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1. INTRODUCTION

1.1 Project Background

- 1.1.1 The Drainage Master Plan Study for the Ta Kwu Ling Basin was completed in 1999 under Drainage Master Plan Study for the Northern New Territories (NNTDMP). The NNTDMP recommended to improve various tributaries of Ping Yuen River, including TKL02, TKL04, TKL05 and TKL07. Tributaries TKL07, TKL02 and TKL04 in the Ping Che/Ta Kwu Ling (PC/TKL) area drain into TKL05 at the upstream, midstream and downstream sections of TKL05 respectively, before draining into the Lower Ping Yuen River and Shenzhen River.
- 1.1.2 After the completion of the NNTDMP, there were changes in developments within the areas and new development proposals and town planning studies were commissioned. In addition, some new flooding complaints were received on the upstream area of the various drainage basins, indicating that further improvement to the drainage systems was required. Therefore, DSD commissioned the “Review of Drainage Master Plans in Yuen Long and North Districts – Feasibility Study” (the DMP Review) in 2008 so that the new development scenarios could be incorporated, and the effectiveness of the previously recommended works could also be assessed.
- 1.1.3 Under PC/TKL New Development Area (NDA), the development plans and infrastructure works were commissioned without a definite implementation programme at the time when the improvement to TKL02 and TKL07 proceeded as planned. In order to meet the community’s increasing expectation on improved flood protection, DSD then agreed with CEDD to first implement the improvement to TKL05 while CEDD continued with their planning on PC/TKL NDA. The investigation and design of improvement to TKL05 was commenced in 2010 in parallel to the DMP Review.
- 1.1.4 In 2011, the DMP review was completed and concluded that no major drainage improvement works would be required in the Ta Kwu Ling area based on the assumption that improvement to TKL04 and TKL05 would be carried out under PC/TKL NDA.
- 1.1.5 In July 2013, the Government announced that PC/TKL NDA would not go ahead. CEDD and PlanD then commenced another study entitled “Preliminary Feasibility Study on Developing the New Territories North (NTN)” in early 2014. The Ta Kwu Ling area forms part of NTN New Town which is identified as one of the Potential Development Areas in the study.
- 1.1.6 On the other hand, the flooding occurrences in recent years, there is thus a genuine need to take forward drainage improvement works in Ta Kwu Ling to relieve the situation. A review of the drainage system in Ta Kwu Ling has thus

been carried out in 2016. The review indicates that some areas in Ta Kwu Ling cannot meet the required flood protection level according to the latest land use and development. Therefore, the implementation of drainage improvement (DI) works is needed to enhance the flood protection level in the area.

- 1.1.7 Aside from the aforementioned studies, DSD also conducted “Review of Drainage Improvement Works for Problematic Rural Villages in Yuen Long and North District – Feasibility Study” in 2013 to examine engineering solutions for addressing reported flooding issues at various problematic rural villages. Ping Yeung Village, which is located at the furthest upstream end of TKL04, is one of the villages covered in the study.
- 1.1.8 This Project will review the drainage improvement proposals in the DMP Review Study and develop an improvement scheme that is both hydraulically and technically feasible with public support for implementation.
- 1.1.9 The proposed project works generally consist of the following items and the Project Site is shown in **Figure 1.1**.
- (i) Improvement works to tributary sections of Ping Yuen River (River Ganges) - TKL04 (about 1.3km long) and TKL05 (about 2km long); and
 - (ii) Associated drainage facilities, including:
 - (a) Drainage improvement works at Ping Yeung Village (about 750m long);
 - (b) Construction of road drainage system at Ping Che Road (about 700m long); and
 - (c) Re-provision of vehicular crossing and footbridges, if found necessary.

1.2 Need of the Project

- 1.2.1 The existing watercourses is located at Ta Kwu Ling area. At present, stormwater runoff collected within a drainage catchment area in Ta Kwu Ling is discharged to Ping Yuen River via TKL05. TKL05 receives surface runoff mainly from three watercourses - TKL02, TKL04 and TKL07 which are eventually discharged to Ping Yuen River at downstream.
- 1.2.2 The flood protection standard of the existing watercourses TKL04 and TKL05 are generally less than 5 years. As shown in **Figure 1.2**, the predicted flood extent of a 1 in 10 years flood event will encroach into the villages along the existing drainage channel, major area including Lei Uk, Tai Po Tin and Ping Che Yuen Ha near TKL05 as well as Sing Ping and Ping Yeung near TKL04. The current flood protection standard of TKL05 is thus considered inadequate.
- 1.2.3 Under DSD Contract No. DC/2007/08, the drainage improvement works for watercourses TKL02 and TKL07 had been completed since 2011 and the works

had upgraded the channels to a 1 in 10 years flood-protection standard. As this upgrading works are carried out in the upstream section, so the downstream sections (i.e. TKL04 and TKL05) is necessary to upgrade to the same flood-protection standard in order to provide enough capacity to convey the stormwater for discharging to Ping Yuen River.

- 1.2.4 Under the above consideration, this Project is necessary to implement so as to upgrade the remaining major drains (TKL04 and TKL05) in Ta Kwu Ling area for alleviating the flooding problem and help safeguard the livelihood of existing and future development along the river.

1.3 EIA Study Brief

- 1.3.1 A Project Profile (PP-588/2019) was submitted to the Director of Environmental Protection (DEP) on 16 September 2019. The DEP issued an EIA Study Brief (ESB-322/2019) on 28 October 2019 for this EIA Study.

1.4 Purpose and Approach of the EIA Study

- 1.4.1 The Project is a designated project under Item I.1(b), Part 1, Schedule 2 of the EIAO: *A drainage channel or river training and diversion works which discharges or discharge into an area (i.e. Deep Bay) which is less than 300m from the nearest boundary of existing Sites of Special Scientific Interest, wild animal protection area and conservation areas.*

- 1.4.2 As the proposed Drainage Channel TKL05 discharges into an area (i.e. Deep Bay) of less than 300 m from the nearest boundary of an existing Site of Special Scientific Interest (i.e. Mai Po Marshes) and Conservation Area (i.e. Mai Po Conservation Area). The construction and operation of the Project will thus require an Environmental Permit (EP). The overall objectives of the EIA Study are: to provide information on the nature and extent of environmental impacts arising from the construction and operation of the Project and the related activities taking place concurrently; to recommend appropriate mitigation measures to control the potential environmental impacts so that it complies with the requirements of the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM); and to confirm the environmental acceptability of the Project.

- 1.4.3 The specific objectives of the EIA Study described in the *EIA Study Brief No. ESB-322/2019* are listed below:

- (i) to describe the Project and associated works together with the requirements and environmental benefits for carrying out the Project;
- (ii) to identify and describe elements of the community and environment likely to be affected by the Project and associated works and/or likely to cause adverse impacts to the Project and associated works, including both the natural and man-made environment and the associated environmental constraints;
- (iii) to identify and quantify emission sources and determine the significance of impacts on sensitive receivers and potentially affected uses, and to propose measures to mitigate these impacts;
- (iv) to identify and quantify/ evaluate any potential loss or damage and other potential impacts to fisheries, flora, fauna and natural habitats and to propose measures to mitigate these impacts;
- (v) to identify and quantify waste management requirements and to propose measures to mitigate these impacts;
- (vi) to identify and quantify contaminated land within any Project area for development works, and to propose measures to avoid disposal of contaminated materials in the first instance;
- (vii) to identify and evaluate any potential landscape and visual impacts and to propose measures to mitigate these impacts;
- (viii) to identify and evaluate any adverse impacts on sites of cultural heritage and to propose measures to mitigate these impacts;
- (ix) to propose measures/actions to avoid or minimise potential archaeological impacts if any archaeological remains are identified during the construction of the Project;
- (x) to propose the provision of infrastructure or mitigation measures to minimise pollution, environmental disturbance and nuisance during construction and operation of the Project and associated works;
- (xi) to investigate the feasibility, effectiveness and implications of the proposed mitigation measures;
- (xii) to identify, predict and evaluate the residual (i.e. after practicable mitigation) environmental impacts and the cumulative effects expected to arise during the construction and operation of the Project in relation to the sensitive receivers and potentially affected uses;
- (xiii) to identify, assess and specify methods, measures and standards to be included in the detailed design, construction and operation of the Project which are necessary to mitigate these residual environmental impacts and cumulative effects and reduce them to acceptable levels;

- (xiv) to investigate the extent of the secondary environmental impacts that may arise from the proposed mitigation measures and to identify constraints associated with the mitigation measures recommended in the EIA study, as well as the provision of any necessary modification;
- (xv) to identify, assess and evaluate the cumulative impacts arising from all the elements and works of the Project;
- (xvi) to design and specify environmental monitoring and audit requirements to ensure the implementation and the effectiveness of the environmental protection and pollution control measures adopted; and
- (xvii) to identify any additional studies necessary to implement the mitigation measures or monitoring and proposals recommended in the EIA report.

1.5 Organisation of the Report

1.5.1 The remainder of this EIA report is organised as follows:

- Section 2 presents a description of the design and construction of the Project;
- Section 3 presents the air quality impact assessment;
- Section 4 presents the noise impact assessment;
- Section 5 presents the water quality impact assessment;
- Section 6 presents the waste management implication;
- Section 7 presents the land contamination assessment;
- Section 8 presents the ecological impact assessment;
- Section 9 presents the fisheries impact assessment;
- Section 10 presents the cultural heritage impact assessment;
- Section 11 presents the landscape and visual impact assessment;
- Section 12 describes the requirements for environmental monitoring and audit;
- Section 13 summarizes the environmental outcomes associated with the Project; and
- Section 14 summarizes the conclusions of this EIA Study.

END OF TEXT