

Improvement of Yuen Long Town Nullah (Town Centre Section)

Environmental Impact Assessment – Executive Summary

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1. INTRODUCTION

1.1 General

- 1.1.1 This Executive Summary summarizes the results of the Environmental Impact Assessment (EIA) for Improvement of Yuen Long Town Nullah (Town Centre Section) (the Project). The EIA has been prepared in accordance with the requirements of the Environmental Impact Assessment Ordinance (EIAO) and the EIA Study Brief (ESB-260/2013).

1.2 Project Background

- 1.2.1 The existing Yuen Long Town Nullah (YLTN) was constructed in mid 1960s to alleviate the flooding risks in the Northwest New Territories and is one of the oldest drainage systems in Hong Kong. Most of the nullah sections were originally natural water courses, which have been straightened and modified. The nullahs now primarily consist of channelized concrete bedding and embankments.
- 1.2.2 With the increasing aspirations for a better living environment, the local residents of Yuen Long are requesting the Government to improve the early design of the YLTN, which is considered no longer in line with the changing townscape of Yuen Long. In addition, odour from the nullah due to the polluted dry weather flow is causing nuisance to the nearby residents.
- 1.2.3 In January 2007, the Drainage Services Department (DSD) of the Government of the Hong Kong Special Administrative Region (HKSARG) commissioned Black & Veatch Hong Kong Limited (B&V) to carry out a feasibility study on “Rehabilitation of Yuen Long Town Nullahs” to investigate various options for improving the design and environmental conditions of the YLTN. The Study recommended intercepting the polluted dry weather flow to the nullah for treatment in the existing Yuen Long Sewage Treatment Works (YLSTW) to alleviate the odour nuisance.
- 1.2.4 In relation to the findings of the feasibility study, B&V was further commissioned by DSD in August 2010 to conduct “Agreement No. CE 6/2010 – Improvement of Yuen Long Town Nullah (Town Centre Section) – Investigation” to investigate the improvement of the town center section of YLTN between On Lok Road and Ma Tong Road of Yuen Long.
- 1.2.5 According to the latest design, the Project mainly comprises provision of a dry weather flow (DWF) interception system, including construction of DWF interceptors along the Town Centre Section of YLTN and a new pumping station with an average capacity of approximately 18,000 m³/day. The scope of works of the Project is shown in [Figure 1.1](#).

1.3 EIA Study Brief

- 1.3.1 A Project Profile (PP-485/2013) was submitted to the Director of Environmental Protection (DEP) on 7 March 2013. The DEP issued an EIA Study Brief (ESB-260/2013) on 3 April 2013 for this EIA Study.

2. PROJECT DESCRIPTION

2.1 General Description of the Project

- 2.1.1 The improvement works for the Town Centre Section of the YLTN mainly comprises of the following items and the general layout plan is shown in [Figure 2.1](#).
- a) Construction of DWF interceptors along and within the YLTN;
 - b) Construction of continuous u-channels adjacent to either side of the retaining walls;
 - c) Construction of a DWF pumping station with capacity of 18,000 m³/day; and
 - d) Laying twin rising mains of approximately 400 m long to convey the intercepted DWF to the YLEPP (upgraded from the existing YLSTW).
- 2.1.2 YLTN is concrete-lined with a total length of approximately 12 kilometers dividing into five sections namely Downstream Section, Town Centre Section, Upstream Section, West Nullah and East Nullah.
- 2.1.3 The DWFI system adopts continuous u-channels/pipes adjacent to either side of the retaining walls to collect and convey the expedient discharges from the drainage outlets. The system was further optimised with external covers, screening the presence of the drainage outlet to minimise visual and odour impact as far as practicable.
- 2.1.4 The latest Interception Scheme for DWF in YLTN is presented in [Figure 2.2](#). The DWFI system will be constructed to intercept the polluted dry weather flow being discharged to YLTN from the Town Centre Section (600 m³/day), East Nullah (16,300 m³/day) and upstream San Hui Nullah (1,000 m³/day). Approximately 60 nos. of existing storm water outfalls within the Town Centre Section will be intercepted by the proposed system.
- 2.1.5 The DWF from upstream Kung Um Road Nullah (13,100 m³/day) will not be intercepted at the upstream as such to maintain water flow within the Town Centre Section during non-rainy days. The DWF from West Nullah (3,600 m³/day) will be intercepted to proposed u-channel/pipe but not treated in YLEPP. Instead, it will be conveyed to existing desilting basin and eventually, together with the DWF from upstream Kung Um Road Nullah, pumped across the rubber dam and towards Shan Pui River via the existing low flow pumping station, which conveys DWF on the nullah across the inflatable dam. This existing low flow pumping station is located at the downstream at Shan Pui Ho Road East.
- 2.1.6 The DWFI system will convey the first 18,000 m³ of DWF being intercepted each day to the YLEPP for treatment. When the above limit is reached, the exceeded DWF will be overflowed directly or as close as possible to the desilting basin of the existing low flow pumping station (LFPS) and mixed with the DWF of Kung Um Road Nullah

and West Nullah before being discharged to Shan Pui River through the existing LFPS.

- 2.1.7 The intercepted/diverted DWF will flow by gravity to a proposed DWF pumping station to be constructed downstream near the existing low flow pumping station at Shan Pui Ho Road East. The proposed DWF pumping station will be a single storey building structure about 17 m in length, 10 m in width and 7 m in height. It comprises an underground covered inlet chamber, screen chamber with mechanical screen, wet well, ventilation systems, odour control facilities and various associated facilities. Twin rising mains of approximately 400 m long will be laid which will be used to convey the first 18,000 m³ of DWF each day from the pumping station to the existing sewers, located at Wang Lok Street, leading to the YLEPP. The diameter of the rising main is around 600 mm.

- 2.1.8 The scale of the proposed Project is summarized in **Table 2.1**.

Table 2.1 Scale of Proposed Project

Nature of Work	Details (Dimensions) of Works
DWFI System	<ol style="list-style-type: none">1. Construction of DWF interceptors along and within the YLTN;2. Construction of continuous 1000 mm × 800 mm u-channels adjacent to either side of the retaining walls;3. Construction of a DWF pumping station (17m(L) × 10m(W) × 7m(H)) with capacity of 18,000m³/day; and4. Laying twin rising mains of approximately 400 m long with 600 mm diameter each.

2.2 Designated Project

- 2.2.1 The Project consists of the following designated projects under Part I, Schedule 2 of the EIAO and, therefore, requires an Environmental Impact Assessment (EIA) to be undertaken and an Environmental Permit to be obtained before the commencement of construction:

- Construction of a DWF pumping station with capacity of 18,000 m³/day within residential area. *[Item F.3(b): A sewage pumping station with an installed capacity of more than 2000 m³ per day and a boundary which is less than 150 m from an existing or planned – (i) residential area; (ii) place of worship; (iii) educational institution; (iv) health care institution; (v) site of special scientific interest; (vi) site of cultural heritage; (vii) bathing beach; (viii) marine park or marine reserve; (ix) fish culture zone; or (x) seawater intake point.]*
- Construction of DWF interceptors along the YLTN which discharges to Deep Bay which is less than 300 m from the nearest boundary of Inner

Deep Bay Site of Special Scientific Interest (SSSI), Mai Po SSSI, the Mai Po Inner Deep Bay Ramsar Site and Conservation Area. *[Item I.1(b): A drainage channel or river training and diversion works which discharges or discharge into an area which is less than 300 m from the nearest boundary of an existing or planned (i) site of special scientific interest; (ii) site of cultural heritage; (iii) marine park or marine reserve; (iv) fish culture zone; (v) wild animal protection area; (vi) coastal protection area; or (vii) conservation area.]*

2.3 Need of the Project

- 2.3.1 Under this Project, the polluted DWF to the nullah will be intercepted and treated in the YLEPP. Upon completion of the DWFI system under the Project, the residents living along the Town Centre Section of YLTN will be immediately benefited from the elimination of odour problem due to polluted DWF. In addition, by intercepting the polluted DWF for proper treatment, the downstream ecologically sensitive Shan Pui River and Inner Deep Bay will be benefited by the improved water quality.

2.4 Scenario of without Project

- 2.4.1 The “Without-Project” scenario considers not implementing the recommended improvement of YLTN. More polluted DWF generation is expected due to population growth and development in Yuen Long. If the proposed Project is not implemented, more polluted DWF will be discharged to the nullah resulting in further worsening of water quality and odour problems as well as deterioration of the nullah appearance.

2.5 Implementation Programme

- 2.5.1 The construction programme for the Project is tentatively expected to commence in second quarter of 2021 for completion in early 2026. The Project will be constructed in sections as shown in [Figure 2.1](#). The tentative key milestone dates are tabulated in **Table 2.2** below.

Table 2.2 Tentative Construction Schedule

	2021			2022				2023				2024				2025				2026
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
Construction of DWFI System																				
Section A – A1																				
Section A – A2																				
Section A – A3																				
Section A – A4																				
Section B – B1																				
Section B – B2																				
Section B – B3																				
Construction of Rising Mains																				
Rising Main																				
Construction of DWF Pumping Station																				
DWF PS																				
Note:																				
(1) DWFI – Dry Weather Flow (DWF) Interceptors and associated u-channels																				
(2) DWF PS – DWF Pumping Station																				
(3) Shaded cells indicate construction activities in progress during the quarter concerned																				

3. SUMMARY OF ENVIRONMENTAL IMPACT ASSESSMENT

3.1 Air Quality

- 3.1.1 The potential sources of air quality impacts associated with the construction and operation of the Project have been identified and the potential impacts were evaluated.
- 3.1.2 Construction works of the Project will inevitably generate some fugitive dust, especially during the excavation of the YLTN. With the sectioning construction approach, the areas of excavation works should be limited in scale. Regular water spraying will also help to control dust nuisance.
- 3.1.3 Through proper implementation of dust control measures required under the *Air Pollution Control (Construction Dust) Regulation*, construction fugitive dust will be controlled at source to satisfactory levels.
- 3.1.4 Maintenance works for the Project will be small-scale in nature. During the operation phase, the Project will unlikely cause any unacceptable air quality impacts in terms of dust and odour. In addition, it is expected that odour nuisance of the YLTN will be alleviated due to operation of the Project since the polluted DWF originally discharged into the Project Site will be diverted to the YLEPP. This is being considered as a beneficial impact of the Project.
- 3.1.5 With the implementation of the recommended mitigation measures, it is expected that the residual impacts from the construction and operation of the Project will not exceed any relevant air quality criteria. As such no unacceptable residual air quality impacts are envisaged from the construction and operation of the Project.
- 3.1.6 Cumulative air quality impacts associated with concurrent projects within the Study Area have been considered, no unacceptable impacts are anticipated.

3.2 Noise

- 3.2.1 A construction noise assessment has been undertaken to predict the noise levels at the representative Noise Sensitive Receivers (NSRs) due to the construction of the Project. Practicable mitigation measures, including use of quiet construction plant, noise barriers, noise insulation sheet and scheduling of construction activities, have been recommended. With the implementation of the recommended mitigation measures, the predicted construction noise levels at all NSRs comply with the noise criteria during the daytime period. Therefore, no unacceptable noise impact is expected to arise from the construction activities. Also, cumulative noise quality impacts associated with concurrent projects within the Study Area have been considered, no unacceptable impact is anticipated.

- 3.2.2 Potential noise impact from the operation of the proposed DWF pumping station has been assessed. The predicted fixed plant noise levels at the representative NSRs due to the operation of the proposed DWF pumping station and the cumulative noise levels with the operation of the existing pumping stations comply with the day-time and night-time noise criteria. No unacceptable residual impact is anticipated.

3.3 Water Quality

- 3.3.1 Potential impacts arising from the proposed construction works are predicted to be largely confined to the specific works areas. With proper implementation of the recommended mitigation measures, in particular the establishment of dry condition for excavation works within the existing nullah and adoption of good construction site practices as recommended in relevant regulatory guidelines, unacceptable water quality impacts are not expected at the identified Water Sensitive Receivers (WSRs).
- 3.3.2 During the operation phase, the interception of polluted DWF provided by the Project and subsequent treatment at YLEPP is expected to lead to improvement of water quality within the YLTN and at Shan Pui River by reducing the pollution loading of SS and BOD₅ and is thus considered to be beneficial.
- 3.3.3 With regular maintenance works to remove excessive sediments, it is anticipated that the Project will not lead to any unacceptable water quality impacts by altering the sediment deposition and erosion pattern of the Project Site and its downstream area. Unacceptable water quality impacts are also not expected to occur at any identified WSRs due to the small-scale and infrequent maintenance works.
- 3.3.4 During emergency discharge of the collected DWF to the YLTN (e.g. due to breakdown of the DWF pumping station), water quality of the nullah is predicted to be similar to the existing condition before operation of the Project. In addition, given the low likelihood of the emergency discharge and proper Emergency Response Plan will be in place and implemented, no unacceptable water quality impact is expected to be associated with such discharge.
- 3.3.5 With proper implementation of the recommended mitigation measures, it is expected that the residual impacts from the construction and operation of the Project will not be significant. As such, no unacceptable residual water quality impacts are envisaged from the construction and operation of the Project.
- 3.3.6 Cumulative water quality impacts associated with concurrent projects within the Study Area have been considered with no unacceptable impact anticipated.

3.4 Waste Management and Land Contamination

- 3.4.1 Wastes generated by the construction activities are likely to include Construction and Demolition (C&D) materials from the construction works, general refuse from the workforce and chemical waste from any maintenance of construction plant and equipment. Approximately 15,252 m³ of C&D materials is expected to be generated. At this stage it has been identified that approximately 29% of C&D material can be reused, thus reducing the need for off-site disposal. A total of approximately 10,828 m³ of surplus C&D materials has to be disposed of at public fill reception facilities.
- 3.4.2 Provided that these identified wastes arisen are handled, transported and disposed of using approved methods and that the recommended good site practices are strictly followed in terms of the avoidance-minimisation-reuse-recycling-disposal hierarchy, unacceptable environmental impacts are not anticipated during construction of the Project.
- 3.4.3 The recommended measures can be enforced by incorporating them into the waste management requirements in the Waste Management Plan as part of the Environmental Management Plan. Environmental site audit would be necessary to ensure the implementation of proper waste management practices during construction.
- 3.4.4 For the operation phase, only silt material and debris are expected to be produced by maintenance works of the DWFI system. Such waste will be removed by manual means and disposed of immediately after the clearance works. Small amount of screenings and chemical waste will be generated during operation and routine maintenance of the DWF pumping station. No unacceptable environmental impacts are anticipated with proper waste management practices.
- 3.4.5 A review of past and present land uses of the Project Site was conducted. Based on desktop review and site walkover, the presence of contaminated land is not expected.

3.5 Ecology

- 3.5.1 A literature review and ecological field surveys have been conducted. The ecological resources recorded within the Study Area included ten habitats (agricultural land, channelized watercourse, developed area, shrubland, mangrove, plantation, pond, reedbed, semi-natural watercourse and tidal marsh) of which two occurred in the Project Site (i.e. channelized watercourse and developed area). Total of 1 floral species and 46 faunal species of conservation importance have been identified within the 500m Study Area. Among them, four bird species were recorded within the Project Area.
- 3.5.2 Given that construction works is temporary in nature and of relatively small scale, and all the construction works will be confined within the channelized watercourse and developed area with low ecological values, with the implementation of the proposed

avoidance/mitigation measures such as scheduling the construction of rising main within WBA outside dry season, implementation of mitigation measures for water quality control and good site practices, unacceptable adverse ecological impact is thus not anticipated during construction.

- 3.5.3 Unacceptable ecological impacts are also not anticipated during operation of the Project given the small-scale and temporary nature of the maintenance works as well as the small percentage of reduction in freshwater input to Shan Pui River due to the DWF interception. During operation, the ecological sensitive areas and wildlife at downstream could be potentially benefited from the improvement of water quality of Shan Pui River and Inner Deep Bay.

3.6 Landscape and Visual Impact

- 3.6.1 During the construction stage, potential adverse landscape and visual impacts would arise from potential tree removal, ground breaking and excavation, backfilling works and final re-instatement by in-situ concreting. According to the latest design, all trees will be preserved. If tree felling is unavoidable during construction, tree transplanting and/or compensatory planting will be provided.
- 3.6.2 During the operation phase, only minor maintenance works such as regular clearance of debris inside the drainage channel and repair of damages to the channel bed and sides are expected. No adverse impacts are anticipated.
- 3.6.3 Specifically regarding visual impacts, the proposed pumping stations are the major visual elements of the proposed development which may visually impact on the surrounding Visual Sensitive Receivers (VSRs).
- 3.6.4 In order to minimize the potential landscape and visual impacts, mitigation measures including good site practice, erection of decorative screen hoarding and tree preservation during construction phase as well as minimum lighting during night time, green roof, vertical greening and designing structure blending with surrounding environment during operation phase will be implemented. With mitigation measure implementation, all affected Landscape Resources (LRs) and Landscape Character Areas (LCAs) will have slight to insignificant adverse landscape impacts during construction phase. All LR and LCAs will have insignificant or even no impact during operational phase.
- 3.6.5 All VSRs will experience from moderate to insignificant visual impacts during construction phase after adoption of mitigation measures. At Year 10 of operation, two VSRs will receive moderate visual impacts arising from the proposed DWF pumping station while the remaining VSRs will receive nil or insignificant visual impacts.

4. EM&A REQUIREMENT

- 4.1.1 Monitoring of air quality (odour), noise and water quality has been recommended at designated sensitive receivers during the construction phase of the Project. Environmental site audit should be conducted weekly throughout the construction phase to ensure that the proposed mitigation measures are implemented.

5. OVERALL CONCLUSION

- 5.1.1 The EIA has identified and assessed the potential environmental impacts during the construction and operation of the Project in accordance with the guidelines of the EIAO-TM and the EIA Study Brief. The EIA has concluded that with the implementation of the recommended mitigation measures, no unacceptable environmental impacts are envisaged as a result of the construction and operation of the Project and the Project would be in compliance with the applicable environmental legislation and standards.

END OF TEXT