

## 11.0 CONCLUSIONS AND SUMMARY OF RECOMMENDATIONS

### 11.1 Summary of Mitigation and Recommendations

Recommended mitigation measures for specific VECs during construction and operations are summarized in Tables 11-1 and 11-2, respectively. These recommendations and mitigation measures are intended to ensure that the conclusions of the assessment are achieved.

**Table 11-1 Summary of Recommended Mitigation during Construction**

Valued Ecosystem Component (VEC)	Recommended Mitigation during Construction
Air Quality	<ul style="list-style-type: none"> <li>• The application of dust suppressants such as water, calcium chloride, or tree lignin based dust suppressant on the work sites as required (calcium chloride will not be used on agricultural fields).</li> <li>• All rock drills are equipped with dust collectors in good working order.</li> <li>• There will be adequate control of dust at work sites that are in proximity to nearby residences.</li> </ul>
Noise	To prevent excessive noise levels, all contractors will be required to provide working machinery and equipment with noise suppression devices equivalent to original equipment.
Environmentally Sensitive Areas and Designated Areas	<p>All barging operations should be completed with the utmost care to prevent spills to the marine environment. The following are recommended:</p> <ul style="list-style-type: none"> <li>• Prior to any construction, the University of West Indies will be contacted to survey the beach for potential turtle nests and to relocate where possible. .</li> <li>• The access road and beachhead will be constructed using large boulders and rock for easy removal after use;</li> <li>• Construction of the road and beachhead will be restricted to the footprint of the former roadway;</li> <li>• Barges will be floated into position at high tide and secured;</li> <li>• All trucks and equipment will be restricted to the roadway and there will be no equipment allowed on the beach;</li> <li>• BLPC will have a representative present at all times during equipment offloading;</li> <li>• Work will stop immediately if conditions are observed that may have an adverse environmental effect; and</li> </ul> <p>The roadway will be removed and the beach will be restored to its original condition once shipments are complete.</p>
Traffic	<ul style="list-style-type: none"> <li>• Provide the Ministry of Public Works Traffic Division with the schedule for pipeline construction and road closures at least one month in advance so that there will be no conflicts with other road work. The schedule will be updated weekly.</li> <li>• Prior to commencing pipeline construction, a description of the road closures and estimated time of closure will be provided to newspapers to ensure the public is aware of the project.</li> <li>• The public will be provided with advance information on road closures through weekly announcements in the newspapers and through radio and television.</li> </ul>

Valued Ecosystem Component (VEC)	Recommended Mitigation during Construction
	<ul style="list-style-type: none"> <li>• Road closures will be posted with detour signs and the detour routes will be fully sign posted throughout to ensure traffic follows the correct routing.</li> <li>• Complete an assessment of the routing for major equipment transfers from the port in advance to identify any constraints.</li> <li>• Provide the Ministry of Public Works with a plan in advance for major equipment transfers from the port and coordinate for overnight transport of oversize loads.</li> </ul>
Spills and Releases	<p>The National Oil Spill Response Plan shall be adhered to for all spills occurring during construction and operation of the facilities. This Plan as well as the Project specific measures are outlined in the EMP for Construction and Operations. These Plans include the following measures:</p> <ul style="list-style-type: none"> <li>• The discharger should immediately provide notification of a spill. In some cases, the spill may be discovered and reported by others. The spill report should be as complete as possible and include: <ul style="list-style-type: none"> <li>○ Name, address and telephone number of reporting source;</li> <li>○ On-scene telephone number;</li> <li>○ Exact location and time of spill;</li> <li>○ Estimated amount and type of pollutant;</li> <li>○ Source of pollutant and cause of spill;</li> <li>○ Actions being taken to control spill;</li> <li>○ Wind Sped and direction;</li> <li>○ Speed and direction of current; damage observed.</li> </ul> </li> <li>• The spill will be investigated for severity and impacts. Based on this assessment, the resources of the Barbados National Response Team will be deployed as necessary. For more serious spills additional assistance from external resources may also be requested.</li> <li>• Measures will be taken to contain the spill and reduce the spread or impact. Under some circumstances dispersants may be necessary.</li> <li>• The clean up activities will be undertaken to recover as much oil as possible. Disposal of the recovered materials will be done to the satisfaction of the Environmental Protection Department of the Ministry of Physical Development and Environment.</li> <li>• A report of the incident will be provided including sampling results and cleanup costs.</li> <li>• Personnel shall undergo spill response training for materials associated with their area of involvement. The level of training will be commensurate with the level of involvement.</li> <li>• Spills will be reported and immediately cleaned up to required standards. The spill response plan, as outlined in the Construction and Operations EMPs shall be adhered to.</li> <li>• Spills shall be immediately reported to the appropriate government authorities.</li> <li>• Contaminants shall be properly labelled and stored in designated areas when on site.</li> <li>• Equipment shall be properly maintained so as to prevent leaks of fuels and lubricants.</li> </ul>

**Table 11-2 Summary of Recommended Mitigation during Operations**

Valued Ecosystem Component (VEC)	Recommended Mitigation during Operations
Air Quality	<p>For Low Speed Diesel plant development the recommended emission control measures include:</p> <ul style="list-style-type: none"> <li>• Electrostatic precipitators to meet 34mg/Nm<sup>3</sup> of total suspended particulate matter.</li> <li>• Specification of low NO<sub>x</sub> injectors on the engines to meet 2000mg/Nm<sup>3</sup> or less of NO<sub>x</sub> (as dry NO<sub>2</sub>, at 15% O<sub>2</sub>).</li> <li>• Installation of SO<sub>2</sub> monitoring station and anemometer at the high ground to the south east of the when expanding the plant beyond 60 MW to obtain a database for SO<sub>2</sub> levels in the area of maximum effect.</li> <li>• Upon expansion beyond 140 MW make provision to store lower sulphur fuel (of less than 0.5% S content), for use during wind reversals causing elevated SO<sub>2</sub> levels as determined by the SO<sub>2</sub> monitoring station.</li> <li>• Alternatively BLPC could dispatch load to alternate plant such as Seawell during SO<sub>2</sub> excursions above World Bank guidelines.</li> </ul> <p>For Combined Cycle Plant development the recommended emission control measures include:</p> <ul style="list-style-type: none"> <li>• Specification of “dry low NO<sub>x</sub>” combustors to meet 43 mg/Nm<sup>3</sup> or less of NO<sub>x</sub> (as dry NO<sub>2</sub>, at 15% O<sub>2</sub>) when operating on natural gas.</li> <li>• Specification of “dry low NO<sub>x</sub>” combustors to meet 112 mg/Nm<sup>3</sup> or less of NO<sub>x</sub> (as dry NO<sub>2</sub>, at 15% O<sub>2</sub>) when operating on distillate fuel.</li> </ul>
Groundwater Resources	<ul style="list-style-type: none"> <li>• Fuel tanks should be contained in impermeable berms having a minimum containment capacity of at least 125% of the largest tank inside the berm. Release of stormwater should be completed only after inspection to confirm that there is no oil contamination. This can be assured by a manually operated pump system that can only start with operator activation or by a valve system with interlock controls that will ensure the valve is normally closed. Oily water should be directed through an oil water separator prior to release.</li> <li>• The heavy fuel pipeline from Checker Hall should be coated and have cathodic protection to prevent corrosion.</li> <li>• A treatment plant should be installed for oily water treatment and suspended solids removal prior to release to a soakaway. All in-plant drains with the exception of sanitary wastes should be directed to the treatment plant.</li> <li>• Sanitary wastes should be treated in a septic tank prior to release to a soakaway.</li> <li>• A monitoring well should be installed down gradient of the plant site, at the west boundary of the property. The Operations EMP (Appendix B) makes recommendations for a sampling program that monitors the groundwater and compares the results with the acceptable criteria shown in Table 2-5. The program also includes action plans should the results of the monitoring program exceed 75% of the proposed criteria.</li> </ul>

<b>Valued Ecosystem Component (VEC)</b>	<b>Recommended Mitigation during Operations</b>
Noise and Vibration	<p>For the LSD option:</p> <ul style="list-style-type: none"> <li>• The powerhouse design should incorporate sufficient silencing to make associated noise radiation negligible.</li> <li>• Overhead doors should be oriented away from any sensitive receptors.</li> <li>• Total radiated noise from the exhaust system, including break-out from ductwork, HRSG and precipitator casings, and stack termination, should not exceed 100 dBA.</li> <li>• Noise from each bank of fin tube radiators should not exceed 102 dBA. This implies a sound power of no more than about 90 dBA for each individual fan (or lower if there are more than 20 fans in the bank). Vertical radiator banks should not be oriented facing any critical noise-sensitive receptors.</li> <li>• Noise from precipitator hammers has been measured at approximately 80 dBAI at 15m, which is likely to be in the range of 45-50 dBAI at 300m. Shielding between the top of the precipitator and any receptors should be provided to address this source.</li> <li>• Radiated sound power from transformers should be limited to about 95 dBA, to prevent significant audible tonalities in the overall sound spectrum.</li> </ul> <p>For the GTG option:</p> <ul style="list-style-type: none"> <li>• The enclosure and intake/exhaust silencers should be designed to limit the total combined sound power emissions to 102 dBA.</li> <li>• The associated ACC may also be selected for a maximum sound power of 102 dBA (all fans/cells combined).</li> </ul> <p>The limits of vibration in relation to personal comfort shall follow the provisions of ISO 2631-2. Vibrations at any sensitive receptors should be measured after start-up, and the results compared to the median threshold of perception for human subjects (per ISO 2631-2).</p>
Traffic	<ul style="list-style-type: none"> <li>• Encourage car pools, use of public transport for employees</li> </ul>
Spills and Releases	<ul style="list-style-type: none"> <li>• The National Oil Spill Response Plan shall be adhered to for all spills occurring during construction and operation of the facilities. This Plan as well as the Project specific measures are outlined in the EMP for Construction and Operations.</li> <li>• Implementation of the EMP will minimise the incidence of spills.</li> <li>• BLPC's Spill Contingency Plan (Appendix G) should be updated to cover the requirements of the Trents Generating Station.</li> </ul>

## 11.2 Conclusions

With the assistance of input from the general public and regulatory agencies, and following detailed analysis by the Project Team, the environmental effects (both biophysical and social) associated with the construction and operation of the proposed Project have been assessed. This assessment has concluded that the Project is not likely to cause significant adverse environmental effects given implementation of the recommended mitigation measures. It was also concluded that significant adverse cumulative effects are not likely to occur.

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