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ACE-EIA Paper 1/2007
For Advice

Environmental Impact Assessment Ordinance (Cap. 499)
Environmental Impact Assessment Report
A Commercial Scale Wind Turbine Pilot Demonstration at Hei Ling Chau

Purpose

This paper presents the key findings and recommendations of the Environmental Impact Assessment (EIA) report for the Commercial Scale Wind Turbine Pilot Demonstration at Hei Ling Chau (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 its consultants will make a presentation at the meeting. Comments from the public and the Advisory Council on the Environment will be taken into account by the Director of Environmental Protection when she makes the 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. The Project is a pilot project launched by the CAPCO to explore the alternative power source using renewable wind energy and to promote public awareness of this alternative power source in Hong Kong.

Description of the Project

4. The Project is to construct and operate a 3-bladed wind turbine, with a rated capacity between 800kW and 1300kW, on Hei Ling Chau. Location of the Project is shown in **Figure 1**. The wind turbine will produce electricity in the range of wind speed of 3 to 25 m/s and will be operated automatically. It will be unmanned and can be controlled remotely. The overall height of the wind turbine will be of about 90m and the site area of the Project will be of about 54m x 100m. Main construction activities for the Project

include :

- site formation works, foundation works with reinforced concrete and pre-bored H-piles, and assembly, erection and installation works at the Project site;

- installation of a temporary steel platform without any marine works at an existing jetty within Hei Ling Chau Typhoon Shelter for unloading the heavy wind turbine components; and

- some enabling works such as slope works, local road widening and rock-cut at the access routes to the Project site.

5. The Project is classified as a designated project under Item D.1, Part I, Schedule 2 of the EIAO, i.e. "*public utility electricity power plant*".

Consideration of Alternative Locations, Designs and Delivery Routes

6. Various potential areas on Hei Ling Chau were considered for the development of the Project. Having considered the factors such as aviation safety, engineering constraint such as wind shear effect, scale of earthworks involved and environmental implications, the Project location as shown in **Figure 1** was selected. The location is an existing contractor's storage area with little vegetation. It is relatively flat and directly accessible from existing access roads and hence will require relatively small scale of earthworks for implementing the Project.

7. Regarding the design of the Project, alternative site layouts and aviation warning marking schemes were considered with a view to minimising the environmental impacts whilst satisfying other constraints such as aviation safety.

8. Alternative delivery modes and routes for materials and equipments of the Project during construction stage were considered. Airlifting using helicopter was found not feasible for delivery of some heavy wind turbine components such as nacelle and tower sections. In order to reduce the scale of enabling works along the access routes, a combination of the long and short access routes as shown in **Figure 2** was recommended to be adopted for delivery of equipments and construction materials.

Specific Environmental Aspects to Highlight

9. The key environmental issues identified for the Project are ecological, landscape, visual and operational noise impacts.

Ecological Impact

10. As mentioned in paragraph 6 above, the Project locates on an existing contractor's storage area at Hei Ling Chau. The area is largely a man-made habitat with low ecological value. About 0.01ha of shrubland of moderate ecological value may be affected at the Project site. For the enabling works along the long and short access routes as mentioned in paragraph 8 above, an additional loss of about 0.15ha of shrubland may be resulted.

11. No Bogadek's Burrowing Lizard was recorded during the ecological surveys for the EIA study of the Project. The Project site was assessed not an optimal habitat for Bogadek's Burrowing Lizard and other rare or protected fauna species. Nevertheless, a survey of Bogadek's Burrowing Lizard and other rare or protected fauna species will be conducted again immediately before the commencement of the construction works. If any rare or protected fauna species are found, they will be caught by hand and translocated to suitable habitats on Hei Ling Chau.

12. Hei Ling Chau was assessed neither an important bird habitat nor important flight path of migratory birds. The potential ecological impact associated with bird collision during operation of the wind turbine was therefore considered as low. Monitoring of the potential bird collision will be conducted for one year during operation of the Project to confirm this impact assessment.

Landscape and Visual Impacts

13. The Project may result in a residual loss of shrubland resources of about 0.15ha and this landscape impact was assessed as slightly adverse. The Project was also assessed to have moderate adverse effect on the Island Landscape Character Area (LCA) and slight adverse effect on all other LCAs such as Institution, Reservoir, Typhoon Shelter and Inshore Water. Since there will be no significant adverse effect on the landscape, landscape impact was assessed as acceptable. Some landscape enhancement measures such as cultivation of temporary affected areas, embankment planting and tree/shrub planting will be implemented.

14. Except the visually sensitive receivers (VSRs) at Hei Ling Chau, all other VSRs such as those at Lantau Island, Cheung Chau, Peng Chau, Lamma Island and Hong Kong Island may experience visual impact of negligible to moderate magnitude. VSRs at Hei Ling Chau may experience moderate-significant visual impact. As there will be no significant visual impact to the VSRs at large, no interference with key views and no excessive adverse effect due to small size of land take and form of the structure, visual impact was assessed as acceptable.

Operational Noise Impact

15. Wind turbine with maximum Sound Power Level of 104dB(A) and without tonality, impulsiveness and intermittency will be installed. With these noise characteristics of the wind turbine, the maximum predicted noise level at the nearest Noise Sensitive Receiver (NSR), i.e. Hei Ling Chau Addiction Treatment Centre (Annex), will be 40dB(A), which is less than the night-time criterion of 45dB(A) laid down in the Technical Memorandum on EIA Process (EIAO TM). Noise monitoring will be conducted for one year during operation of the Project to verify this impact assessment.

Other Environmental Impacts

16. The EIA report also addressed the impacts of noise, water quality, waste management and cultural heritage during construction stage. Brief findings are summarized below :

- Short-term construction noise impact exceeding the criterion laid down in the EIAO TM by 8dB(A) may be experienced by a NSR, which involves some currently unoccupied staff quarters, during construction of an enabling work at the long access route. However, the impact duration will only be about one week. Moreover, indirect measures such as avoidance of the use of the affected staff quarters can be arranged by the Correctional Services Department (CSD) to mitigate the construction noise impact;

- The Project involves only land-based construction without any marine or dredging works. The EIA report recommended appropriate mitigation measures to control the construction water quality impact to within the requirements of the EIAO TM; and

- The Project will have no unacceptable construction waste management implication and have no impact on cultural heritage resources.

Environmental Monitoring and Audit (EM&A)

17. The EIA report includes an EM&A Manual which recommends an EM&A programme during both construction and operation phases of the Project. As mentioned above, bird and noise monitoring will be conducted for one year during operation of the Project.

Public Consultation

18. The EIA report, EM&A Manual and Executive Summary are available for the public to comment under the EIAO starting from 14 December 2006 for 30 days. Members will be briefed on any comments received from the public at the meeting.

19. As mentioned in the EIA report, the applicant has conducted 25 stakeholder consultation meetings for the Project during the site selection and EIA processes. The consulted stakeholders included some non-government organizations, CSD (i.e. the main user on Hei Ling Chau) and some government departments.

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Environmental Assessment Division
Environmental Protection Department

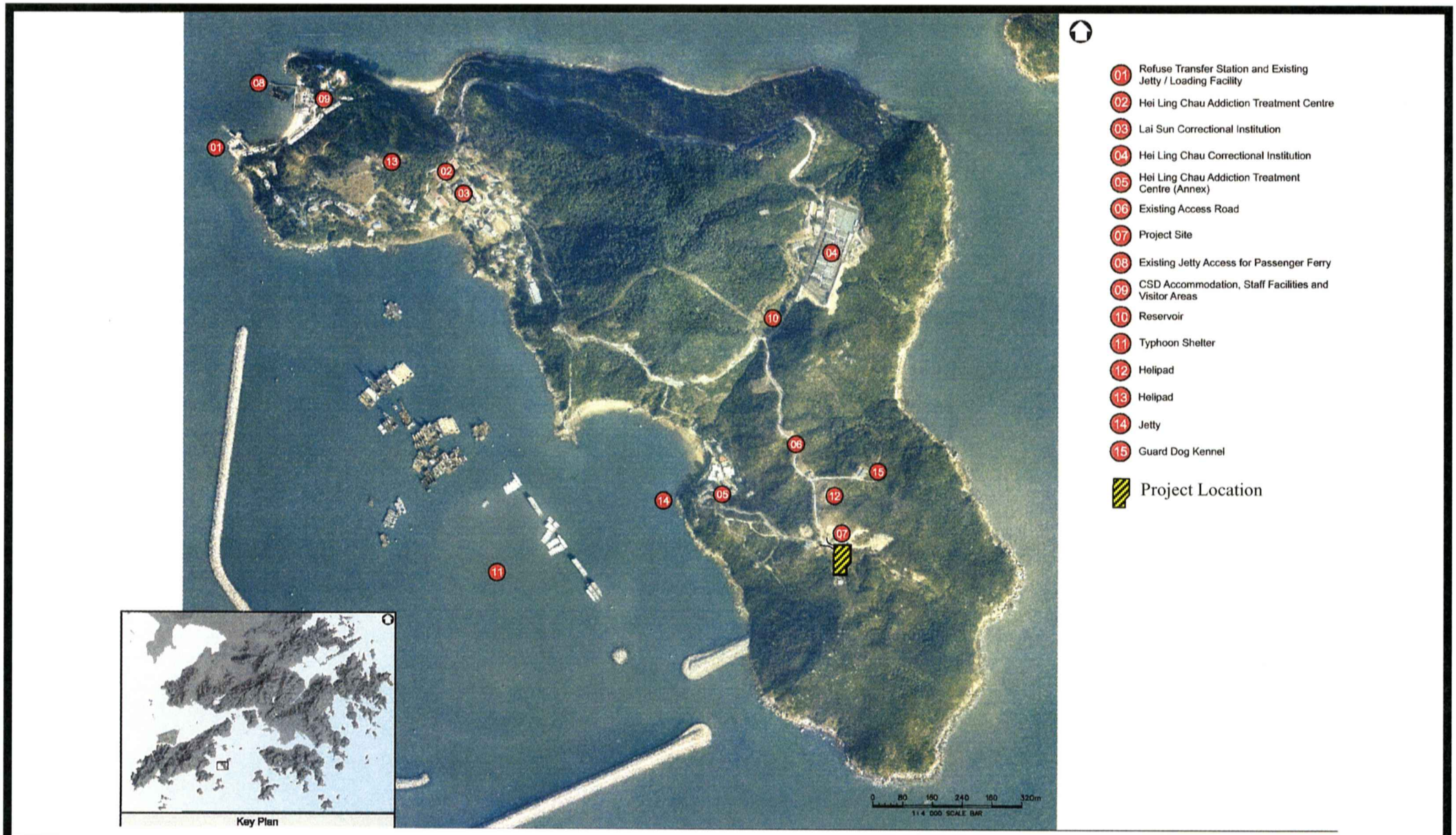

Figure 1: Project Location (Reproduced based on Figure 3.1a in EIA Report)

Project Title: A Commercial Scale Wind Turbine Pilot Demonstration at Hei Ling Chau

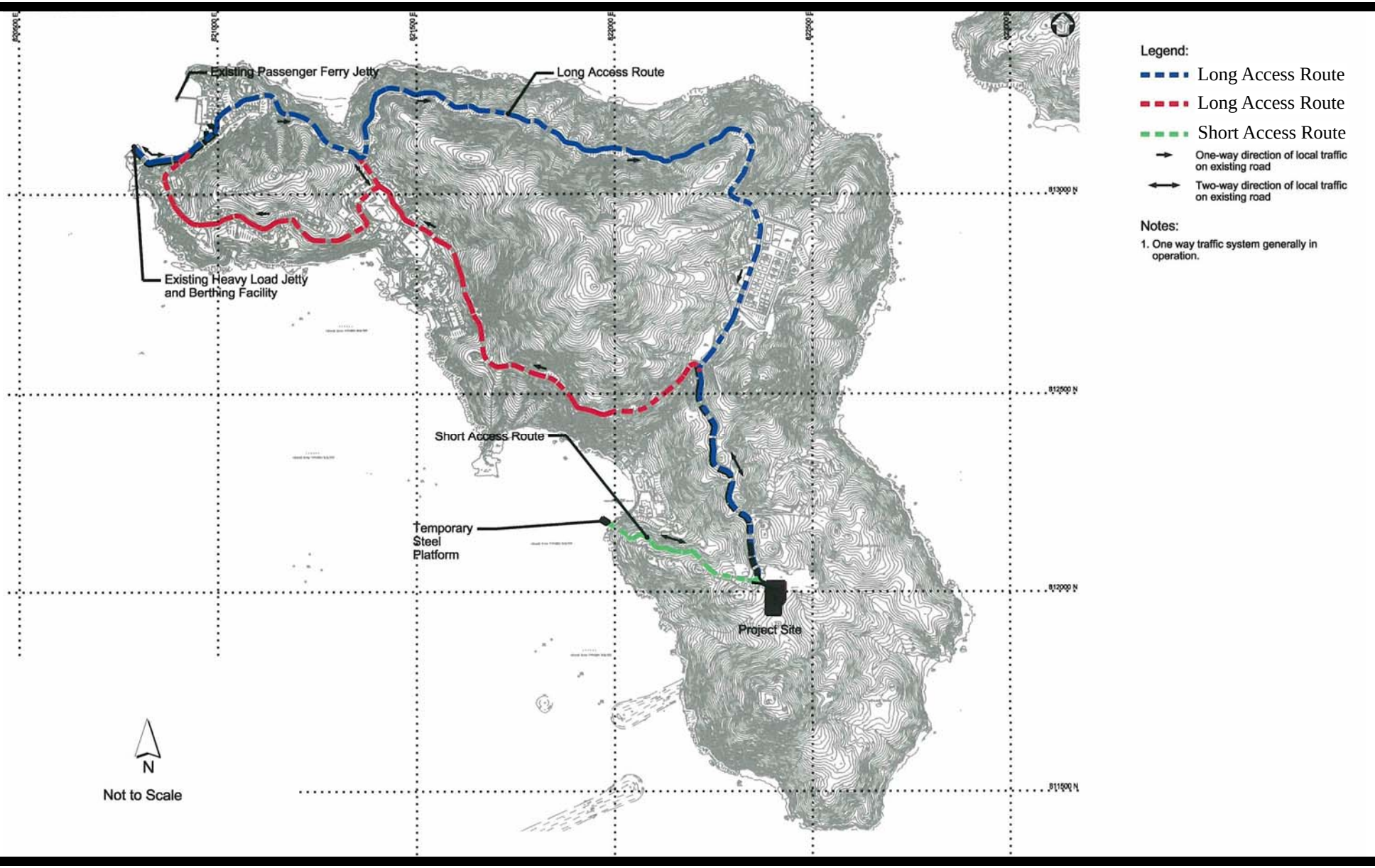

Figure 2: Long and Short Access Routes (Reproduced based on Figure 2.4d in EIA Report)

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