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1. INTRODUCTION

Background to the Study

- 1.1 The Sha Tin and Tai Po Drainage Master Plan (DMP) Study completed in October 1999 indicated that certain stormwater drains and natural rivers / streamcourses in the Sha Tin and Tai Po area did not have the required hydraulic capacity to meet the anticipated flow requirements. To alleviate the risks of flooding and to cope with future development as identified in the DMP Study, construction of river channels, upgrading of existing stormwater drains, construction of flood pumping stations in the low-lying areas and other minor drainage facilities were recommended.
- 1.2 Upon completion of the DMP Study, the Drainage Services Department (DSD) of Hong Kong SAR Government commissioned Maunsell Consultants Asia Ltd. to undertake Agreement No. CE50/2001 (DS) Drainage Improvement in Sha Tin and Tai Po – Design and Construction (hereinafter referred to as “the Assignment”), for implementing the drainage improvement works at various locations recommended in the DMP study.
- 1.3 The drainage improvement works in Shuen Wan recommended in the DMP Study has been reviewed under this Assignment. The following works items, which are collectively referred to as the “Drainage Improvement Works in Shuen Wan” (the Project), are proposed to alleviate the potential flooding problems in the Shuen Wan area in Tai Po:
- Construction of a 1000m long 3m x 2.5m twin-cell box culvert along Tung Tsz Road
 - Replacement of existing gates by automatic mechanical gates at the mouth of Wai Ha River
 - Construction of a drainage pipe of 280m long and 1200mm in diameter near Wai Ha Village
 - Construction of a flood relief drain of 260m long and 2100mm in diameter along Ting Kok Road
 - Construction of a floodwater pumping station of about 10m high at Shuen Wan
- 1.4 **Figure 1.1** shows the location of the Project.
- 1.5 In accordance with Category Q.1 of Part 1, Schedule 2 of the EIA Ordinance (Cap. 499), works partly or wholly in an existing Conservation Area (CA) are classified as Designated Projects (DP). Since a section of the proposed box-culvert along Tung Tsz Road as described in Section 1.3 above would be constructed within the CA, the Project is classified as a designated project, and requires an Environmental Permit under the Ordinance for its construction and operation. An EIA study has been undertaken for the Project in accordance with requirements of the EIA Brief of the Project under the Ordinance.
- 1.6 This report provides a summary of the key findings of the EIA study, assessing potential environmental impacts from the construction and operation phases of the Project, and recommending mitigation measures to comply with the environmental legislation and standards.
- 1.7 Alternative design schemes and alignment options have been thoroughly considered and environmentally friendly design has been adopted to avoid / minimize impact to the CA, areas of ecological importance and species of conservation interest where possible.

Project Implementation and Interaction with Other Projects

- 1.8 The construction of the proposed Project is scheduled to commence in December 2007 for completion in June 2010.
- 1.9 A sewerage project, namely “Tolo Harbour Sewerage of Unsewered Areas Stage I Phase II” (hereinafter referred to as “the Sewerage Project”, would be carried out by Drainage Services

Department in San Tau Kok Village. This Project was tentatively scheduled to start in November 2008 and complete in November 2010, and would likely be carried out concurrently with the Project.

2. IMPACT ASSESSMENT

Noise Impact

- 2.1 Construction of the proposed drainage improvement works would, if unmitigated, generate noise levels exceeding 75 dB(A) Leq(30-min) at Noise Sensitive Receivers (NSRs) in close proximity to the proposed works.
- 2.2 Measures including the implementation of good site practices, use of quieter powered mechanical equipment (PME), temporary barriers, quieter alternative construction method (the Low Impact Method) and the use of noise enclosure were recommended to mitigate the potential construction noise impacts. With the implementation of these measures, no adverse impacts at the NSRs were predicted.

Air Quality Impact

- 2.3 Potential air quality impacts arising from the construction of the proposed drainage works would mainly be related to dust nuisance from excavation, material handling and wind erosion from the site.
- 2.4 With the implementation of the dust suppression measures as stipulated in the *Air Pollution Control (Construction Dust) Regulation*, and good site practices, dust levels at air sensitive receivers would comply with the Hong Kong Air Quality Objectives (HKAQOs).

Water Quality Impact

- 2.5 Potential sources of water quality impact associated with the construction of the proposed drainage improvement works include site runoff and drainage; debris, refuse and liquid spillages from general construction activities; and sewage from the construction workforce.
- 2.6 To minimize potential impacts on water quality, working method controls have been recommended. Excavation works within the affected length of the river channel should be carried out from October to April and in dry condition by use of containment measures within the channel. Sheet-piles would be installed around the works trench near the CA to serve as hoardings to isolate the works site. Control measures on the runoff and drainage are proposed to minimise construction run-off. Proper site management and good housekeeping practices would also be required to ensure that construction wastes and materials would not enter Wai Ha River or fish ponds at Shuen Wan. Sewage arising from the construction workforce would also require appropriate treatment through provision of portable toilets.
- 2.7 With the implementation of these recommended mitigation measures, unacceptable impacts on water quality would not be anticipated. Regular site inspection should be undertaken to check against the proper implementation of the mitigation measures.

Waste Management Implications

- 2.8 The types of wastes associated with the construction activities of the Project would include construction and demolition (C&D) materials, chemical waste and general refuse from the workforce.
- 2.9 Waste reduction measures and good site practices are recommended to minimize the potential impacts associated with the generation of wastes. It is also recommended that the excavated C&D materials with suitable characteristics/sizes should be reused on-site as fill material as far as practicable. Appropriate waste handling, transportation and disposal methods for all waste generated during the construction works should be implemented.

- 2.10 Provided that the waste arisings are to be handled, transported and disposed of using the recommended methods and that good site practices are to be strictly followed, adverse residual impacts are not anticipated during the construction works.

Ecological Impact

- 2.11 The alignment of the twin-cell box culvert has been carefully designed such that impacts on key ecological resources are avoided / minimized. The main impact on habitats resulting from the proposed works would be minimised to approximately 0.3ha marshland (located at the margin of the CA adjacent to Tung Tsz Road), 0.08ha secondary woodland and 30m natural stream.
- 2.12 A low ecological value recreational fishpond area, approximately 0.8ha, is proposed to be enhanced to provide moderate-high ecological value compensatory foraging habitats for avifauna, particularly ardeids and other waders. Several individuals of a locally common plant species of conservation interest that may be affected would be transplanted to a suitable nearby habitats prior to the construction. Mitigation measures and good site practices are recommended to minimise noise and water quality impacts to surrounding habitats.
- 2.13 With the implementation of the recommended mitigation measures, the ecological impacts resulting from the proposed works during construction and operation phases are considered to be acceptable.

Fisheries Impact

- 2.14 No direct loss of fishing ground would arise from the Project with recommendations to protect water quality implemented, specific mitigation measures to protect fisheries resources are not necessary.

Landscape and Visual Impacts

- 2.15 To alleviate the landscape and visual impacts arising from the Project, various mitigation measures such as landscape planting have been recommended. Measures during construction phase would be implemented from the commencement of the works and should be applied for the whole duration of the construction period. Management and maintenance for the mitigation measures should follow ETWB TCW No. 2/2004.
- 2.16 During construction phase, the Project would induce moderate landscape impacts at two identified landscape resources, while there would be one visual sensitive receiver subject to moderate residual impact after mitigation. After completion of the construction, the impact to the sensitive receivers will be reduced. The anticipated adverse residual landscape and visual impact would be low and generally acceptable.
- 2.17 Upon completion of the proposed works and after mitigation, there would only be limited landscape and visual impacts during operation phase. Therefore, with reference to criteria defined in Annex 10 of the EIAO TM, landscape and visual impacts in the construction and operational phases would be acceptable with mitigation measures.

3. ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS

- 3.1 An environmental monitoring and audit (EM&A) programme has been recommended for implementation during the construction and operation of the Project, to check on compliance with environmental legislation and standards during Project implementation.

4. CONCLUSION

- 4.1 The main objective of the Project is to alleviate the potential flooding problems in the Shuen Wan area in Tai Po.

- 4.2 The EIA study has identified and assessed potential environmental impacts of the Project. All direct and indirect, as well as cumulative impacts likely to arise during the construction and operation phases of the Project have been evaluated. With the implementation of the recommended mitigation measures, the Project would be environmentally acceptable and no adverse residual impacts would be expected.

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附圖

圖 1.1 工程項目位置圖

1. 簡介

研究背景

- 1.1 一九九九年十月完成的「沙田及大埔雨水排放整體計劃研究」顯示，部份位於沙田及大埔區之排水道及天然河道未能提供足夠的排洪能力以符合應有的防洪標準。為了減低該區水浸之危機並配合於研究中指出之未來發展，研究建議了一系列的改善措施，包括修建河道、改善現有河道及排水道、於低地興建洪氾抽水站以及其他排水設施。
- 1.2 渠務署完成以上研究後，批出工程顧問合約編號 **CE 50/2001** - 沙田及大埔雨水排放系統改善計劃 - 設計及建造予茂盛（亞洲）工程顧問有限公司，實施研究所建議之雨水排放改善措施。
- 1.3 研究報告所建議於船灣進行的雨水排放改善工程經覆檢後，確立了以下之擬建項目，並列作為船灣雨水排放系統改善工程（下統稱「本工程項目」），以舒緩於大埔船灣區一帶的水浸危機：
- 沿洞梓路建造一道長約 1,000 米，3 米（闊）及 2.5 米（高）雙管箱形暗渠
 - 以電動水閘取代現有位於圍吓河出口的瓣閘
 - 在圍吓村一帶敷設長約 280 米及直徑 1.2 米的雨水排放管道
 - 在汀角路一帶敷設長約 260 米及直徑 2.1 米的雨水排放管道
 - 在汀角路及洞梓路交匯處以東興建一座洪氾抽水站
- 1.4 圖 1.1 展示了本工程項目的位置。
- 1.5 根據環境影響評估條例〔香港法例第 499 章〕（下稱「環評條例」）第 I 部附表 2 種類 Q.1，若工程項目部分或全部於現有的自然保育區內進行，該工程項目會被界定為指定工程項目。由於本工程項目其中一段沿洞梓路的箱型暗渠擬建於自然保育區內，所以本工程項目被界定為指定工程項目。按照環評條例，本工程項目的施工和運作均需要環境許可證。本工程項目已按照環評條例所發出的環境影響評估研究大綱當中的要求，進行了環境影響評估。
- 1.6 本報告行政摘要主要就環境影響評估報告書（下稱「環評報告書」）內所得出之結論作總結，包括本工程項目於施工與運作階段對環境造成的潛在影響之評估，並因應這些環境影響建議緩解措施，致使這些影響能符合環評條例及標準。
- 1.7 本工程項目已分考慮其他設計方案及路徑方案，並在情況許可下採納了環保設計，以避免／減低對自然保育區、生態重要區域和具保育價值的品種的影響。

工程項目計劃之實施及其他工程項目之影響

- 1.8 本工程項目預計由二零零七年十二月開始施工，並於二零一零年六月完成。

- 1.9 渠務處於本工程項目施工期間，於頭角村會有另一項名為「吐露港內未有污水設施而興建的污水收集系統第一階段第二期」工程進行。該工程預計會在 2008 年 11 月動工，並在 2010 年 11 月竣工，預計會與本工程項目同期進行。

2. 環境影響評估

噪音

- 2.1 在未有實施任何緩解措施情況下，本工程項目施工期間在工地附近噪音感應強的地方所預測到的建築噪音水平，會超出《環境影響評估程序的技術備忘錄》中所訂定的 75 分貝之日間建築活動噪音標準。
- 2.2 因此，環評報告書中建議於本工程項目施工期間，實施緩解措施，當中包括良好的工地作業、使用靜音設備、臨時隔音屏障、採用低噪音施工方式（低影響方式）和使用隔聲罩，以減低建築噪音之影響。在施行以上緩解措施後，預計本工程項目不會為噪音感應強的地方帶來不良的剩餘建築噪音影響。

空氣質素

- 2.3 本工程項目的潛在空氣污染來源，主要是建造工程產生的建築塵埃，來源包括挖掘工程、物料處理及風蝕揚塵。
- 2.4 於實施《空氣污染管制（建造工程塵埃）規例》內的塵埃管制措施及施行良好的工地管理措施後，預計本工程項目的範圍內所有易受空氣污染影響的受體之空氣質素水平將會符合《香港空氣質素指標》。

水質

- 2.5 本工程項目於施工期間所造成之水質影響包括來自工地的溢流、工程產生的垃圾和污水滲漏及工人產生的污水。
- 2.6 為了減低是次工程項目對水質所產生的影響，環評報告書內建議了施工控制方法。在部份受影響的河道上進行的挖掘工程將須於十月至翌年四月期間進行，並會在有關的河段內採用圍堵方法及於乾涸環境下進行。鄰近自然保育區的工地週圍會用板樁包圍，作為臨時圍籬以分隔工地和自然保育區。其他緩解措施包括執行良好的工地管理措施以確保建築廢料及物料不會進入圍吓河或位於船灣的魚塘；設置臨時廁所予工地之工人使用，確保污水會作適當處理。
- 2.7 有效執行所有緩解措施，是項工程項目將不會對水質造成不良的影響。在施工期間定期巡查工地，可確保建議之緩解措施能有效地執行。

廢物處理

- 2.8 本工程項目於施工期間所產生的廢物主要包括建造和拆除建築廢料、化學廢料及一般廢棄物。

- 2.9 減少廢物措施及良好的工地作業可有效地減少產生廢物及對環境造成的潛在不良影響。此外，應盡量回收和再用挖掘河道時所產生的廢棄物，並需有效地執行所有合適的廢物處理、運輸以及棄置程序。
- 2.10 施工期間，若根據建議的緩解措施來管理、運輸以及棄置廢料，並嚴格執行良好的工地作業，預料本工程項目將不會帶來不良的環境影響。

生態

- 2.11 擬建的雙管箱形暗渠的路線是經審慎設計以避免／減低對重要生態資源的直接影響。因此，受是次工程項目影響的棲息地已減低至 0.3 公頃的沼澤濕地（受影響的沼澤濕地位於洞梓路旁自然保育區的邊沿）、0.08 公頃的次生林地及約 30 米長的天然河流。
- 2.12 沼澤濕地旁一個面積約 0.8 公頃、具低生態價值、作消遣用的魚塘將擬建成具有中等至高生態價值的棲息地，以供雀鳥，特別是鷺鳥及涉水禽覓食，以補償受工程影響的棲息地之損失。數種本地常見但具保育價值的植物品種可能會受到本工程項目影響，這些受影響的品種在工程施工之前將會被移植到附近合適的棲息地。環評報告書中亦建議於本工程項目施工期間，實施緩解措施和良好的工地作業以減少對附近棲息地所造成的噪音和水質影響。
- 2.13 在有效執行所有緩解措施的情況下，預計本工程項目於施工和運作期間對生態所構成的剩餘影響是可以接受。

漁業影響

- 2.14 只要有效執行針對水質影響所建議的緩解措施，鄰近的漁業將不會受到本工程項目直接影響，將不需要執行特定的緩解措施以保護漁業。

景觀及視覺影響

- 2.15 爲了緩解是次工程的景觀及視覺影響，環評報告書中建議了如園藝種植等緩解措施，建議的施工期間緩解措施由展開施工時開始執行，直至整項工程完結爲止，緩解措施的管理及保養應按照技術通告（工務）2/2004 執行。
- 2.16 施工期間，預計本工程項目在實施緩解工程下，會對兩個景觀帶來中度的剩餘景觀影響及對一個視覺敏感受體帶來中等的剩餘視覺影響。施工完成後，易受影響的景觀所受到的影響都會減少。預計本工程項目所帶來的剩餘影響屬低和可以接受的水平。
- 2.17 工程竣工及透過實行有效的緩解措施後，運作期間的剩餘景觀及視覺影響將屬輕微。因此，根據《環境影響評估程序的技術備忘錄》附件十，有效地執行緩解措施，於施工及運作期間所帶來的景觀及視覺影響屬可以接受水平。

3. 環境監察及審核要求

- 3.1 建議本工程項目在施工和運作期間實施環境監察與審核計劃，以確保本工程項目施行期間能夠符合有關的環保法例和標準。

4. 總結

- 4.1 本工程項目的目的，主要是改善大埔船灣區的雨水排放系統，以減輕該區的水浸危機，並配合該區之未來發展。
- 4.2 是次環評研究已指出擬建工程項目對環境可能造成的影響，並予以評估。擬建工程項目在施工和運作階段可能造成的所有直接、間接和累積影響，都已採用適當和被認可的評估方法作出評估。在實施研究報告所建議的緩解措施後，本工程項目在環保方面會屬可接受，而且不會造成不良的剩餘影響。