

Water Supplies Department  
**Ngau Tam Mei Water Treatment  
Works Extension**  
Environmental Impact Assessment  
Report – Executive Summary

282551-REP-080-05

Revised | 10 May 2024

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 282551

**Ove Arup & Partners Hong Kong Ltd**  
Level 5 Festival Walk  
80 Tat Chee Avenue  
Kowloon Tong  
Kowloon  
Hong Kong  
[www.arup.com](http://www.arup.com)

**ARUP**

# Contents

---

	Page	
<b>1</b>	<b>Introduction</b>	<b>1</b>
1.1	Background	1
1.2	Scope of the Project	1
1.3	Site Location and History	3
1.4	Scope of the EIA Report	3
1.5	Purpose of this Executive Summary	4
<b>2</b>	<b>Project Description</b>	<b>5</b>
2.1	Purposes and Objectives of the Project under the Study	5
2.2	Need of the Project	5
2.3	Scenarios “With” and “Without” the Project	6
2.4	Tackling Environmental Challenges and Options Considered	6
2.5	Proposed Development Scheme	7
2.6	Environmental Benefits of the Project	8
2.7	Tentative Implementation Programme	8
<b>3</b>	<b>Summary of Environmental Impact Assessment</b>	<b>9</b>
3.1	Air Quality	9
3.2	Noise Impact	9
3.3	Water Quality	10
3.4	Waste Management Implications	10
3.5	Land Contamination	11
3.6	Ecology	11
3.7	Fisheries	12
3.8	Landscape and Visual	12
3.9	Cultural Heritage	13
3.10	Hazard to Life	14
<b>4</b>	<b>Environmental Monitoring and Audit</b>	<b>15</b>
<b>5</b>	<b>Conclusion</b>	<b>16</b>

## Figures

**Figure 1.1** Location of Project

# 1 Introduction

---

## 1.1 Background

- 1.1.1.1 The existing Ngau Tam Mei Water Treatment Works (NTM WTW) and associated treated water transfer and distribution system were commissioned in 2000 to provide treated water capacity of 230,000m<sup>3</sup>/day. The treated water is supplied to Yuen Long, Ngau Tam Mei, San Tin and Mai Po Areas.
- 1.1.1.2 With consideration on the planned and potential developments in Yuen Long area, the future water demand will render the existing water treatment capacity of NTM WTW to be exceeded by Year 2030. In this connection, it is necessary to expand and upgrade the existing NTM WTW and treated water transfer and distribution systems by end of 2030 to meet the development programme.
- 1.1.1.3 Ove Arup & Partners Hong Kong Ltd (Arup) was commissioned by the Water Supplies Department (WSD) of the Government of the Hong Kong Special Administrative Region on 15 June 2021 to carry out the Agreement No. CE 78/2020 (WS) on Ngau Tam Mei Water Treatment Works and Primary Service Reservoir Extension – Investigation, Design and Construction.
- 1.1.1.4 The Agreement No. CE 78/2020 (WS) will include the extension of NTM WTW within the site compound with the aim of upgrading the water treatment capability and enhancing the treatment efficiency. It also includes the construction of extension of NTM Fresh Water Primary Service Reservoir (FWPSR) adjacent to the existing FWPSR and laying of fresh water trunk mains of 1600mm from the extended NTM WTW to FWPSR.
- 1.1.1.5 The Study under this Agreement No. CE 78/2020 (WS) will cover the whole Ngau Tam Mei Water Treatment Works Extension Project (hereinafter referred to as the “Study”), which also includes the works under Agreement No. CE 62/2022 (WS) – “Laying of Fresh Water Trunk Mains from Ngau Tam Mei Fresh Water Primary Service Reservoir to Tan Kwai Tsuen and Modification of Raw Water Tunnel Junction (Chamber G) – Design and Construction”.

## 1.2 Scope of the Project

- 1.2.1.1 As discussed in **Section 1.1**, the Study covers the investigation, design and construction of NTM WTW extension, NTM FWPSR extension, Chamber G and fresh water trunk main, and the following works will be included:
- Provision of additional treatment facilities within the existing NTM WTW compound to increase the water treatment capacity of NTW WTW;

- Construction of an extension of NTM FWPSR with a capacity of 54,000m<sup>3</sup> adjacent to the existing FWPSR;
- Laying of about 9.5km of fresh water trunk mains of diameters ranging from 1600 mm to 2000 mm for delivery of the treated water from the expanded NTM WTW to the NTM FWPSR and from the FWPSR to the existing fresh water distribution system near Tan Kwai Tsuen; and
- Modification of the existing raw water tunnel junction (Chamber G) located near NTM WTW.

1.2.1.2 Upon reviewing the potential Designated Project (DP) elements of the Study under Item Q.1 of Part I of Schedule 2 of the revised Environmental Impact Assessment Ordinance (EIAO), the environmental impacts of the construction and operation of the aforementioned works will be addressed in two separate reports:

- The Environmental Impact Assessment (EIA) of the Study (see **Section 1.2.1.3**) would only address DP elements of the Study; and
- A separate Preliminary Environmental Review (PER) report (see **Section 1.2.1.4**) would address the remaining non-DP elements of the Study.

1.2.1.3 The EIA of the Study (hereinafter referred to as the “Project”) would only include Project elements that fall into DP elements (see **Figure 1.1**), which includes the following:

- Laying of about 1km (around 750m from NTM WTW to NTM FWPSR and around 250m from Ching Yau Road to San Tam Road) of fresh water trunk mains of diameter 1600 mm, which encroach into boundary of the Conservation Area (CA), for delivery of the treated water from the expanded NTM WTW to the NTM FWPSR and from the FWPSR to the existing fresh water distribution system near Tan Kwai Tsuen; and
- Modification of the existing raw water tunnel junction (Chamber G) located near NTM WTW within Lam Tsuen Country Park and CA.

1.2.1.4 A separate PER Report would be prepared to include the non-DP elements of the Study, which are listed below. These elements of the Study would also be considered as concurrent project of the Project.

- Provision of additional treatment facilities within the existing NTM WTW compound to increase the water treatment capacity of NTW WTW;
- Construction of an extension of NTM FWPSR with a capacity of 54,000m<sup>3</sup> adjacent to the existing FWPSR; and
- Laying of about 8.5km of fresh water trunk mains of diameters ranging from 1600 mm to 2000 mm, which do not encroach into boundary of the CA and

also Lam Tsuen Country Park, for delivery of the treated water from the expanded NTM WTW to the NTM FWPSR and from the FWPSR to the existing fresh water distribution system near Tan Kwai Tsuen.

- 1.2.1.5 **Figure 1.1** shows the location of the Project. Detailed description of the Project is presented in **Section 2.5**.

### 1.3 Site Location and History

- 1.3.1.1 The Project is located near Ngau Tam Mei within the Yuen Long District. The proposed fresh water trunk mains mainly run through the existing roads in rural areas of Ngau Tam Mei. A section of the proposed fresh water trunk mains runs from NTM WTW towards the NTM FWPSR along an existing access road, which cuts through the CA and are aligned immediately adjacent to Lam Tsuen Country Park. Another section of the proposed fresh water trunk mains fall within a CA between Ching Yau Road and San Tam Road.

- 1.3.1.2 The existing raw water tunnel junction (Chamber G) is an underground facility located to the southeast of NTM WTW for distribution of raw water to various WTWs including NTM WTW. The existing Chamber G is an underground Y-shaped chamber of about 225m<sup>2</sup> on plan within the Lam Tsuen Country Park and the proposed bypass tunnels would fall within the underground stratum of Lam Tsuen Country Park and a CA.

### 1.4 Scope of the EIA Report

- 1.4.1.1 Pursuant to Section 5(7)(a) of the EIA Ordinance, the Director of Environmental Protection issued a Study Brief (No.: ESB-333/2020 dated 14 September 2020) for the EIA study.
- 1.4.1.2 Nevertheless, according to Clause 3.4 of the revised Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM), “For a designated project under Item Q.1 of Part I of Schedule 2 to the Ordinance (i.e. a project involving works partly or wholly in the environmental sensitive areas mentioned in Item Q.1), which is not otherwise a designated project listed in items A to P of Schedule 2 to the Ordinance, the EIA study brief shall set out in such a way that the assessments and derivation of mitigation measures will focus on the environmental implications of the project on the environmental sensitive areas.” This EIA would therefore focus on the environmental implications of the Project elements, as listed out in **Section**

**1.2.1.2**, which encroach onto the environmental sensitive areas, i.e. CA and Lam Tsuen Country Park.

## **1.5 Purpose of this Executive Summary**

1.5.1.1 This Executive Summary (ES) highlights the key information and findings of the Ngau Tam Mei Water Treatment Works Extension EIA.

## 2 Project Description

---

### 2.1 Purposes and Objectives of the Project under the Study

- 2.1.1.1 The existing NTM WTW provides treated water capacity of 230,000m<sup>3</sup>/day and delivers the treated water to the NTM FWPSR and the existing fresh water distribution system near Tan Kwai Tsuen through fresh water trunk mains. The treated water is subsequently supplied to Yuen Long, Ngau Tam Mei, San Tin and Mai Po Areas.
- 2.1.1.2 The Study aims to increase the water treatment capacity of the existing NTM WTW to 640,000m<sup>3</sup>/day and enhance the overall treatment efficiency, by extension of the NTM WTW, and to upgrade the associated raw water and treated water transfer and distribution system, by extension of NTM FWPSR, laying of fresh water trunk mains and modification of Chamber G, to cope with the increase of fresh water demand owing to the planned and potential development in Yuen Long in the future. The proposed fresh water trunk mains and modification of Chamber G of the Project form part of the treated water transfer and distribution system to be upgraded. Apart from satisfying the genuine need from the public, the Project also strives to minimise the potential environmental impacts during the course of construction and operation.

### 2.2 Need of the Project

- 2.2.1.1 As discussed in **Section 1.1**, the planned and potential development in Yuen Long area, including Yuen Long South Development, Hung Shui Kiu New Development Area, housing developments at Wang Chau, Tan Kwai Tsuen, Long Bin, etc., will generate significant water demand in Yuen Long, which will render the existing water treatment capacity of the NTM WTW be exceeded by Year 2030. It is therefore necessary to expand and upgrade the existing NTM WTW by end of Year 2030 to secure the fresh water supply for the future population.
- 2.2.1.2 With the potential increase of fresh water demand, the raw water distribution system, i.e. the raw water tunnel junction (Chamber G), would also require modification to supply sufficient raw water for water treatment at the NTM WTW.
- 2.2.1.3 As the treated water from NTM WTW is firstly transferred to NTM FWPSR for providing a treated water supply to Yuen Long, Ngau Tam Mei, San Tin and Mai Po areas, with the proposed incremental of treatment capacity of NTM WTW, the associated treated water transfer and distribution system, i.e. NTM FWPSR and fresh water trunk mains, would require expansion and upgrade in order to deliver the increased supply of treated water to the aforementioned areas. The proposed fresh water trunk mains of the Project form part of the treated water transfer and distribution system.

## 2.3 Scenarios “With” and “Without” the Project

### *Without Project Scenario*

- 2.3.1.1 Without the Project in place, there would not be sufficient supply of raw water for water treatment at the extended NTM WTW with the increased treatment capacity. The amount of treated water for fresh water supply would remain the same. In addition, the treated water transfer and distribution system, which includes the fresh water trunk mains, could not support the increased treated water supply associated with the NTM WTW and NTM FWPSR extension. As a result, there would be a shortage of fresh water supply as anticipated due to the increase in population associated with the planned and potential developments in Yuen Long.

### *With Project Scenario*

- 2.3.1.2 With the Project in place, the increased fresh water supply due to the extension work of NTM WTW would be able to meet the potential increase of fresh water demand and deliver to the planned and potential developments in Yuen Long area by the end of Year 2030. This would ensure reliable and adequate supply of fresh water to the future population in Yuen Long. In addition, the operation of the fresh water trunk mains and Chamber G would not cause adverse environmental impacts on air quality, noise, water quality, waste management implications, land contamination, ecology, fisheries, cultural heritage and hazard to life. The environmental trends with the Project in place would be similar to the existing environment.

## 2.4 Tackling Environmental Challenges and Options Considered

- 2.4.1.1 Due consideration has been given in formulating the design of the Project to overcome environmental challenges encountered. The hierarchy of “Avoid, Minimise and Mitigate” has been adopted during the process to protect the environment as much as practicable. The key principles adopted to tackle all the environmental challenges are discussed in **Table 1**.

Table 1 – Key design considerations and the associated environmental benefits

Design Approach	Key Design Considerations & Associated Environmental Benefits
Avoidance of above ground works within Lam Tsuen Country Park	<ul style="list-style-type: none"> <li>- Mined excavation and drill and break methods proposed for modification works of Chamber G</li> <li>- Avoid any direct impacts to Lam Tsuen Country Park</li> </ul>
Minimisation of works within CA	<ul style="list-style-type: none"> <li>- Minimisation of works within CA regarding laying of fresh water trunk mains as the works would be mainly located along the existing access road / slope adjacent to existing access road or</li> </ul>



Design Approach	Key Design Considerations & Associated Environmental Benefits
	within water works reserve area between NTM WTW and NTM FWPSR, and between Ching Yau Road and San Tam Road
Minimisation of air quality impacts during construction	<ul style="list-style-type: none"> <li>- Adopt construction programme and design, e.g. to conduct mainlaying works of proposed fresh water trunk mains in sub-sections and in small scale, to minimise the construction dust impact</li> <li>- Adopt mitigation measures for fugitive dust such as regular water spraying and covering exposed earth surface by tarpaulins as far as practicable, etc.</li> <li>- Avoid the use of exempted Non-Road Mobile Machines (NRMM) where practicable</li> <li>- Install dust filter at the portal exhaust at the entrance of the access tunnel</li> </ul>
Minimisation of the risk of unauthorised filling activities	<ul style="list-style-type: none"> <li>- Adopt trip-ticket system to monitor the disposal of Construction and Demolition (C&amp;D) materials</li> <li>- Provide warning signs to deter any illegal dumping activities</li> <li>- Proper management of the Contractors on land transport of C&amp;D materials to minimise the risk of unauthorised filling activities</li> </ul>

## 2.5 Proposed Development Scheme

2.5.1.1 Taking into account all the environmental constraints identified and engineering/operational requirements, and considerations of revised EIAO as discussed in **Section 1.2**, the Project has adopted the current design and the key elements are listed below and are shown in **Figure 1.1**:

- Laying of about 1km fresh water trunk mains, which encroach into boundary of the CA, between NTM WTW and NTM FWPSR, and between Ching Yau Road and San Tam Road; and
- Modification of the Chamber G within Lam Tsuen Country Park and CA.

2.5.1.2 Descriptions of the design of the above key elements are given in the following sections.

### *Laying of Fresh Water Trunk Mains*

- 2.5.1.3 A total of 1km fresh water trunk mains with a diameter of 1,600mm will be laid between NTM WTW and NTM FWPSR, and between Ching Yau Road and San Tam Road by open-cut method.

### *Modification of Chamber G*

- 2.5.1.4 The modification of Chamber G includes construction of a new combined access tunnel with portal, bypass tunnel and connection tunnels for laying of raw water main from Muk Wu branch to NTM WTW and from Muk Wu branch to Tai Po Tau branch and from Tai Po Tau branch and Au Tau branch, and for providing access to the proposed Chambers G2, G3 and G4. (see **Figure 1.1a**).
- 2.5.1.5 Associated works to the modification of Chamber G, such as the construction of ventilation building for providing ventilation to the tunnels and connection chambers, portal for access to the tunnels and chamber and connection of raw water mains, are within the boundary of NTM WTW and outside the CA boundary which would also be assessed under separate PER.

## **2.6 Environmental Benefits of the Project**

- 2.6.1.1 The major environmental benefit of the Project is to provide treated and reliable fresh water supply to meet the demand of future population. The design of extension works of NTM WTW will be capable of producing the final water with quality complying with the Treated Water Quality Objective as stated in the Scope of the Study, while for individual water quality parameters not referred to standard stated in the Scope, they will be meeting the Hong Kong Drinking Water Standard.

## **2.7 Tentative Implementation Programme**

- 2.7.1.1 The construction civil works and electrical and mechanical (E&M) installation works are scheduled to commence in Q1 of Year 2025 and completed by Q4 of Year 2030.

## 3 Summary of Environmental Impact Assessment

---

### 3.1 Air Quality

#### *Construction Phase*

- 3.1.1.1 The key air pollution sources in association with the Project have been identified and the potential construction air quality impact has been evaluated. For the laying of fresh water trunk mains, the works would also be constructed by sections along the alignment in small scale, so the air quality impact is anticipated to be short-term and localised. With the implementation of the mitigation measures as stipulated in the Air Pollution Control (Construction Dust) Regulation, control measures, including watering on exposed work sites with dust emission and good site practices, no adverse air quality impact is anticipated.
- 3.1.1.2 For the modification works for Chamber G, only underground works would be involved under this Project and no adverse air quality impact is anticipated.

#### *Operational Phase*

- 3.1.1.3 There is no air emission during the operation of fresh water trunk mains and Chamber G. Hence no adverse air quality impacts during operational phase are anticipated.

### 3.2 Noise Impact

#### *Airborne Construction Noise Impact*

- 3.2.1.1 Noise arising from the construction activities of the Project would have unavoidable potential impact on the Noise Sensitive Receivers (NSRs) located in the vicinity of the works areas of the proposed fresh water trunk mains. Mitigation measures are recommended, including good site practices, use of quieter construction methods/equipment, silencer, retractable noise barrier, movable noise barrier and noise enclosure. With the recommended mitigation measures in place, noise levels at all NSRs including residential premises could comply with the EIAO-TM daytime construction noise criterion.

#### *Groundborne Construction Noise Impact*

- 3.2.1.2 The closest existing representative NSRs at Ngau Tam Village are located at more than 300m away from the modification works of Chamber G. Given the large separation distance, adverse groundborne construction noise impacts from the modification of Chamber G are not anticipated.

### ***Fixed Noise Sources Impact***

- 3.2.1.3 As there are no planned fixed noise sources for the modification of Chamber G and the fresh water trunk mains, no adverse fixed noise source impacts are anticipated. In addition, the ventilation building of Chamber G will fall outside the boundary of CA and therefore will be addressed in a separate PER.

## **3.3 Water Quality**

### ***Construction Phase***

- 3.3.1.1 The key water quality impact associated with the proposed fresh water trunk mains laying works and the modification of Chamber G could impact the water bodies through general construction activities, construction site run-off, sterilisation of water mains prior to commissioning, accidental spillage, sewage effluent from construction workforce, and tunnelling and underground works. With proper implementation of the recommended good site practices and mitigation measures, no adverse water quality impacts would be anticipated during construction phase.

### ***Operational Phase***

- 3.3.1.2 During operational phase of the Project, major sources of water quality impact include stormwater runoff from paved or developed area. However, considering that the proposed works would only result in marginal increase in stormwater runoff, no adverse water quality impact from stormwater runoff is expected.

## **3.4 Waste Management Implications**

### ***Construction Phase***

- 3.4.1.1 Waste generation during construction phase has been assessed for potential waste management implications. The main types of waste that would be generated include construction and demolition (C&D) materials, chemical waste and general refuse. It has been estimated that 247,690m<sup>3</sup> of inert C&D materials, 17,280m<sup>3</sup> of non-inert C&D materials, a few hundred kilograms/litres per month of chemical waste, as well as 170 tons of general refuse would be generated. In order to reduce the amount of surplus materials to be disposed of, strategic mitigation measures such as the opportunity for on-site sorting, reusing C&D materials, preparation of a Construction and Demolition Material Management Plan (C&DMMP), etc. are devised. With the proper implementation of the recommended mitigation measures, adverse environmental impacts from waste management during construction phase are not anticipated.

### ***Operational Phase***

3.4.1.2 No waste generation is anticipated during the operational phase.

## **3.5 Land Contamination**

3.5.1.1 Potentially contaminative land uses within the assessment area have been examined, as well as their potential impacts on future use. Based on desktop review findings, the information collected during the site surveys and from relevant government departments, no land contamination issues within the assessment area are anticipated, environmental Site Investigation (SI) works are not required. Preparation and submission of Contamination Assessment Plan (CAP), Remediation Action Plan (RAP) and Remediation Report (RR) are therefore not necessary.

3.5.1.2 No future works would be conducted within the assessment area (i.e. Chamber G and proposed fresh water trunk mains) before commencement of the Project while major construction works for the Project are anticipated to commence in Year 2025. Site re-appraisal is therefore not required prior to the commencement of the construction. No land contamination impacts are identified for the Project. No further site investigation and land contamination assessment are required for the Project.

## **3.6 Ecology**

3.6.1.1 Literature review and a 6-month ecological field survey covering both wet and dry seasons were undertaken to establish the ecological profile of the proposed works areas and assessment area.

3.6.1.2 The proposed aboveground works would not encroach into the boundary of Lam Tsuen Country Park, hence no direct impact on wildlife and habitats within the Country Park is anticipated. Although small sections of the fresh water trunk mains from NTM WTW to NTM FWPSR and from Ching Yau Road to San Tam Road would encroach into CA, the required works would be located along the existing access roads/ slope adjacent to existing access road or within water works reserve area. The associated construction works would be minor excavation, mainlaying and backfilling, therefore, no significant ecological impacts to the CA is anticipated.

3.6.1.3 The proposed modification works at Chamber G may potentially cause indirect impacts to the habitats and the associated wildlife nearby due to groundborne noise and vibration. Nevertheless, the potential impact is considered to be of low level in the absence of mitigation measures, as the stratum under the natural ground surface consists of colluvium, saprolite, corestone and rock. Furthermore, construction of

tunnels would be conducted using mined excavation and drill and break method, where vibration would be minimised as no blasting is required.

- 3.6.1.4 The potential construction runoff and other disturbance impacts resulting from the proposed works, including impacts to the groundwater table, may potentially have indirect impact on wildlife and species of conservation interest. Mitigation measures such as good site practice and control of groundwater infiltration are proposed.
- 3.6.1.5 Overall, with the effective implementation of the recommended good site practices, no significant adverse residual ecological impacts during construction and operational phases are expected from the Project.

## 3.7 Fisheries

- 3.7.1.1 No direct loss of fishpond will be resulted from the Project as no fishponds were found within the works areas of the Project. Indirect impacts arising from the Project, including uncontrolled runoff, dust, silt and chemical waste arising from construction activities during the construction phase would be properly mitigated through standard mitigation measures such as water quality control measures to control site runoff. Temporary traffic arrangements should also be provided to maintain access to ponds (if required). No adverse fisheries impact is anticipated during the construction phase. No fisheries impact during the operational phase of the Project have been identified.

## 3.8 Landscape and Visual

- 3.8.1.1 The proposed modification of Chamber G is located within the Lam Tsuen Country Park and CA, while the proposed fresh water trunk mains are located within the CA, in which falls within column 2 of the planning note, which implies that planning permission from the Town Planning Board is required.
- 3.8.1.2 The most affected Landscape Resources (LR) and Landscape Character Area (LCA) are Woodland / Natural Hillside Plantation and Upland and Hillside LCA respectively. Upon full implementation of all proposed mitigation measures, the residual impacts on all LRs are anticipated to be insubstantial during construction phase. During operational phase, the residual impacts of all LRs and LCAs are also anticipated to be insubstantial.
- 3.8.1.3 The most affected Visually Sensitive Receivers (VSR) are Hikers at Ngau Tam Shan, Hikers at Kai Kung Leng and Residents in Fuk Hing Lei and nearby residential developments. Upon full implementation of all proposed mitigation measures, the residual impacts on all VSRs are anticipated to be insubstantial during

construction phase. During operational phase, the residual impacts of all VSRs are also anticipated to be insubstantial.

- 3.8.1.4 Based on Individual Tree Survey, it is anticipated that 200-300 nos. of trees (excluding *Leucaena leucocephala*) will be affected by the proposed fresh water trunk main laying works and slope stabilisation works, and are proposed to be removed due to low “Suitability for Transplanting”. No Trees of Particular Interest (TPI) was identified within the works area of proposed modification of Chamber G and laying of fresh water trunk mains. The dominant affected trees species are mainly, *Acacia confusa*, *Acacia mangium*, and *Celtis sinensis*.
- 3.8.1.5 Tree compensation according to DEVB TC(W) No.4/2020 – Tree Preservation will be carried out. Trees will be compensated at a ratio of not less than 1:1 in terms of quantity of removed trees. The project proponent is committed to compensate for the loss of trees in not less than 1:1 ratio in terms of quantity, it is anticipated that compensatory trees will be in areas under WSD’s vegetation maintenance, subject to further review and discussion with WSD and other relevant government departments on the availability of land. The locations for compensatory tree planting will be provided in due course after agreement with the Project Proponent.
- 3.8.1.6 Tree species selected shall be compatible with surrounding existing vegetation. It is considered that there is no net loss of landscape resources in terms of trees upon full implementation of compensatory planting. Given the extent of the proposed modification of Chamber G and laying of fresh water trunk mains are relatively small in scale, with full implementation appropriate landscape and visual mitigation measures, it is considered that all residual landscape and visual impacts are acceptable with mitigation measures implemented during construction and operational phases.

## 3.9 Cultural Heritage

### *Construction Phase*

- 3.9.1.1 One Site of Archaeological Interest (SAI), Ngau Tam Mei (NTM) SAI, is identified within the Cultural Heritage Assessment Area (CHAA) where no excavation works of the Project are proposed in or adjacent to the SAI, therefore no adverse archaeological impact due to the Project is anticipated and thus, no mitigation measure is required.
- 3.9.1.2 The proposed works are largely along existing road network or other disturbed areas of no archaeological potential. A number of archaeological investigations were conducted within the assessment area in 1997 and 1999, but no archaeological

materials, deposits or features were identified. No archaeological survey is therefore required.

- 3.9.1.3 As a precautionary measure, the project proponent and his/her contractor are required to inform Antiquities and Monument Office (AMO) immediately when any antiquities or supposed antiquities under the A&M Ordinance (Cap. 53) are discovered during the course of works.
- 3.9.1.4 Desktop review identified no declared or proposed monuments and Government historic sites identified by AMO are located within the CHAA.
- 3.9.1.5 One grade 2 and seven grade 3 historic buildings are identified within cultural heritage assessment area. Direct and indirect impact is not anticipated as they are outside the works area of the Project, while potential construction vibration impact is considered minimal due to the small scale of the proposed works of fresh water trunk mains and considerable distance from the alignment of proposed fresh water trunk mains and the built heritage items. No mitigation measure is required.

### ***Operational Phase***

- 3.9.1.6 No adverse archaeological / built heritage impact arising from operation of the Project is identified.

## **3.10 Hazard to Life**

- 3.10.1.1 The Potentially Hazardous Installation (PHI), NTM WTW, which currently stores and uses liquid chlorine on site is identified as a hazardous source in the vicinity of the Project. There would be no liquid chlorine storage at NTM WTW before the commencement of the construction works of this Project and explosives would not be used for the construction activities. The aboveground works (i.e. mainlaying of fresh water trunk mains) of this Project is about 300m away from the OSCG plant and DG facilities of NTM WTW, impacts to them is not anticipated. Therefore, no hazard-to-life impact would be induced.



## 4 Environmental Monitoring and Audit

---

- 4.1.1.1 An Environmental Monitoring and Audit (EM&A) programme has been formulated for Project which is a DP listed under Schedule 2 of the EIAO, with details presented in the separate EM&A Manual.
- 4.1.1.2 The EM&A programme will provide management actions to check the effectiveness of the recommended mitigation measures and compliance with relevant statutory criteria, thereby ensuring the environmental acceptability of the construction and operation of the Project.

## 5 Conclusion

---

- 5.1.1.1 With the increasing water demand due to the planned and potential developments in Yuen Long Area, it is necessary to expand and upgrade the existing NTM WTW and treated water transfer and distribution systems by end of Year 2030 to meet the development programme.
- 5.1.1.2 The Project aims to upgrade the associated raw water and treated water transfer and distribution system, by laying of fresh water trunk mains and modification of Chamber G, to support the future increase of treated water supply from the extended NTM WTW and NTM FWPSR under the Study.
- 5.1.1.3 An EIA Report has been prepared to fulfil the requirements as specified in the EIA Study Brief (No.: ESB-333/2020) and the EIAO-TM regarding the DP elements under the revised EIAO. All the latest design information has been incorporated into the EIA process. The aspects that have been considered in this EIA Report include:
- Project Description and Consideration of Alternatives;
  - Air Quality Impact;
  - Noise Impact;
  - Water Quality Impact;
  - Waste Management Implications;
  - Land Contamination;
  - Ecological Impact (Terrestrial and Aquatic);
  - Fisheries Impact;
  - Landscape and Visual Impact;
  - Impact on Cultural Heritage;
  - Hazard to Life; and
  - EM&A Requirements.
- 5.1.1.4 Overall, the EIA Report has predicted that the Project is expected to meet all relevant environmental standards with the implementation of the proposed mitigation measures during both the construction and operational phases. An environmental monitoring and audit programme has been recommended to ensure the effectiveness of recommended mitigation measures.