea tanker to the Arawak cement Plant pier. The fuel will be offloaded to a transfer station located on BLPC's Checker Hall property. It will be pumped from the transfer station to the Trents site via an underground pipeline that follows the roadway. Presently the cement plant also receives fuel deliveries by sea tanker at a pier associated with its operation.

BLPC needs to have additional generation developed on the site by 2008. The schedule for having a gas supply from Trinidad will therefore influence the ability to use the combined-cycle option during the early phases of development. Hence the first stage may use low-speed diesels and the latter stages combined cycle.

The Trents Generating Station will provide 200 to 300 temporary positions during each of the three phases of the construction of the fuel pipeline and site facilities. Approximately 50 to 60 long-term positions will become available to effectively operate the power generations facility. The estimated capital cost of the entire works at full capacity will be in the order of $400 to $650 million Barbadian dollars, depending on the power generation option chosen.

1.1 Regulatory Submission and Approval Process

The Town and Country Development Planning Office (TCDPO) has the mandate to regulate and approve new and expanded developments. The Government of Barbados has introduced guidelines for the types of developments requiring an environmental impact assessment (EIA) and the related studies that are required in the EIA for planning approval. The new generating station is included in the list of projects that trigger an EIA.

As part of the planning approvals process for projects requiring an EIA, the TCDPO establishes a committee of relevant agencies to provide review and comment on the project. In advance of the EIA, the proponent submits a Terms of Reference (TOR) document to TCDPO for approval of the work scope to be completed. TOR for the new Trents Generating were submitted to TCDPO, dated March 1, 2005 and are included in Appendix E

Upon completion of the EIA, the proponent is required to submit a report of findings to TCDPO. The report is circulated to the various government agencies for comment. The EIA process also requires the applicant conduct a public information session (Town Hall Meeting) to present the project to the public and the results of the EIA. The TCDPO accepts the comments from the public in determining if additional studies are necessary or if the project can receive approval.

Once the TCDPO has received comments from the public and the review committee and is satisfied that the environmental effects of the project are acceptable, the project can be approved with such conditions as are deemed applicable.

1.2 Alternative Sites for Development

Since the early 1990's, BLPC has made a concerted effort to identify and procure a suitable site for the installation of a new low speed diesel powerhouse. Initially, BLPC had proposed that a new low speed diesel station be built adjacent to the Flour Mill at the Bridgetown Port and had reached an understanding with Land Reclaimers Limited for the long term lease of the land. When it was recognized that this was not going to materialize, primarily due to environmental concerns, BLPC met with Shell Antilles and Guianas Limited and proposed that they relocate their facilities to the Port site and that BLPC would purchase their site at Spring Garden. Shell was agreeable to this proposal but the Port Authority indicated that the area was required for port expansion and opposed the idea.

Government suggested the Shell and Texaco LPG facilities be replaced by a single terminal at the Texaco site to allow Shell to vacate their site and make this available for expansion by BL&P. The Parliamentary Secretary in the Ministry of Finance coordinated discussions between Shell, Texaco and BL&P. Preliminary layouts were prepared but the cost estimates were prohibitive.

BLPC approached the West Indian Rum Refinery and had virtually reached agreement to acquire land from them when the Government announced that this land was required for a desalination plant. Approval for BLPC to develop the land for power generation was therefore blocked.

In the interim BLPC had taken steps to secure a new site at Checker Hall, adjacent to the Arawak Cement Plant. Applications were submitted for the installation of a new low speed diesel plant at this site. This application was initially refused. BLPC submitted additional information and the Town & Country Development Planning Office reviewed its earlier decision and in May 1997 granted permission to develop, subject to conditions. However, the Checker Hall site is of limited size and instead BLPC decided to decommission older units at Spring Garden to accommodate a 60 MW plant. From a long-term strategic point of view, BLPC considers that the Checker Hall site would be an attractive location for any offloading and

storage facilities associated with the importation of natural gas from Trinidad, should this prove to be a viable option.

BLPC has since selected the Trents site as meeting the following desirable criteria for development of a new power station:

- It is of adequate size to allow for future expansions;
- It is outside of the most sensitive water protection zones;
- There is a willing seller;
- It is in an area of low tourism;
- It is inland thereby having greater security against hurricane damage; and,
- It is at the northern part if the island providing additional generation at the far end of the power grid.

1.3 Report Organization

This report consists of the following chapters and associated appendices:

Project Description/Purpose and EIA Structure

Section 1 - Introduction. Provides a brief Project overview and purpose and explains the context under which the EIA is being submitted.

Section 2 - Regulatory and Legislation Overview. This section provides an overview of all policies and legislation that exist in Barbados that may be applicable to this proposed Project.

Section 3 - Approach and Environmental Assessment Methodology. Describes how the assessment has been conducted, including social impacts and public consultation.

Section 4 - Project Description. Provides a more detailed summary of the facilities and activities that are encompassed in the Project to help identify possible interactions with the environment.

Environmental Assessment Information

Section 5 - Project Environmental Setting. Describes the current environmental baseline conditions of the Project Area.

Section 6 - Valued Ecosystem Components. Valued Ecosystem Components (VECs) are those environmental issues which have been identified through issues scoping and pathway analysis. This section details the list of VECs considered for the Project.

Section 7 - Environmental Effects Assessment - Construction. Specifies the potential effects and significance of these effects during the construction phase.

Section 8 - Environmental Effects Assessment - Operations. Specifies the potential effects and significance of these effects during operations.

Section 9 – Social Impact Assessment. Describes the effects of the project on the socio-economic environment and the program of public and agency consultation to obtain input to the study.

Section 10 – Cumulative Effects Assessment. Specifies the effects of this project with other projects in the same area.

Conclusion and References

Section 11 - Conclusions and Summary of Recommendations. Summary of findings of EIA and mitigation to be implemented into the Project activities and design.

Section 12 - References. Lists references used in the preparation of the report.

Appendices

Appendix A	Environmental Management Plan - Construction
Appendix B	Environmental Management Plan - Operations
Appendix C	Photographs
Appendix D	Air Emissions Data
Appendix E	Terms of Reference
Appendix F	Marine Pollution Act – Proposed Discharge Standards
Appendix G	BLPC's Spill Contingency Plan
Appendix H	Public Consultation

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BARBADOS LIGHT AND POWER CO. LTD.
ENVIRONMENTAL IMPACT ASSESSMENT
TRENTS GENERATING STATION

KEY PLAN

PROJECT NUMBER TC 51603	DATE JULY 2005
VENDOR DWG No	CLIENT DWG No

FIGURE 1-1