THE GOVERNMENT OF THE HONG KONG
SPECIAL ADMINISTRATIVE REGION
DRAINAGE SERVICES DEPARTMENT

Project Profile

for

Yuen Long South Effluent Polishing Plant

January 2019

CONTENTS

1. BASIC INFORMATION

1.1 Project Title

The title of this Project is:

Yuen Long South Effluent Polishing Plant (YLS EPP) (hereinafter referred to as the "Project").

1.2 Purpose and Nature of the Project

The Government plans to develop Yuen Long South Development Area (YLS DA) which is a mega-scale and complex development aiming to provide land to transform the degraded brownfield land to developable land contributing to meet the territory's medium to long-term need for housing development. The YLS DA is proposed to accommodate a population of approximately 88,000 persons and generate about 10,500 employment opportunities on full development.

The purpose of the Project is to provide sewage treatment to the sewage collected from the YLS DA and other developments in the North West New Territories (NWNT), and to subsequently provide reclaimed water for reuse after treatment.

1.3 History of Site

The YLS DA is located to the south of Yuen Long New Town, and in the proximity of Tin Shui Wai New Town and the planned new development area (NDA) in Hung Shui Kiu (HSK). It is connected with the urban areas by strategic road links, including Route 3 and Yuen Long Highway.

The YLS DA is generally rural in character with a mixture of land uses. The predominant uses are brownfield operations including open storage yards, warehouses, industrial workshops, etc. These brownfield operations are intermingled with rural settlements and residential settlements, agricultural land, livestock farms and vacant land. Proliferation of such brownfield sites has resulted in degradation of the rural environment. There is a need to better utilise the degraded brownfield land occupied by open storage yards, warehouses, industrial workshops, etc for beneficial uses. Hence an effluent polishing plant (EPP) is proposed to site at the YLS DA to optimise the development potential to meet the territory's needs, and to improve the local living environment with infrastructure.

1.4 Name of the Project Proponent

Consultants Management Division, Drainage Services Department (DSD) of the Government of the Hong Kong Special Administrative Region

1.5 Location and Scale of the Project

The YLS DA has reserved about 4 hectares of land for the proposed YLS EPP, the location of which is shown in Drawing No. No. **DCM/2018/025**. The proposed sewage pumping station, rising main for raw sewage, reclaimed water service reservoir and rising main for treated sewage effluent as shown on the drawing are not under the scope of the Project. The site formation works of the YLS EPP site is also not under the scope of the Project.

The proposed works of the Project comprise:

(i) construction of a sewage treatment plant with a maximum capacity to treat Average Dry Weather Flow (ADWF) up to 65,000 m^3/day;

(ii) construction of sludge treatment facilities for treating sludge generated from YLS EPP and additional sludge generated from the Hung Shui Kiu Effluent Polishing Plant (HSK EPP) and other nearby sewage treatment works;

(iii) construction of facilities for receiving and co-digesting pre-treated food or organic wastes;

(iv) construction of effluent discharge pipe for the purpose of emergency discharge; and

(v) associated ancillary works.

1.6 Type of Designated Project covered by the Project Profile

Based on the definition as listed in Part I, Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO), the following items are classified as designated project:

- Category F.1 - sewage treatment works with an installed capacity of more than 15,000 m^3 per day;
- Category F.4 - an activity for reuse of treated sewage effluent from a treatment plant; and
- Category G.4 - a waste disposal facility (excluding any refuse collection plant), or waste disposal activity, for (a) refuse; or (b) chemical, industrial or special wastes.

1.7 Name and Telephone Number of Contact Persons

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2. OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

2.1 Project Planning and Implementation

Consultants will be engaged by the project proponent to undertake investigation, planning, design and construction supervision of the proposed works which would include, among other tasks, the investigation of sewage treatment technologies and the environmental impact assessment. DSD will operate and maintain the completed works.

2.2 Project Programme

The construction works are tentatively scheduled to commence in Q1 2028 for completion in Q4 2032.

3. POTENTIAL ENVIRONMENTAL IMPACTS

3.1 Outline of Processes Involved

The Project involves construction of a new YLS EPP to cope with the sewage to be generated from the YLS DA and other developments in NWNT. There are various treatment technologies available for the removal of biochemical oxygen demand and suspended solids and for carrying out disinfection. A comprehensive review on various treatment technologies, including membrane bioreactors which require less land intake, would be carried out in parallel with the environmental impact assessment to determine the most appropriate sewage treatment process.

The proposed treatment process is to be studied and designed to provide an enhanced effluent quality at tertiary level for a design ADWF of 65,000 m^3/d. There are various treatment technologies available for the removal of suspended solids, biochemical oxygen demand, nitrogen, phosphorus and *E.coli* in order to meet the effluent standard.

A comprehensive review on different sludge treatment options would also be carried out, including on-site sludge treatment, and transporting the dewatered sludge to HSK EPP for undergoing centralized sludge treatment at HSK EPP for subsequent disposal at nearby landfill site.

Organic wastes co-digestion facilities may be installed to YLS EPP. The proposed organic wastes co-digestion facilities will:

(i) Receive pre-treated food or organic wastes through pipelines or tankers for co-digestion with sewage sludge; and

(ii) Handle the wastewater and biogas from (i) above.

Major construction activities will include earthworks (excavation and backfilling works), foundation works, and construction of buildings and other structures, pipe laying, disposal of excavated materials and installation of electrical and mechanical plant and equipment.

3.2 Construction Phase

3.2.1 Air Quality

Dust emissions would be resulted from construction activities such as earthworks, foundation works, and construction of building and other structures.

3.2.2 Noise

Noise would be generated from construction activities through the use of construction plant and equipment.

3.2.3 Water Quality

Runoff from the site during construction may contain sediments and silts arising from earthworks, and oil and lubricants from construction vehicles and plant. Muddy water may also be generated from construction activities such as dust suppression sprays, dewatering during excavation and washing of construction equipment.

3.2.4 Waste Generation

Wastes generated during the construction phase may include:

- Waste spoil from site clearance, site preparation and earthworks;
- Waste material such as wood, metal scraps and concrete generated from the construction process;
- General waste from workers; and
- Chemical waste from maintenance of construction plant and equipment such as lubrication oil.

3.2.5 Ecology

There may be potential indirect impact to the surrounding natural habitats and the associated wild life due to construction activities.

3.2.6 Landscape and Visual

Visual impact resulted from construction activities, such as the presence of construction equipment and stockpiled materials on works site, will be temporary.

3.2.7 Traffic

Traffic generated from vehicles transporting earth materials, plant and other construction materials during the construction phase will be temporary and it is envisaged that the traffic impact will be insignificant.

3.2.8 Cultural Heritage

No impact on historic monuments or buildings is expected during the construction phase.

3.3 Operation Phase

3.3.1 Air Quality

The sewage treatment process, including among others, the screening of sewage and the handling of sludge, is a potential odour source.

3.3.2 Noise

Blowers, pumps/motors, ventilation equipment and other machinery are potential noise sources during operation phase of the Project.

3.3.3 Water Quality

Upon commissioning of the Project, sewage from the YLS DA and areas in NWWT will be properly treated before disposal and this will enhance the water quality of the surrounding environment. It is anticipated that the Project would not cause any adverse water quality impact during normal operation. Under emergency situation, such as prolonged power failure, sewage bypass to nearby water body would occur. Nevertheless, with incorporation of adequate precautionary measures/mitigation measures into the design of the YLS EPP, it is expected that the chance of emergency sewage bypass would be extremely remote.

3.3.4 Waste Generation

Waste generated in the operation phase will principally be gross solids and sludge. Sludge will be thickened in thickeners and then digested. After digestion, the sludge volume will be reduced by sludge dewatering and subsequently conveyed for disposal at landfill or incineration elsewhere. In case it is considered that co-digestion is feasible and practical after study, appropriate treatment facilities for the co-digested waste will be arranged.

3.3.5 Ecology

No adverse impact on ecology is expected during normal operation of the YLS EPP. In the very unlikely emergency event that sewage has to bypass to the nearby water body, there would be potential ecological impact. Precautionary measures would be incorporated into the design of the YLS EPP to abate water quality and ecological impacts under emergency situation.

3.3.6 Landscape and Visual

The above-ground treatment units and structures may induce landscape and visual impacts to the surroundings.

3.3.7 Traffic

The impact on traffic during the operation phase of the Project is considered to be insignificant.

3.3.8 Cultural Heritage

No impacts on historic monuments or building is expected during the operation phase.

3.3.9 Hazard to Life

It is estimated that an increased amount of biogas will be generated during the proposed digestion process. The biogas will be used for generation of electricity by Combined Heat and Power (CHP) system and will be stored in gas holding tanks on site, if needed, during the operational phase of the Project. Since the biogas storage capacity would be far below the lower threshold quantity of 15 tonnes for existing flammable gas and town gas installations in Hong Kong, the Project would not be classified as Potentially Hazardous Installations. Potential hazards from the storage and utilization of the biogas will be addressed in the EIA.

4. MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

4.1 Existing and Planned Sensitive Receivers and Sensitive Parts of the Environment

The Project site is located at southern end of Kung Um Road to the north of Tai Lam Country Park. The Project site is located in a rural area currently occupied mainly by brownfield operations. The nearest identified noise and air sensitive receivers are village-type residential premises of Yeung Ka Tsuen located within 500m of the site. The Project site falls within the YLS DA. According to the YLS Recommended Outline Development Plan, the Project site is designated as Other Specified Uses (Sewage Treatment Works). Within 500m of the Project site, there are lands planned for different uses including Residential, Education, Government, Other Specified Uses (Mixed Use), and Government (Reserve) Intended for Government Depots (with Green Building Design), which may be considered as sensitive receivers in the future.

The Project site is within the North Western Water Control Zone and/or Deep Bay Water Control Zone according to Water Pollution Control Ordinance. As the collected sewage will be treatment treated to the tertiary level, no significant adverse environmental impact is anticipated.

4.2 Major Elements of the Surrounding Environment Affecting the Project Site

The Project site is located at the southern part of the Yuen Long town centre and sited close to Tai Lam Country Park. The nearest identified noise and air sensitive receivers are village-type residential premises along Kung Um Road and Pak Sha Shan Road (including Yeung Ka Tsuen) but these are mostly screened by trees and shrubs between the Project site and the environmental sensitive receivers.

5. ENVIRONMENTAL PROTECTION MEASURES TO BE INCORPORATED INTO THE DESIGN AND ANY FURTHER ENVIRONMETAL IMPLICATIONS

This section describes those measures likely to be incorporated in the design to minimize environmental impacts arising from both construction and operation phases of the Project.

5.1 Construction Phase

5.1.1 Air Quality

The extent of dust generation from the construction works is expected to be insignificant with the implementation of dust suppression measures as stipulated in the Air Pollution Control (Construction Dust) Regulation of Air Pollution Control Ordinance (APCO). These measures would be incorporated into the specifications for the works contract.

5.1.2 Noise

The contractor for the works will have to comply with the provisions of Noise Control Ordinance. The contractor will be required to follow good site practices, such as use of silenced plant and noise barriers near sensitive receivers, careful scheduling of activities to minimize noise nuisance, use of temporary acoustic barriers and acoustic machinery enclosures.

5.1.3 Water Quality

Silt removal facilities will be provided to remove silt before the discharge of site runoff into the nearby stormwater drains. The design of temporary on-site drainage and silt removal facilities will comply with the guidelines stipulated in EPD's Practice Note for Professional Persons, Construction Site Drainage (ProPECC PN 1/94). The above mitigation measures will be incorporated into the specifications of the works contract and be provided prior to the commencement of earthworks. With the adoption of such mitigation measures, no significant impact on water quality is expected during construction phase.

5.1.4 Waste Management

Consideration will be taken during the design phase to minimize the generation of construction and demolition (C&D) materials and to maximize its re-use on site. The contractor will be required to sort all C&D materials and waste into different categories for re-use on site and disposal at designated public fill reception facilities, landfills, or recycling facilities as appropriate.

5.1.5 Ecology

Measures will be implemented to control the quality of site runoff so as to minimize impact on the water quality of the surrounding area and thereby minimizing the potential for any ecological impact. Pollution control measures will also be undertaken to alleviate the ecological impact arising from dust and noise generated by the construction activities.

5.1.6 Landscape and Visual

Site hoarding, compatible with the surrounding environment, will be erected as a mitigation measure. Proper control over site cleanliness and the stockpiling of materials will be exercised to minimize the impact on landscape and visual qualities.

5.1.7 Traffic

Insignificant traffic impact is expected during the construction phase, and therefore no mitigation measure is necessary.

5.1.8 Cultural Heritage

No cultural heritage impact is expected during the construction phase, and therefore no mitigation measure is necessary.

5.2 Operation Phase

5.2.1 Air Quality

Odour impact assessment will be conducted to identify the sources and impact to nearby sensitive receivers, and to propose mitigation measures, such as covering up the major odour sources, providing adequate ventilation and odour removal system, for implementation.

5.2.2 Noise

All pumps, motors, blowers and other mechanical equipment will be enclosed in structures or located underground as far as practicable. All openings for ventilation will be located away from sensitive receivers as far as practicable and if required, fitted with acoustic louvers. It is envisaged that any potential noise generation can be readily mitigated.

5.2.3 Water Quality

To minimize potential impact on water quality, dual power supply or automatic emergency generator, standby equipment, telemetry warning system and emergency buffer storage of sewage will be provided as far as practicable to prevent emergency sewage bypass.

5.2.4 Waste Management

Waste generated in the operation phase will comprise screenings, grits and sludge treatment. The sludge will be thickened, digested, dewatered and subsequently disposed at landfill (or other approved facilities). In case co-digestion is found to be practical, the sludge will be properly treated and no risk will be caused to the public.

5.2.5 Ecology

In order to preserve the ecological function of the area, the following mitigation measures will be implemented subject to the recommendations of further assessment:

- Avoiding or minimizing activities with strong light and high levels of unpredictable noise near the sensitive area; and
- Minimizing the height of the facilities to reduce the impacts to birds.

During operation, there may be a possibility of untreated effluent discharge under emergency conditions. The mitigation measures described in Section 5.2.3 are relevant.

5.2.6 Landscape and Visual

Architectural and landscaping features will be provided at YLS EPP with a view to enhancing the general outlook of the YLS EPP and achieving a harmonious design for the facilities to blend with the existing environment.

5.2.7 Traffic

Minimal traffic impact is expected during the operation phase and therefore no mitigation measure is necessary.

5.2.8 Hazard to Life

It is estimated that an increased amount of biogas will be generated during the proposed digestion process. The biogas will be used for generation of electricity by Combined Heat and Power (CHP) system and will be stored in gas holding tanks on site, if needed, during the operational phase of the Project. Since the biogas storage capacity would be far below the lower threshold quantity of 15 tonnes for existing flammable gas and town gas installations in Hong Kong, the Project would not be classified as Potentially Hazardous Installations. Potential hazards from the storage and utilization of the biogas will be addressed in the EIA.

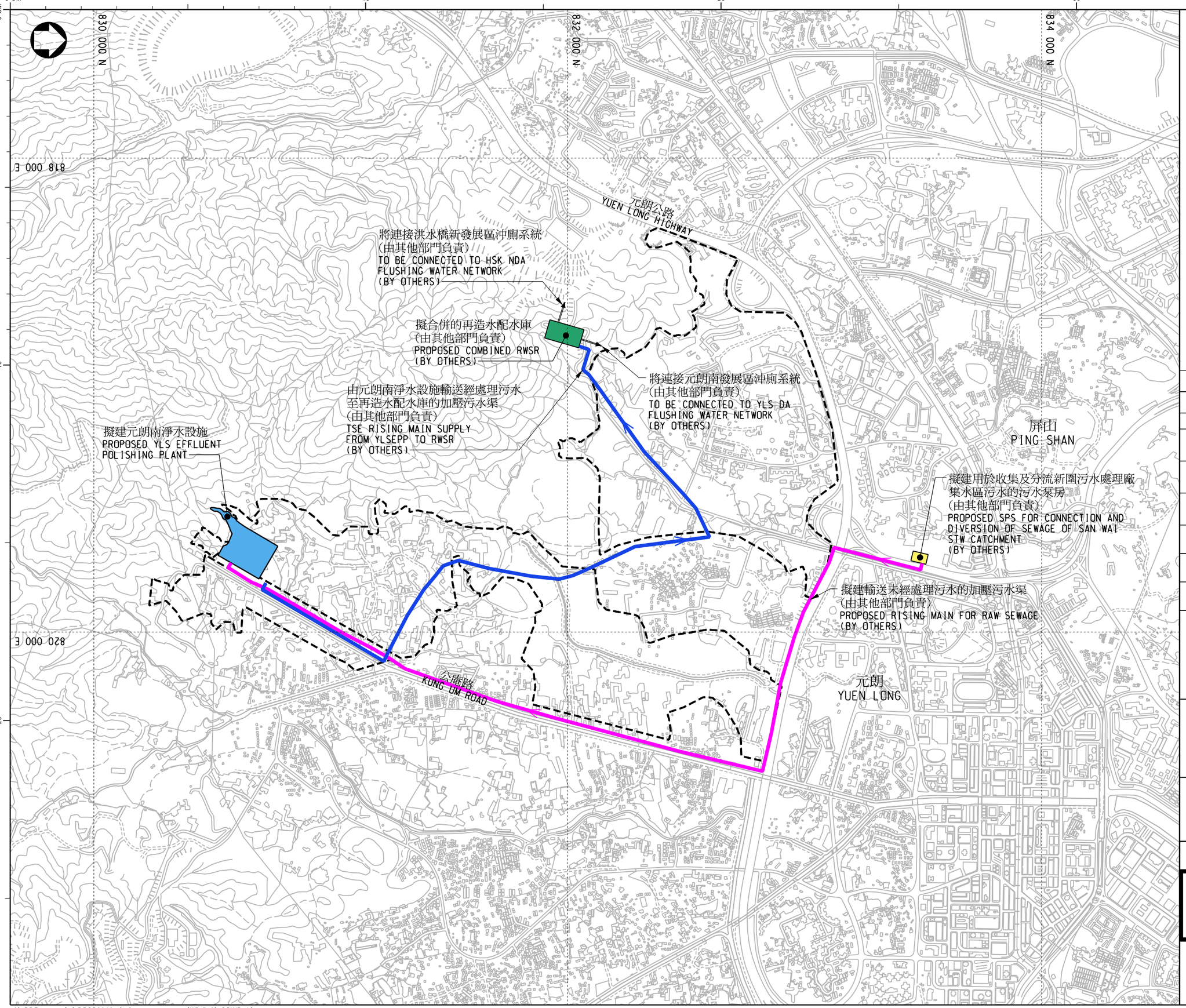
5.2.9 Cultural Heritage

No cultural heritage impact is expected during the operation phase and therefore no mitigation measure is necessary.

6. USE OF PREVIOUSLY APPORVED EIA REPORTS

6.1 Previously Approved Reports

No previously approved EIA reports have been referred to in the preparation of this Project Profile.



圖例 LEGEND :

- 元朗南發展界線 YUEN LONG SOUTH (YLS) DEVELOPMENT BOUNDARY
- 由元朗南淨水設施輸送經處理污水至再造水配水庫的加壓污水渠(由其他部門負責) TSE RISING MAIN SUPPLY FROM YLSEPP TO RECLAIMED WATER SERVICE RESERVOIR (RWSR) (BY OTHERS)
- 輸送未經處理污水的加壓污水渠(由其他部門負責) RISING MAIN FOR RAW SEWAGE (BY OTHERS)
- 擬建元朗南淨水設施 PROPOSED YUEN LONG SOUTH (YLS) EFFLUENT POLISHING PLANT
- 擬建經處理污水配水庫(由其他部門負責) PROPOSED TREATED SEWAGE EFFLUENT (TSE) SERVICE RESERVOIR (BY OTHERS)
- 擬建污水泵房(由其他部門負責) PROPOSED SEWAGE PUMPING STATION (SPS) (BY OTHERS)

版 no.	日 期 date	修 改 項 目 description	簡 簽 initial

修 訂 REVISION

	姓 名 name	日期 date
繪 畫 drawn	K. S. LEUNG	
核 對 checked	Ir W. K. AU YEUNG	
批 核 approved	Ir K. F. SEIT	

合 約 編 號 contract no.

檔 案 編 號 file no.

工 程 編 號 project no.

合 約 名 稱 contract

PROVISIONAL
SUBJECT TO AMENDMENT
4/10/2018

圖 則 名 稱 drawing title

元朗南淨水設施—勘查研究
淨水設施及相關設施的暫定位置
YUEN LONG SOUTH EFFLUENT POLISHING PLANT - INVESTIGATION
TENTATIVE LOCATIONS OF EFFLUENT POLISHING PLANT AND RELATED FACILITIES

圖 則 編 號 drawing no.: DCM/2018/025

比例 scale: 1 : 15 000

部 門 office

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