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ACE-EIA Paper 1/2011
For advice on 24 January 2011

Environmental Impact Assessment Ordinance (Cap.499)
Environmental Impact Assessment Report
Liantang/Heung Yuen Wai Boundary Control Point and Associated Works

PURPOSE

This paper presents the key findings and recommendations of the Environmental Impact Assessment (EIA) report on "Liantang/Heung Yuen Wai (LT/HYW) Boundary Control Point (BCP) and Associated Works" (hereafter known as "the Project") submitted under section 6(2) of the Environmental Impact Assessment Ordinance (EIAO) (Application No. EIA-190/2010). Civil Engineering and Development Department (CEDD) (the applicant) and their consultants will present the report at the meeting of EIA Subcommittee if necessary.

ADVICE SOUGHT

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

NEED FOR THE PROJECT

3. Presently, vehicular access on the eastern side of the New Territories is limited to the two existing BCPs at Man Kam To and Sha Tau Kok, and all cross-boundary traffic have to negotiate through congested local roads before joining the highway system in the Mainland. Also, the BCPs at Man Kam To and Sha Tau Kok have already reached

their capacity limits, and due to physical constraints, the potential for expansion is limited. Thus the existing BCPs will hardly meet the anticipated future demand in terms of capacity, convenience and level of comfort. The proposed new LT/HYW BCP will alleviate the frequent traffic congestion at Man Kam To BCP and provide room for improvement at both Man Kam To and Sha Tau Kok BCPs. It will also provide a direct linkage to the Guangdong highway network via the Eastern Corridor in Shenzhen, resulting in shorter journey times and better connection to major cities in both Guangdong and adjacent provinces.

DESCRIPTION OF THE PROJECT

4. The Project mainly comprises construction and operation of a new BCP, connecting roads and other associated works. Key components of the Project includes:

(i) site formation for the construction of a BCP at HYW of about 18.3 ha;

(ii) construction of a dual two-lane trunk road with traffic control and surveillance system connecting the HYW BCP with Fanling Highway adjacent to Wo Hop Shek - which comprises approximately 5.3 km of viaduct and/or at-grade sections, and two tunnel sections totaling 5.7 km in length, tunnel administration building and tunnel ventilation system;

(iii) associated cargo processing, passenger-related, government, transport-related facilities for the HYW BCP;

(iv) other peripheral structures and supporting facilities such as bridges across Shenzhen River, border road and fences, water supply system, utilities, culvert and drainage etc;

(v) associated diversion/modification works at Lin Ma Hang Road;

(vi) associated environmental mitigation measures, landscaping works, drainage/sewerage, waterworks, utilities and traffic engineering works; and

(vii) on-site sewage treatment facility (membrane bioreactor design to tertiary level) for HWY BCP with provision for partial effluent reuse.

5. The Project is classified as a designated project under the following items in Part I, Schedule 2 of the EIAO:

(i) A.1 – *A road which is an expressway, trunk road, primary distributor road or district distributor road including new roads, and major extensions or improvements to existing roads.*

(ii) F.4 – *An activity for the reuse of treated sewage effluent from a treatment plant.*

6. The location of the Project and general layout of the HYW BCP is shown in **Figures 1** and **2** respectively. The construction programme is closely tied in with another project, Regulation of Shenzhen River Stage 4 for regulation of a 4.5 km section of the Shenzhen River immediately adjacent to the HYW BCP to enhance flood protection (subject to a separate EIA study carried out by Drainage Services Department). This EIA study has addressed the cumulative impacts of the two projects.

CONSIDERATION OF ALTERNATIVE OPTIONS

7. Alternative options for the location of the HYW BCP and alignment of the dual two-lane connecting roads have been considered in the Planning Study on LT/HYW BCP and its Associated Connecting Roads in Hong Kong completed by the Planning Department in September 2008. Further refined alternatives for the connecting road alignment, construction methods and sequences of works were considered in this EIA study. Environmental benefits and disbenefits of various alternatives were considered in recommending the preferred option.

8. The current HYW BCP location is considered suitable on environmental grounds as it has a larger separation distance from the nearest sensitive receivers (Tsung Yuen Ha Village and Kong Yiu Drainage Channel) and the location offers increased flexibility for implementing landscape mitigation measures. A total of 10 refined connecting road alignments were considered in this EIA study and the preferred option was considered having the least overall environmental impacts as there are fewer nearby sensitive receivers and its construction will not require the use of explosive in close proximity to any sensitive receivers. The preferred alignment will avoid direct encroachment upon the Fung Shui Woodland at Tan Chuk Hang Lo Wai, the Tan Shan River and nearby country park.

SPECIFIC ENVIRONMENTAL ASPECTS TO HIGHLIGHT

Air Quality Impacts

9. The key pollutants of concern were identified to be Nitrogen Dioxide (NO_2) and Respirable Suspended Particulates (RSP) from vehicular emissions during the operational phase. The EIA predicted that the cumulative hourly, daily and annual NO_2 and RSP levels to be in compliance with the corresponding Air Quality Objectives, hence no adverse operational phase air quality impacts from road traffic is anticipated. A fugitive dust assessment was conducted for the construction phase, which concluded that with the implementation of mitigation measures including frequent water spraying up to eight times a day, covering of stockpiling areas, limiting the speed of construction vehicles, paving of all haul roads as well as other good dust control practices, there should be no adverse residual impacts.

Noise Impacts

10. During the operational phase, the dual two-lane connecting road will have the potential to pose traffic noise on nearby noise sensitive receivers (NSRs) and exceedance of noise criteria were predicted at a number of existing and planned NSRs. To address the issue, the EIA recommends direct mitigation measures including low noise road surfacing for the connecting roads and associated slip roads, and road-side noise barriers of up to 5 m high for affected sections of the connecting road. While the noise levels at some of the NSRs will still exceed the relevant noise criteria even with the mitigation measures in place, further analysis reveals that noise contribution from the new roads is smaller than 1.0 dB(A), hence no further mitigation measure is recommended.

11. The results of the construction noise assessment indicate that the impacts would comply with the stipulated noise criteria after the implementation of good site practices, quiet plant and other mitigation measures (moveable noise barriers, noise enclosure/acoustic shed and noise insulation fabric).

Ecological Impacts

12. Direct ecological impacts were identified in the EIA study, including loss of habitats and impacts on floral and fauna species of conservation importance. The EIA concludes that the Project will unavoidably result in permanent loss of 6.2 ha of secondary woodland and 1.4 ha of freshwater wetland (originated from abandoned

agricultural land). The loss of woodland and wetland will be fully mitigated by the provision of 18.6 ha compensatory woodland and at least 1.4 ha of compensatory wetland. Detailed design and implementation of the above compensatory habitats will be formulated and provided under a Woodland Compensation Plan and a Habitat Compensatory and Management Plan respectively.

13. The EIA also identifies that there will be potential impact on the floral species of conservation importance including *Aquilaria sinensis* and *Euonymus kwangtungensis* and recommends transplantation of any unavoidably affected healthy and young individuals as well as seedlings of *Aquilaria sinensis* and inclusion of the species into the planting schedule of the Woodland Compensation Plan. It is also proposed that any *Euonymus kwangtungensis* to be affected would be transplanted to other undisturbed habitats for preservation. A pre-construction vegetation survey would be conducted to identify suitable receptor sites and to ensure proper implementation of the above mitigation measures.

14. Potential impacts on fauna species of conservation interest have been evaluated as minor under the Project as direct impacts on any identified hotspot of fauna species of conservation importance were avoided during the planning stage of the Project. Any habitat loss and fragmentation impact have also been minimized through consideration of alternative options and with the proposed viaduct design of the connecting road and the proposed landscaping measures that will allow wildlife crossing.

15. With proper implementation of the proposed mitigation measures, no adverse residual ecological impact is anticipated under the project.

Waste Management Implications

16. The tunnelling works and earthworks for the HYW BCP and the connecting road are expected to generate approximately 3.4 Mm^3 of Construction and Demolition (C&D) materials, of which about 27.1% would be reused on site for site formation and fill embankments. The surplus rock and other inert C&D materials would be transported to the Government's Public Fill Reception Facilities at Tuen Man Area 38 for beneficial use by other projects in Hong Kong. In addition, approximately 68,727 m^3 of C&D materials comprising non-inert materials of mainly topsoil/vegetative materials mix will be generated from the proposed road works and site formation works. These would be reused as far as practicable with the remaining part being disposed of at landfills.

Cultural Heritage

17. The Project is located near two sites of archaeological interest - the Ping Che Archaeological Site and Queen's Hill Archaeological Site. An archaeological survey was conducted within the Project areas on accessible land. The former Chuk Yuen village is considered to have historical and archaeological interests and direct impact on these archaeological resources is anticipated. In the alignment section between Ping Yeung and Wo Keng Shan, in-situ late Qing Dynasty cultural layers have been identified in one of the test pits. As the construction works will directly impact the archaeological resources in this area, a survey-cum-rescue excavation is recommended to be conducted after land resumption and before the commencement of the construction works to define precise horizontal extent of the deposits and to preserve the archaeological resources by record. For areas that have not been surveyed during the EIA study due to site access constraint, a further archaeological survey is recommended to be conducted after land resumption and before commencement of construction works. Subject to the findings of the archaeological survey to be conducted after land resumption, additional mitigation measures would be designed and implemented before the commencement of construction works to mitigate the adverse impacts.

18. The EIA study identifies that a number of grave sites, built structures and cultural/historical landscape feature are located within the Project areas, thus direct impact on these built heritage sites is anticipated. While preservation in-situ has been assessed for these built heritage features, it is considered impractical to retain these features, hence relocation/removal of the affected grave sites as well as removal of the affected built structures and cultural/historical landscape feature prior to commencement of the construction works are considered necessary as a last resort. In order to preserve by record, photographic and cartographic records for these features before their removal have been recommended.

Landscape and Visual Impacts

19. In the absence of mitigation measures, significant impacts are predicted on nearby landscape resources, landscape character areas and visual sensitive areas during construction and operation.

20. To mitigate the potential landscape and visual impacts, mitigation measures including tree protection, preservation and transplantation, decorative screen hoarding, topsoil reuse, watercourse impact mitigation, and night time lighting control at the construction sites have been recommended during the construction phase. During

operation, mitigation measures include minimising landscape footprint and visibility of structures through detailed design considerations, adopting aesthetically pleasing design, compensatory planting, buffer tree planting, aesthetic improvement planting on and under viaduct structures, landscaped slopes, green roofing, vertical greening, roadside amenity planting, reinstatement, reprovisioning and revegetation of disturbed areas, specific reprovisioning of the Leisure and Cultural Services Department's garden at Wo Keng Shan and night time lighting control on future roads and structures have been recommended.

21. With the implementation of the recommended mitigation measures, the residual landscape and visual impacts will largely be reduced to slight/insignificant and moderate/insignificant respectively by day 1 and year 10 of operation.

Other Environmental Impacts

22. Other impacts including sewage treatment implications, land contamination, fisheries impact and glare impact have been addressed in the report. With the implementation of recommended mitigation measures, the Project will comply with the relevant requirements under the Technical Memorandum on EIA Process.

ENVIRONMENTAL MONITORING AND AUDIT

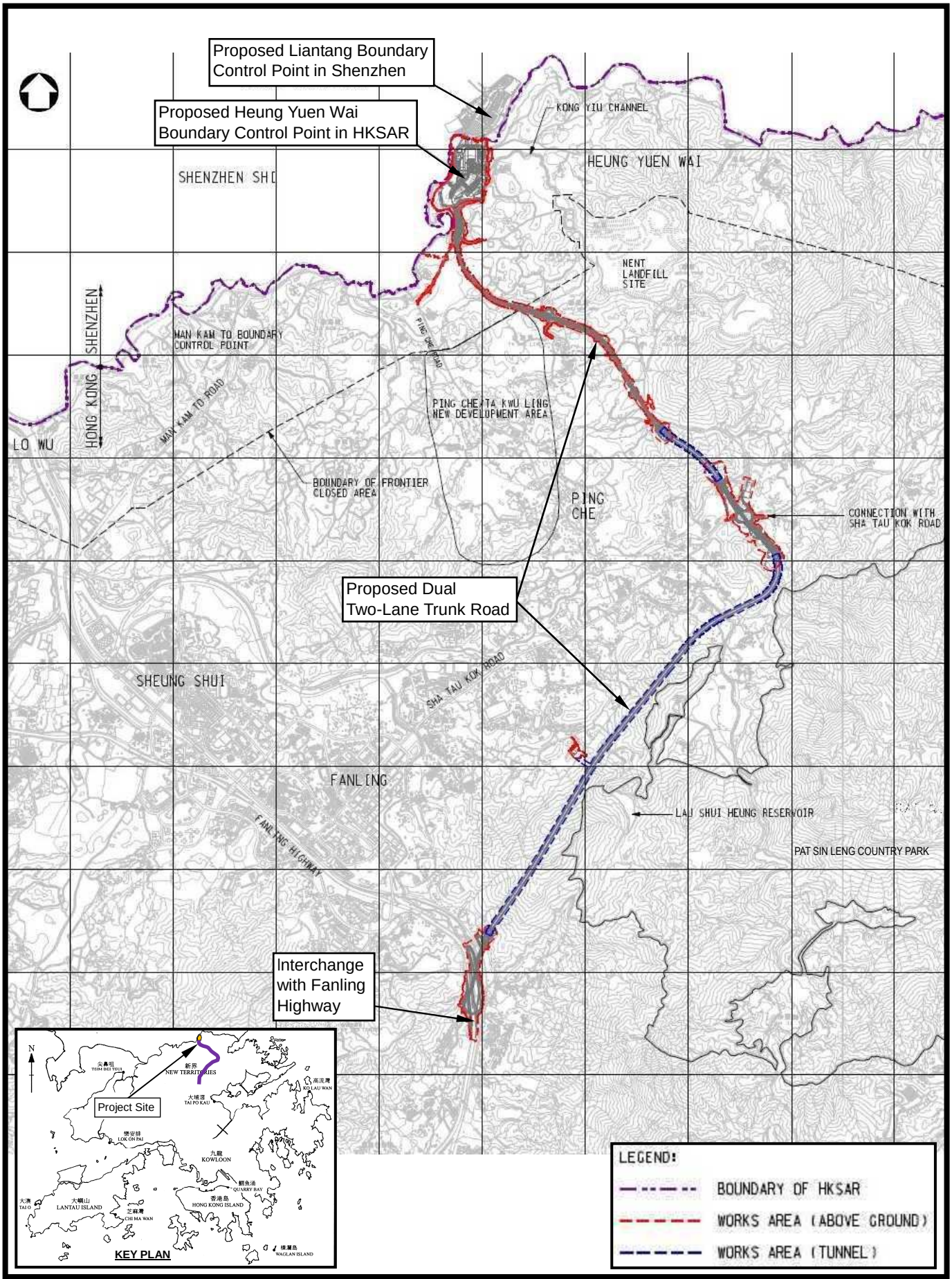
23. The EIA report includes an Environmental Monitoring and Audit (EM&A) Manual which recommends an EM&A programme during the construction and operation stages of the Project. Key recommended EM&A requirements include regular checking of transplanted floral species of conservation interest and provision of wetland compensation area, ecological monitoring of woodland compensation in accordance with the Woodland Management Plan, checking the implementation of the landscape mitigation measures during and after the construction works, additional archaeological survey and survey-cum-rescue excavation, baseline condition survey and baseline vibration impact assessment on built heritage, as well as dust and noise monitoring, etc..

PUBLIC CONSULTATION

24. The applicant has made the EIA report, EM&A Manual and Executive Summary

available for the public to comment under the EIAO from 18 December 2010 to 16 January 2011. Members will be informed of any public comments received by the Environmental Protection Department.

January 2011
Environmental Assessment Division
Environmental Protection Department



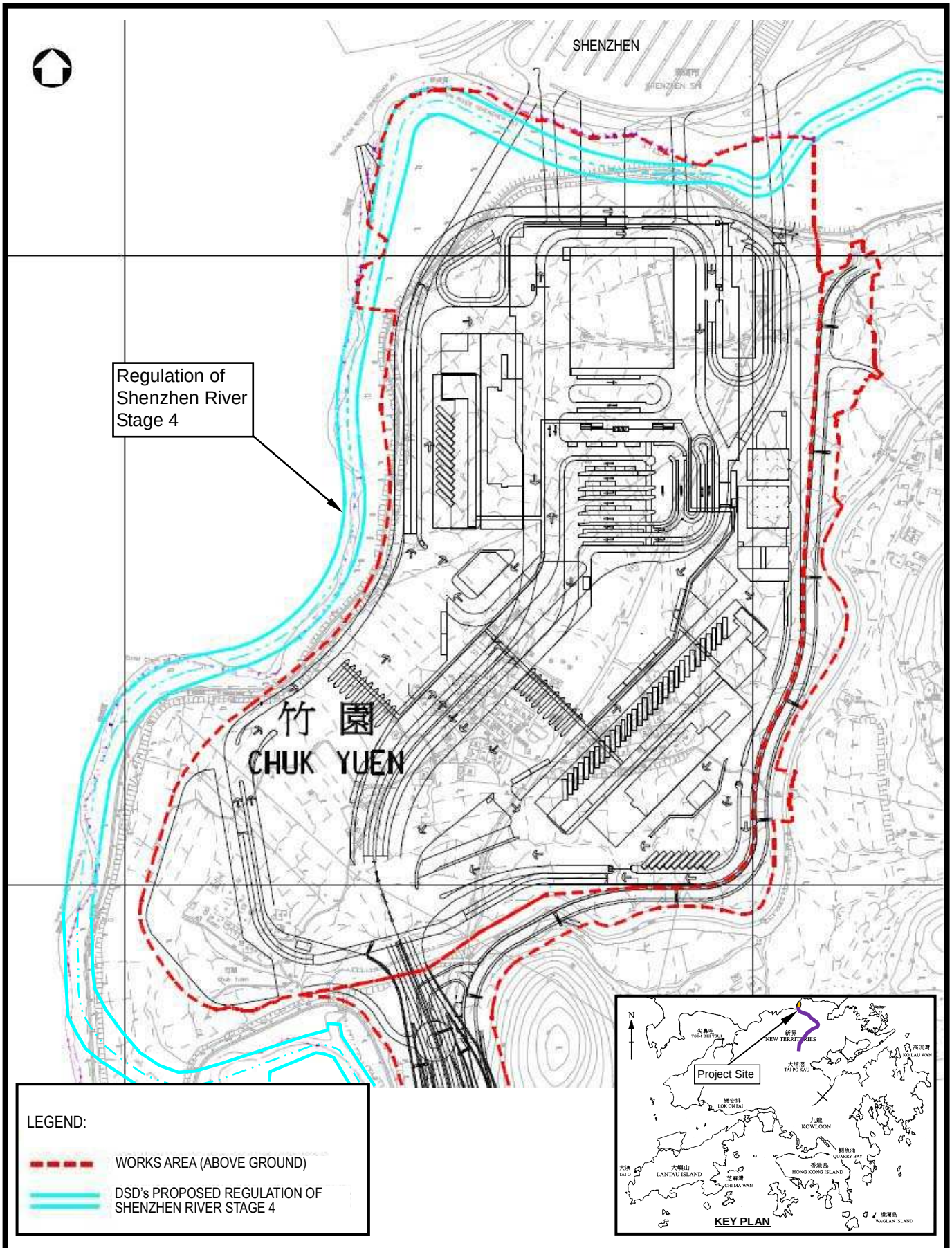
Project Title: Liantang/Heung Yuen Wai Boundary Control Point and Associated Works

Location Plan of the Project

This figure was prepared based on Figure no. 1.1 of the EIA Report

Figure 1

EIA Application No. EIA-190/2010



Project Title: Liantang/Heung Yuen Wai Boundary Control Point and Associated Works

General Layout of the Heung Yuen Wai Boundary Control Point in HKSAR

This figure was prepared based on Figure no. 2.1 of the EIA Report

Figure 2

EIA Application No. EIA-190/2010