The Government of the Hong Kong Special Administrative Region

Drainage Services Department

Agreement No. CE 9/2006 (DS)
Tolo Harbour Sewerage of Unsewered Areas, Stage II - Investigation, Design and Construction

Project Profile
for
Sai O Trunk Sewer Sewage Pumping Station

October 2014

AECOM Asia Co. Ltd.

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1 BASIC INFORMATION

1.1 Project Title

1.1.1 Sai O Trunk Sewer Sewage Pumping Station (hereinafter referred to as the "Project")

1.2 Purpose and Nature of the Project

1.2.1 The Project is part of Public Works Programme Item 4125DS - Tolo Harbour Sewerage of Unsewered Areas, Stage II, which originates from the findings of the Study "Review of North District and Tolo Harbour Sewerage Master Plan" completed by Environmental Protection Department (EPD) in 2002. The purpose of the Project is to construct and operate a sewage pumping station in Sai O to cope with the sewerage needs of both existing and future developments.

1.3 Name of Project Proponent

1.3.1 Drainage Services Department (DSD) is the works department and Environmental Protection Department (EPD) is the client department.

1.4 Location and Scale of Project and History of Site

1.4.1 The Project is located at the north of Sai O and within "Government, Institution or Community" (G/IC) zone on the Ma On Shan Outline Zoning Plan (OZP) No. S/MOS/19. The project site was agricultural land in the past. It is currently unoccupied and covered with grasses with a few numbers of shrubs. Location of the Project is shown in **Figure 1**.

1.4.2 The design flow of the proposed pumping station is about 12,500 m3/day (average dry weather flow).

1.5 Number and Type of Designated Project

1.5.1 The Project involves construction and operation of a sewage pumping station. Since the proposed pumping station will have installed capacity of more than 2000 m3/day and will be located less than 150m from an existing/planned residential area/education institution, it is classified as Designated Project under the following category under Part I of Schedule 2 of Environmental Impact Assessment Ordinance (EIAO):

F.3. A sewage pumping station –
- (a) with an installed capacity more than 300,000 m^3 per day; or
- (b) with an installed capacity of more than 2,000 m^3 per day and a boundary of which is less than 150 m from an existing or planned –
  - (i) residential area;
  - (ii) place of worship;
  - (iii) education 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 cultural zone; or
  - (x) seawater intake point.

1.6 Name and Telephone Number of Contact Person(s)

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2 OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

2.1 Project Planning and Implementation

2.1.1 The Consultants, which was engaged by the Consultants Management Division of DSD, and the Electrical & Mechanical Projects Division of DSD will carry out the design and construction supervision of the Project. The Sewage Treatment Division 1 and Hong Kong & Islands Division (Buildings/ Civil Maintenance Team) of DSD will operate and maintain the completed works.

2.2 Project Time-table

2.2.1 The construction of the Project is scheduled to commence in year 2016 for completion in year 2020.

2.3 Interactions with Other Projects

2.3.1 There are no major projects in the vicinity of the Project with overlapping implementation programme that will cause significant environmental impacts due to cumulative effects.

3 POSSIBLE IMPACTS ON THE ENVIRONMENT

3.1 Construction Phase

3.1.1 Air Quality

3.1.1.1. During construction, construction dust would be generated from construction activities such as earthworks, excavation works and construction of concrete structures. However, in view of the scale and nature of the Project, the potential air quality impact would be short-term and limited and could be well controlled through the dust suppression measures as stipulated in the Air Pollution Control (Construction Dust) Regulation of Air Pollution Control Ordinance (APCO) and good site practices.

3.1.2 Water Quality

3.1.2.1. Potential impacts would arise from surface runoff and erosion of exposed soil, earthworks and stockpiles during storm events. Muddy water may also be generated from the construction activities such as dust suppression sprays, dewatering during excavation and washing of construction equipment. Nevertheless, with proper mitigation measures and good site practices, the potential impact on water quality would not be insurmountable.

3.1.3 Noise

3.1.3.1. During construction phase, noise would be generated from construction activities with the use of powered mechanical equipments (PMEs) such as concreting and excavation works, and the temporary increase in construction traffic on roads in the proximity. Appropriate mitigation measures would be required to alleviate the potential noise impact to acceptable level.

3.1.4 Waste Management

3.1.4.1. Construction and demolition (C&D) material and waste such as excavated spoil (soil and rock), unusable concrete and grout, wood, metal scraps, equipment parts, packaging materials, general refuse from workers and chemical waste from maintenance of the plant and equipment would be generated.

3.1.5 Landscape and Visual

3.1.5.1. A few trees in the vicinity of the site might be affected by the proposed works. In addition, potential landscape and visual impacts during the construction phase may arise from the construction plant and materials, spoil heaps, site traffic and on-site lighting.

3.1.6 Ecology

3.1.6.1. The Project site is located within a disturbed vegetated area, construction activities may result in direct habitat loss.

3.1.6.2. There may be potential indirect impact to the surrounding natural habitats (e.g. a soft shore about 30m away from the site) and the associated wildlife due to construction activities such as surface runoff.

3.1.7 Cultural Heritage

3.1.7.1. There are no historic monuments or buildings or structures located within or close to the Project. The Project is located within Sai O Archaeological Site; however, it is

considered as no archaeological potential because it is located at the low-lying areas, and its surrounding areas have already been heavily built-up or modified. Moreover, there are no artefacts or archaeological remains were found in the site visits or surveys conducted in 1980s. Therefore, potential impact on cultural heritage resources is not expected during the construction of the Project.

3.1.8 Land Contamination

3.1.8.1. The Project is located at low-laying area which was used as agricultural land in the past. It is currently unoccupied and covered with grasses with a few numbers of shrubs. In view of this, land contamination issue is not expected.

3.1.9 Hazard to Life

3.1.9.1. The proposed pumping station is located at about 700m away from the Ma On Sha Water Treatment Works (WTW) and hence falls within the 1km Potentially Hazardous Installation (PHI) Consultation Zone of Ma On Sha WTW. In view of the nature and small scale of the works, the number of workers (no more than 15 workers) to be involved would be limited. Population induced by the construction activities would be minor and transient. Potential hazard associated with the Ma On Sha WTW appeared to be insignificant.

3.1.9.2. Since the site is located in the vicinity of the existing Towngas Offtake and Pigging Station, potential hazard associated with the Offtake and Pigging Station during construction phase will need to be addressed.

3.2 Operational Phase

3.2.1 Air Quality

3.2.1.1. The inlet chamber, screen chamber and wet wells of the proposed pumping station would be potential sources of odour nuisance. However, with the implementation of appropriate mitigation measures, the potential odour impact from the proposed pumping station would be controlled.

3.2.2 Water Quality

3.2.2.1. Implementation of the Project would enhance the water quality of Tolo Harbour. 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 overflow via the nearby stormwater drainage system into the Tolo Harbour would occur. Nevertheless, with incorporation of adequate precautionary measures/mitigation measures into the design of the pumping station, it is expected that the chance of emergency sewage bypass would be extremely remote.

3.2.3 Noise

3.2.3.1. Electrical and mechanical equipments, such as mechanical screens and sewage pumps are the potential noise sources during operation of the proposed pumping station. However, with the incorporation of appropriate noise mitigation measures into the design such as silencers, acoustic louvre and etc, adverse noise impact from the operation of the proposed pumping station is not anticipated.

3.2.4 Waste Management

3.2.4.1. During operational phase, the main waste types will include screenings and chemical waste generated from the operation of the proposed pumping station. Sewage would

pass through the mechanical screens, which prevent large solid materials from entering the pumps and causing damage to the pumping station. Large solid materials in the sewage would be retained by the mechanical screens of the pumping station. It is expected that quantity of screenings to be generated would be limited. Small quantities of chemical waste (mainly lubricant oil and paints) would be expected to be generated from the maintenance of the pumping station.

3.2.5 Landscape and Visual

3.2.5.1. A few existing trees might be affected by the Project. The superstructure of the pumping station may generate landscape and visual impacts. By adopting proper mitigation measures such as dedicated landscape design to match with the exiting environment, compensatory planting, etc., the residual landscape and visual impact would be minimal as anticipated.

3.2.6 Ecology

3.2.6.1. No adverse impact on ecology is expected during normal operation of the pumping station. Given emergency situation would occur that sewage overflow via the nearby stormwater drainage system into the Tolo Harbour and Channel Water Control Zone, there would be potential indirect ecological impact. Precautionary measure would be incorporated into the design of the pumping station to abate water quality impact under emergency situation and thus alleviate the potential ecological impacts.

3.2.7 Cultural Heritage

3.2.7.1. No adverse impact on cultural heritage is expected during the operational phase.

3.2.8 Hazard to Life

3.2.8.1. Since the proposed pumping station would be unmanned, potential hazard associated with the Ma On Shan WTW and the Offtake and Pigging Station would not be expected during operation stage.

4 MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

4.1.1 The Project site is located at the north of Sai O and is bounded by Nin Ming Road to its south. The site is currently zoned as G/IC. Adjacent lands of the site are currently zoned as “Other Special Uses” (OU) to the northwest and G/IC to the south.

4.1.2 Existing sensitive receivers in the vicinity of the Project site comprise the existing Hong Kong Baptist which includes the residential Staff and Students’ Quarters (HKBTS) and a planned international school within the adjacent land zoned as OU.

4.1.3 Three sites of conservation importance, namely Nai Chung Site of Special Scientific Interest (SSSI), Nai Chung Coastal Protection Area (CPA); and Ma On Shan Country Park (CP) boundary are located about 250m, 200m and 450m respectively from the Project site.

5 ENVIRONMENTAL PROTECTION MEASURES TO BE INCORPORATED

5.1 Air Quality

Construction Phase

5.1.1 In order to prevent adverse impact on air quality, the control measures stipulated in the Air Pollution control (Construction Dust) Regulation would be implemented to control the dust emissions from the site. The following mitigation measures would be considered to minimize the potential air quality impact on nearby air sensitive receivers.

- skip hoist for material transport should be totally enclosed by impervious sheeting.
- vehicle washing facilities should be provided at every vehicle exit point.
- the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete or bituminous materials or hardcore.
- where a site boundary adjoins a road, streets or other areas accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit.
- every main haul road should be paved with concrete and kept clear of dusty materials or sprayed with water so as to maintain the entire road surface wet.
- every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides.
- all dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet.
- every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites.
- the load of dusty materials carried by vehicles leaving a construction site should be covered entirely by clean impervious sheeting to ensure dusty materials do not leak from the vehicle.

Operational Phase

5.1.2 It is recommended that air ventilated from the enclosed structure of the proposed pumping would be treated by deodorizers with at least 90% odour removal efficiency before discharging to the atmosphere.

5.1.3 In addition to the provision of deodorizers to the proposed pumping station, the following measures are recommended to minimize the odour impacts from the pumping station:

- The inlet chamber, screen chamber and wet well should be enclosed.
- Discharge point of the odour removal system should be directed away from the adjacent sensitive uses.
- Screenings should be stored in a covered container or sealed plastic bag before transporting outside the building.
- The transportation of screened material during maintenance should be transported in an enclosed type carrier or vehicle and disposed off on the same working day.

- Checking and maintenance of the odour removal system should be implemented at least once every half year to maintain the removal efficiency.

5.2 Water Quality

Construction Phase

5.2.1 The site practices outlined in ProPECC PN 1/94 “Construction Site Drainage” would be implemented in order to minimize surface runoff and the chance of erosion. The mitigation measures may include, but not limited to, the following practices:

- Before commencing any site formation works, all sewer and drainage connections should be sealed to prevent debris, soil, sand etc. from entering public sewers/drains.
- Provision of perimeter channels to intercept storm-runoff from outside the site. These should be constructed in advance of site formation works and earthworks.
- Temporary ditches such as channels, earth bunds or sand bag barriers should be included to facilitate runoff discharge into the stormwater drain, via a sand/silt basin/trap.
- Sand/silt removal facilities such as sand traps, silt traps and sediment basins should be provided to remove the sand/silt particles from run-off to meet the requirements of the Technical Memorandum standard under the Water Pollution Control Ordinance (WPCO). These facilities should be properly and regularly maintained.
- Works programmes should be designed to minimise works areas at any one time, thus minimising exposed soil areas and reducing the potential for increased siltation and runoff.
- Careful programming of the works to minimise soil excavation works, during rainy season.
- Open stockpiles of construction materials on site should be covered with tarpaulin or similar fabric during rainstorms.

Operational Phase

5.2.2 The emergency discharges from the proposed pumping station would be the consequence of pump failure and interruption of the electrical power supply. Various precautionary measures as listed could be incorporated in the design of the pumping station to avoid emergency bypass of sewage to the maximum practicable extent.

- A standby pump will be provided to cater for breakdown and maintenance of the duty pump in order to avoid sewage bypass.
- Backup power supply in the form of dual / ring circuit power supply or generator will be provided to secure electrical power supply.
- An alarm would be installed to signal emergency high water level in the wet well;

- An emergency storage capacity of two hour dry weather flow would be provided for the proposed pumping station in form of spare volume of wet well and emergency storage tank.
- Regular maintenance and checking of plant equipment to prevent equipment failure.
- Twin rising mains system (1 duty + 1 standby) would be provided to facilitate the maintenance works and to avoid emergency bypass of sewage.

5.3 Noise

Construction Phase

5.3.1 Control and mitigation measures would be implemented wherever appropriate to alleviate the construction noise impacts from the Project to acceptable level. The control and mitigation measures may include:

- Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction phase;
- Silencers or mufflers on construction equipment, if applicable, should be utilized and should be properly maintained during the construction program;
- Powered mechanical equipment that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;
- Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and
- Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.

Operational Phase

5.3.2 In order to minimize the potential noise impacts from the operation of the pumping station, all the pumps and mechanical screens would be enclosed inside the pumping station building. Silencer would be installed at the outlets of air extraction fans if necessary.

5.4 Waste Management

Construction Phase

5.4.1 Good waste management plan and practises would be implemented to ensure proper handling and disposal of waste and minimize the quantity of waste and C&D materials generated. All C&D materials generated would be required to be sorted by the contractor into different categories for disposal at public filling, landfills or recycling as appropriate.

5.4.2 All chemical wastes from equipment maintenance will be handled, stored and disposed of properly and in accordance with the requirements for Waste Disposal (Chemical Waste) Regulation.

5.4.3 General refuse should be stored in enclosed bins or compaction units separate from C&D materials and chemical wastes. A reputable waste collector should be

employed by the contractor to remove general refuse from the site, separately from C&D materials and chemical wastes, on a daily or every second day basis to minimize odour, pest and litter impacts.

Operational Phase

5.4.4 The screenings collected by the screens of the proposed pumping station would be stored in enclosed containers and transported to landfill for disposal regularly. The waste packaging would be conducted inside the pumping station building. All chemical wastes from equipment maintenance will be handled, stored and disposed of properly and in accordance with the requirements for Waste Disposal (Chemical Waste) Regulation. No adverse waste impact is anticipated.

5.5 Landscape and Visual

5.5.1 The trees in the vicinity of the Project site are of common species and no endangered species have been identified. Tree protection measures and transplanting, if necessary, would be adopted as far as practicable to prevent damage to existing trees during the construction phase. Proposals for tree felling, if necessary, will be submitted to District Lands Officer/Sha Tin and other relevant authorities for approval. The potential impacts from the construction plant, site traffic, etc would be minimized by erection of temporary hoarding. Spoil heaps and C&D materials would be removed off site promptly.

5.5.2 Landscaping work and screening would be provided to enhance the appearance of the pumping station. Architectural aspects including colour scheme, types of external finishing and layout of the infrastructures would be designed with consideration of visual harmony between the pumping station and the surrounding environment. The structure would also be restricted to single-storey high.

5.6 Ecology

5.6.1 To minimise the Project's impact to natural habitats and sites of conservation importance and its consequential ecological impacts on the flora and fauna species associated with these habitats, appropriate mitigation measures (e.g. on water quality) would be implemented to mitigate the potential ecological impacts. For instance, it is proposed to install sand/silt removal facilities during construction stage and to set up an emergency storage capacity during operation stage.

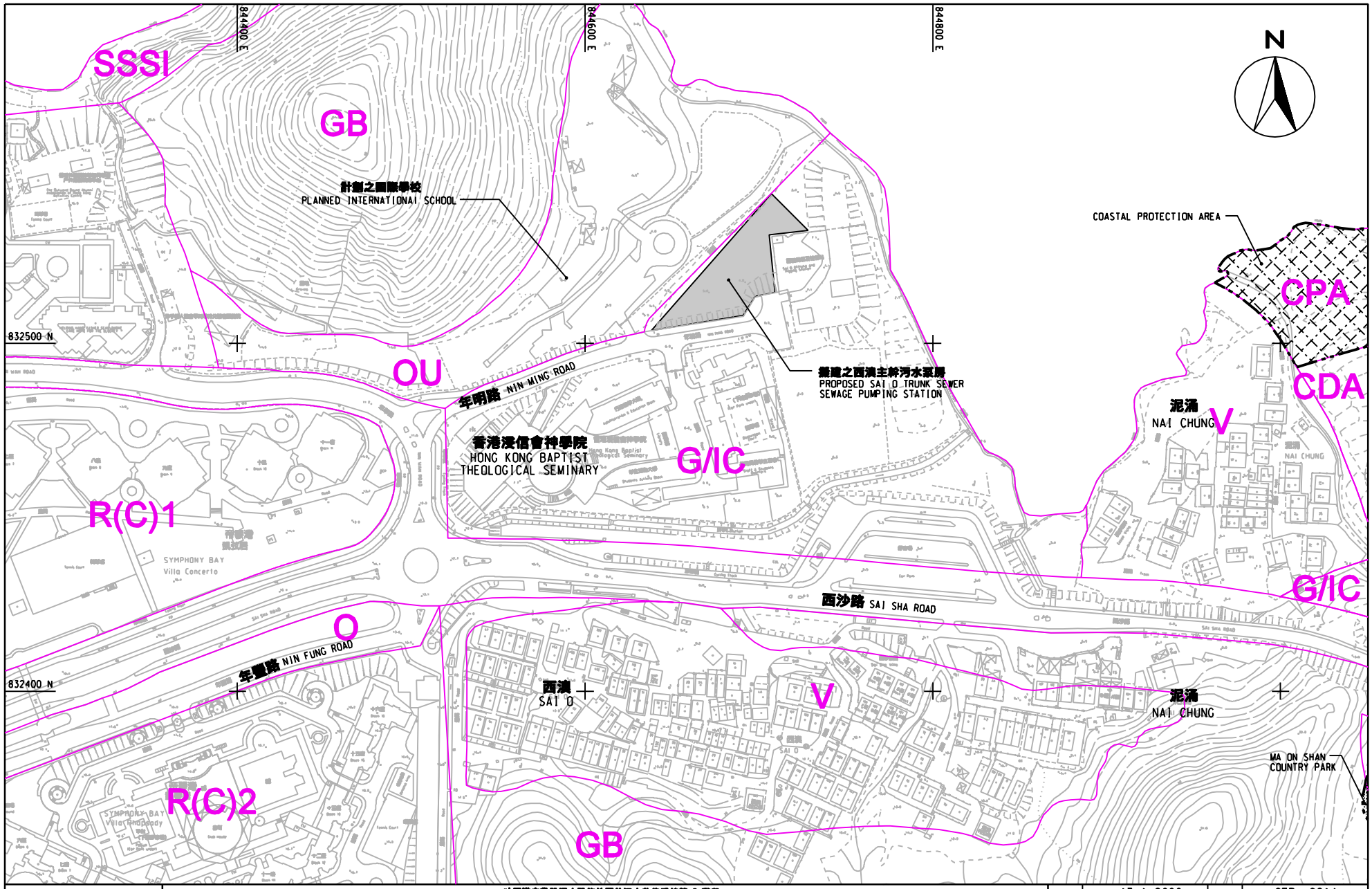
5.7 Hazard to Life

5.7.1 Suitable mitigation measure for the potential hazard during the construction should be implemented. Mitigation measures such as provision of emergency response arrangement and training, Code of Practices of Avoiding Danger from gas pipes and with close coordination with Hong Kong and China Gas Company Limited (HKCG) should be considered in the EIA study.

6 USE OF PREVIOUSLY APPROVED EIA REPORTS

6.1.1 There is no EIA report previously approved under the EIAO for this Project.

FIGURE



吐露港未鋪設污水收集地區的污水收集系統第 2 階段
AGREEMENT NO. CE 9/2000 (DS)
TOLO HARBOUR SEWERAGE OF UNSEWERED AREAS, STAGE II - INVESTIGATION, DESIGN AND CONSTRUCTION

工程項目位置圖

LOCATIONS OF PROJECT SITE

SCALE	A3 1:2000	DATE	SEP. 2014
CHECK	-	DRAWN	ZDY
JOB No.	60022486	DRAWING No.	Figure1(圖1)

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