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ACE-EIA Paper 2/2006
For advice

Environmental Impact Assessment Ordinance (Cap. 499)
Environmental Impact Assessment Report
Emissions Control Project at the Castle Peak Power Station "B" Units

Purpose

This paper presents the key findings and recommendations of the Environmental Impact Assessment (EIA) Report for the Emissions Control Project at the Castle Peak Power Station "B" Units (hereafter known as the Project), submitted under Section 6(2) of the Environmental Impact Assessment Ordinance (EIAO). The applicant, Castle Peak Power Company Limited (CAPCO), and their consultants will make a presentation. Comments from the public and ACE will be taken into account by the Director of Environmental Protection when he makes his decision on the approval of EIA report under the EIAO.

Advice Sought

2. Members' views are sought on the findings and recommendations of the EIA report.

Need for the Project

3. To improve regional air quality, the Hong Kong SAR Government and the Guangdong Provincial Government have reached a consensus to reduce, on a best endeavour basis, the emissions of four major air pollutants, namely sulphur dioxide (SO_2), nitrogen oxides (NOx), respirable suspended particulates (RSP) and volatile organic compounds in the region by 2010. This Project is proposed by CAPCO in response to the Hong Kong SAR Government's emission reduction initiative.

Description of the Project

4. The Project is a material change to existing Castle Peak Power Station, an exempted designated project (DP) under the EIAO, and requires an environmental permit under section 9(4) of the EIAO. It is also a DP under Schedule 2 Part 2 Item 16 (*decommissioning of a store for oil with capacity more than 200 tonnes*), and Schedule 2 Part 1 Items G6 and K6 (*waste disposal facility for gypsum and chemical plant with storage capacity more than 500 tonnes*).

5. The Project is located within Castle Peak Power Station in Tuen Mun (Figure 1). The Project is scheduled to start construction in the 1st half of 2007 for commissioning by end 2009. The Project comprises the following key items of work:

(i) demolish existing facilities including a 4680 tonne capacity oil tank, etc.;

(ii) relocate/re-route existing facilities including underground pipework, oil sump, etc.;

(iii) install new NOx and SO_2 emission control equipment;

(iv) provide storage for re-agents (urea and limestone) & by-products (gypsum); and

(v) provide additional berthing for loading and unloading of reagents and by-products.

Consideration of Alternative Emission Control Technologies

6. Three SO_2 control technologies were considered, i.e. Dry Flue Gas Desulphurisation (FGD), Limestone Forced Oxidation Flue Gas Desulphurisation (LS-FGD) and Sea Water Flue Gas Desulphurisation (SW-FGD). LS-FGD was chosen as the preferred technology because of its high efficiency, lower long-term impact to marine water, smaller waste management impact (commercially reusable by-products) and proven track record for large coal-fired power plants.

7. Five NO_x control technologies were considered, i.e. Advanced low NO_x burner, Low NO_x burner with Over Fire Air, Selective Non-Catalytic Reduction, Selective Catalytic Reduction (SCR) and Amine Enhanced Fuel Lean Gas Reburn. SCR was selected for assessment purpose as it encompasses more environmental issues than the others. In future, CAPCO would optimise their design depending on the latest operational situations to be required by the government.

Specific Environmental Aspects to Highlight

8. The key environmental issues identified for the Project are impacts on air quality, water quality, ecology, waste management and land contamination.

Air Quality Impact

9. The wind tunnel model study demonstrated that the operation of the Project would result in a reduction in the concentration of SO_2, NOx and RSP (up to 91%, 83% and 66 % respectively) at all air sensitive receivers within the EIA study area. The Project would have a positive effect on the air quality.

Water Quality Impact

10. With mitigation measures in place, there would be no exceedance of water quality (WQ) criteria during construction and operation stages. The main WQ concern is potential impact from the dredging of about 80,000m^3 of uncontaminated marine sediment to build an additional berthing facility. The EIA report proposed a package of mitigation measures including:

(i) to allow only 1 dredger to be used;

(ii) maximum daily dredging rate limited to 5,200m^3;

(iii) use of closed grab of 8m^3 size;

(iv) maximum dredging time limited to 16 hours/day, 6 days/week; and

(v) use of silt curtain around the dredger.

Ecology Impact

11. Two main sensitive receivers were identified namely the Sha Chau & Lung Kwu Chau Marine Park (over 3 km away) and the dolphin area in North Lantau water respectively. Since the Project subject site is about 5 km away from the Marine Park and the water around Project site is a low dolphin sighting density area, no significant impacts on marine ecological resources or marine mammals are anticipated. To further minimize ecological impacts, the EIA report proposed a package of mitigation measures including:

(i) acoustic de-coupling of noisy equipment on barges and bubble curtains/jacket during marine piling work;

(ii) a 500m radius dolphin exclusion zone to be enforced around the marine piles for at least 30 minutes prior to start of piling; and

(iii) restriction on speed of marine vessels to 10 knots in high density dolphin area (West Lantau, Sha Chau and Lung Kwu Chau).

Waste Management and Land Contamination Impact

12. During construction stage, about 80,000m^3 of dredged uncontaminated sediment will be disposed of subject to Marine Fill Committee's decision and dumping licence issued by the Environmental Protection Department under the Dumping at Sea Ordinance and 30,000m^3 of Soil will be excavated and re-used on site. In the operation stage, about 240,000 tonnes/year commercial grade gypsum would be generated from the FGD process, which would be sold to plasterboard manufacturers.

13. Site investigation results indicated small volume, about 50m^3, of potentially contaminated soil (contaminated by Total Petroleum Hydrocarbon) within the Project site. All contaminated soil within the Project site would be removed prior to start of construction. The EIA report recommended on-site treatment of contaminated soil adopting bioremediation. Decontaminated soil would be re-used on site.

Environmental Monitoring & Audit (EM&A)

14. The EM&A programme is mainly for monitoring of marine water quality during construction. The EM&A requirements will be enforced as Environmental Permit conditions.

Public Consultation

15. CAPCO will make the EIA report and Executive Summary available for public comment under the EIAO as soon as possible. Members will be briefed on any comments received from the public at the meeting.

August 2006
Environmental Assessment Division
Environmental Protection Department