渠務署
DRAINAGE SERVICES DEPARTMENT

Sewage Interception Scheme in Kowloon City Sewage Pumping Stations

PROJECT PROFILE

July 2008

ATKINS

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1. BASIC INFORMATION

1.1 Project Title

1.1.1 Sewage Interception Scheme in Kowloon City – Sewage Pumping Stations (hereafter referred to as the "Project").

1.2 Purpose and Nature of Project

1.2.1 The Project in this Project Profile covers the construction and operation of two sewage pumping stations. The Project is part of the Public Works Programme Item No. 4357DS - Sewage Interception Scheme in Kowloon City which is an outcome of the "Review of Central and East Kowloon Sewerage Master Plans" completed by Environmental Protection Department (EPD) in August 2003.

1.2.2 The sewage pumping stations will only serve the populations in the hinterland built-up areas in Kowloon City and they will convey the collected sewage to the To Kwa Wan Preliminary Treatment Works. In addition, the sewage pumping stations will be constructed within the site of the former Kai Tak Airport. Thus, no reclamation will be required for the construction of the sewage pumping stations.

1.3 Name of Project Proponent

1.3.1 Drainage Services Department.

1.4 Location and Scale of Project

1.4.1 The two sewage pumping stations, namely SPS No. 1 and SPS No. 2 are located south of San Po Kong Interchange and adjacent to Olympic Avenue, respectively. The locations are shown on **Figure 1.1**. The average dry weather flow (ADWF), the peak capacity and the site size of the two SPSs are summarised in **Table 1.1**.

Table 1.1 Details of the Sewage Pumping Stations

Pumping Station	Average Dry Weather Flow (ADWF)		Peak Capacity	Site Area m^2
	m^3/day	m^3/s	m^3/day	
SPS No.1	60,480	0.7	140,000	3,247
SPS No.2	64,800	0.75	152,000	2,427

1.5 Number and Type of Designated Project Covered by the Project Profile

1.5.1 The two sewage pumping stations are classified as designated projects (DPs) in accordance with Schedule 2, Part 1, F3(b) of the EIAO as they have an installed capacity (ADWF) of more than 2000 m^3 per day and a boundary of which is less than 150 m from an existing or planned residential area.

1.6 Name and Telephone Number of Contact Person(s)

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1.7 Outline of Planning and Implementation Programme

1.7.1 Drainage Services Department (DSD) is responsible for the design, construction and operation of the sewage pumping stations. DSD has engaged a Design and Construction (D&C) Consultant to carry out the design and supervision of the construction of the two sewage pumping stations. Relevant divisions of DSD will operate and maintain the sewage pumping stations.

1.7.2 The D&C Consultancy for the two SPSs commenced in June 2008, and the construction is scheduled to commence in May 2009 for completion in February 2012.

1.7.3 Based on this programme, potential interaction with other planned works during the construction includes the construction of the future Kai Tak Government Office; construction of the rising mains under the Sewage Interception Scheme in Kowloon City, Upgrading of Central and East Kowloon Sewerage; Reconstruction and Improvement of Kai Tak Nullah; and cable diversion works within the North Apron Area of Kai Tak Airport. The cumulative construction phase environmental impacts will be addressed in Sections 2.1.14 and 5.2.

2. USE OF PREVIOUSLY APPROVED EIA REPORTS

2.1 Reference to the SEKDCFS-EIA

2.1.1 The previous EIA for the "Comprehensive Feasibility Study for the Revised Scheme of South East Kowloon Development" (titled "SEKDCFS-EIA") approved under the EIAO in September 2001 (EIAO Register Ref.: AEIAR-044/2001) has been referenced to in this Project Profile.

2.1.2 The relevancy of the SEKDCFS-EIA to this Project is given in Sections 2.1.3 to 2.1.16.

2.1.3 In November 1999, the former Territory Development Department (TDD) commissioned the Comprehensive Feasibility Study (FS) for the Revised Scheme of South East Kowloon Development (SEKD). The FS included five proposed SPSs at the North Apron Area of Kai Tak Airport (NAKTA), two of which, namely PS1 and PS3, are referred in this Project Profile.

2.1.4 The Revised Scheme of SEKD falls within Item 1 of Schedule 3 of the *Environmental Impact Assessment Ordinance* (EIAO) and is a Designated Project. An EIA Study "EIA Report for the Comprehensive Feasibility Study for the Revised Scheme of SEKD" (SEKDCFS-EIA) was undertaken for the Designated Project and was approved in September 2001 (EIAO Register Ref: AEIAR-044/2001).

2.1.5 As mentioned in Section 1.2.2, the two SPSs under this Project Profile are proposed to serve to convey the sewage collected within the hinterland to the existing To Kwa Wan Preliminary Treatment Works, whereas the SPSs covered under the FS are proposed to convey sewage collected within the hinterland and NAKTA to the existing To Kwa Wan Preliminary Treatment Works. Thus, the scope of the SPSs under this Project Profile and those under the SEKDCFS-EIA are comparable.

2.1.6 The land uses referred in the current Kai Tak Outline Zoning Plan (OZP) No. S/K22/2 are planned based on a "no reclamation" scenario, whereas the previous SEKD scheme did involve reclamation. Therefore, the total land area associated with the current scenario is less than that of SEKD. In effect, the population that would be allocated will consequently be reduced with the current "no reclamation" scenario. With less population, the number of potential sensitive uses will be reduced. Thus, the current scenario is expected to be "no worse", or even better, than the SEKD scenario in terms of the number of sensitive uses that may be affected.

2.1.7 The two SPS sites under this Project Profile are located by and large in the same area as PS1 and PS3 under the SEKDCFS-EIA, with SPS No. 1 site located about 22 m to the northwest of the PS1 site, and SPS No. 2 site located about 35 m to the southwest of the PS3 site. Therefore, the location of the two SPSs under this Project Profile are considered to be comparable with the location of PS1 and PS3 covered under the SEKDCFS-EIA.

2.1.8 There are no changes in the existing land uses in the vicinity of the two SPS sites, but there are some changes in the planned land uses. The planned land uses in the vicinity of the sites of PS1 and PS3 (in the SEKDCFS-EIA), and SPS No. 1 and SPS No. 2 (in this Project Profile) are summarized in **Table 2.1**.

Table 2.1 Land Use in the Vicinity of the SPS Sites

	Proposed land use / Sensitive Receiver	Distance to the SPS site
PS1 (SEKDCFS-EIA)	School	adjacent to the north-eastern site boundary
	Residential development	adjacent to the south-eastern site boundary
	Open space	adjacent to the south-western site boundary
	Road	about 32 m from the north-western site boundary
SPS No. 1	Government offices with open space	about 21m from the eastern site boundary
	Comprehensive Development Area (CDA)	about 77 m from the south-eastern site boundary
	Open space	about 34 m from the southern site boundary
	Road	adjacent to the site boundary on three sides
PS3 (SEKDCFS-EIA)	Open space	adjacent to the site boundary on three sides
	School	about 20 m from the south-eastern site boundary
	Residential development	about 25 m from the southern site boundary
	Road	adjacent to the north-western site boundary
SPS No. 2	Refuse collection point (RCP)	adjacent at the south-west corner
	Ambulance depot and sub-divisional fire station	about 10 m from the north-eastern site boundary
	Electric substation	adjacent to the south-eastern site boundary
	Sung Wong Toi Park	about 30 m from the south-western site boundary
	Road	adjacent to the site boundary on two sides

2.1.9 The land uses in the vicinity of the site of SPS No. 1 include offices and Comprehensive Development Area (CDA), which have replaced the school and residential development uses that were included in the SEKDCFS. For uses in CDA site, residential development may be included (subject to planning permission). Therefore, the CDA use is comparable with the previous residential use. Whereas for office uses, the environmental requirements may be less stringent than that for school in terms of construction noise (e.g., construction noise criterion of $L_{eq(30\ minutes)}$ 70 dB(A) during daytime (65 dB(A) during examination period) for school, but there is no specific noise criterion for offices). As the environmental requirements of offices with the current scenario are less stringent, the environmental compliance that was achieved as in the SEKDCFS-EIA would also be achieved.

2.1.10 The land uses in the vicinity of the site of SPS No. 2 include Government, Institution or Community (G/IC) facilities such as refuse collection point (RCP), ambulance depot, fire station and electric substation, park and road. Open space that was included in the SEKDCFS is open-air public space for active and/or passive recreational use, which is essentially equivalent to a park (Sung Wong Toi Park). Therefore, the environmental requirements are the same. The planned residential development and schools that were the key environmental sensitive uses included in the SEKDCFS are no longer included with the current scenario. The environmental requirements of the G/IC

facilities are less stringent than that of residential development and schools (e.g., they are not noise sensitive). As the environmental requirements of G/IC uses with the current scenario are less stringent, the environmental compliance that was achieved as in the SEKDCFS-EIA would also be achieved.

2.1.11 The capacities of the previous and current SPSs are summarized in **Table 2.2**.

Table 2.2 Capacities of Previous and Current SPSs

Sewage Pumping Station	Average Dry Weather Flow (ADWF)		Peak Capacity
	m^3/day	m^3/s	m^3/day
PS1 (SEKDCFS-EIA)	28,500	0.33	94,176
SPS No.1	60,480	0.7	140,000
PS3 (SEKDCFS-EIA)	4,300	0.05	13,824
SPS No.2	64,800	0.75	152,000

2.1.12 The capacities of the SPSs under this Project are generally higher compared to the SPSs included in the SEKDCFS-EIA. With higher capacities, the SPS buildings will be larger. The footprint of the SPS buildings of SPS No. 1 will be about 1000 m^2 whereas the footprint of the previous PS1 was about 660 m^2 (the footprint of SPS No. 1 is about 1.5 times larger than PS1). For SPS No.2, the footprint of the SPS building will be about 1000 m^2, whereas the footprint of the previous PS3 was about 380 m^2 (the footprint of SPS No. 2 is about 2.6 times larger than PS3).

2.1.13 With a larger footprint, the duration of the civil construction works for the SPSs under this Project is about 33 months, which is only marginally longer than that for the PS1 and PS3 as assessed in the SEKDCFS-EIA (about 30 months). Therefore, the construction duration of the two SPSs under this Project Profile are considered to be comparable with that of PS1 and PS3 covered under the SEKDCFS-EIA.

2.1.14 The nature of civil works for constructing the SPSs will be comparable for both the previous and current SPSs, thus the magnitude of any potential environmental impacts that may arise will be comparable. Furthermore, the cumulative construction phase environmental impacts are expected to be comparatively less with the SPSs under this Project, as there will only be limited concurrent works (construction of the future Kai Tak Government Office; construction of the rising mains under the Sewage Interception Scheme in Kowloon City, Upgrading of Central and East Kowloon Sewerage; Reconstruction and Improvement of Kai Tak Nullah; and cable diversion works) that may contribute to cumulative environmental impacts to the construction of SPSs, whereas there were numerous concurrent construction works within the SEKD (over 20 works packages) assessed in the SEKDCFS-EIA. To this end, the change in the capacities of the SPSs is not considered to result in any adverse changes in the environmental impacts during the construction phase as assessed in the SEKDCFS-EIA.

2.1.15 Given that the design of the SPSs will need to comply with the latest Drainage Services Department's standard design which includes all necessary measures to avoid creating any environmental nuisance, the environmental performance of the SPSs under this Project is considered to be comparable with that of the previous PS1 and PS3 during the operation phase. Therefore, the change in the capacities of the SPSs is not considered to result in any adverse changes in the environmental impacts during the

operation phase, and the operation phase assessment findings in the SEKDCFS-EIA undertaken for the previous PS1 and PS3 are considered to be comparable with the SPSs under this Project.

2.1.16 All of the potential environmental impacts arising from the proposed SPSs in SEKD have been assessed as part of the entire South East Kowloon Development under the SEKDCFS-EIA, including dust, odour, noise, water quality, sewerage system, waste management, land contamination, cultural heritage, landscape and visual elements, environmental monitoring and audit (EM&A), and schedule of recommended mitigation measures.

2.1.17 Based on the above, the SEKDCFS-EIA is considered to be comparatively conservative but still can be applicable to the current Project. To this end, this Project Profile has made reference to the findings of the SEKDCFS-EIA. The relevant environmental protection measures recommendations in the SEKDCFS-EIA are also referred and provided in Section 5.

3. MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

3.1 Sewage Pumping Station No. 1 (SPS No. 1)

3.1.1 The proposed SPS No. 1 is located in Area 1E of NAKTA. Adjacent planned land uses (with the distance separation indicated in brackets "[ ]") based on Kai Tak OZP No. S/K22/2, Tsz Wan Shan, Diamond Hill & San Po Kong OZP No. S/K11/22, and Wang Tau Hom & Tung Tau OZP No. S/K8/17 include:

- Open space located to the south [about 34 m]
- Comprehensive Development Area (CDA) located to the south and the southeast [about 77 m]
- G/IC zone located to the east for accommodating the Kai Tak Government Office [about 21 m]
- Residential development located further to the north across San Po Kong Interchange ("Rhine Harbour" under construction – expected completion in 2010) [about 103 m]

3.1.2 The adjacent existing land uses (with the distance separation indicated in brackets "[ ]") include:

- School [about 100 m]
- Clinic [about 75 m]
- Residential building [about 210 m]
- Open space [about 200 m]
- Roads adjacent to the north (Prince Edward Road East and San Po Kong Interchange)

3.2 Sewage Pumping Station No. 2 (SPS No. 2)

3.2.1 The proposed SPS No. 2 is located in Area 2A of NAKTA. Adjacent planned land uses (with the distance separation indicated in brackets "[ ]") based on the Kai Tak OZP No. S/K22/2 and Ma Tau Kok OZP No. S/K10/19 include:

- Open space located to the southwest (proposed Sung Wong Toi Park) [about 30 m]
- Ambulance depot and sub-divisional fire station located to the northeast [about 10 m]
- Refuse collection point adjacent to the south-west
- Electric substation adjacent to the south

3.2.2 The adjacent existing land uses (with the distance separation indicated in brackets "[ ]") include:

- Open space [about 30 m]
- Residential building [about 140 m]
- Church [about 210 m]
- Roads adjacent to the north (Prince Edward Road East and Olympic Avenue)

4. POSSIBLE IMPACT ON THE ENVIRONMENT

4.1 Environmental Issues during Construction

4.1.1 The environmental issues during the construction of the two SPSs include:

- dust
- noise
- water quality
- waste management
- visual and landscape elements
- cultural heritage
- land contamination

4.1.2 The potential construction impacts on the environment have been assessed in the SEKDCFS-EIA. The assessment findings and the relevant environmental protection measures recommended in the SEKDCFS-EIA are briefly described in Section 5.

4.2 Environmental Issues during Operation

4.2.1 The environmental issues during the operation of the two SPSs include:

- odour
- noise
- water quality
- waste management
- visual and landscape elements
- cultural heritage

4.2.2 The potential operation impacts on the environment have been assessed in the SEKDCFS-EIA. The assessment findings and the relevant environmental protection measures recommended in the SEKDCFS-EIA are briefly described in Section 5.

5. ENVIRONMENTAL PROTECTION MEASURES TO BE INCORPORATED

5.1 Reference to the SEKDCFS-EIA

5.1.1 The environmental protection measures presented in the following sections have made reference to the relevant recommendations in the SEKDCFS-EIA and include those measures contained in the Implementation Schedule of Environmental Mitigation Measures (Appendix A of the SEKDCFS-EIA EM&A Manual) for the two SPSs.

5.2 During Construction Stage

Dust

5.2.1 Section 2.4.1 of the SEKDCFS-EIA assessed the cumulative dust impacts during the construction of infrastructure in SEKD. The air quality impact arising from the Project is fugitive dust emissions from the construction activities, such as land clearance, ground excavation, construction of superstructure, wind erosion of open sites and stockpiling area, and equipment traffic over the site area.

5.2.2 Section 2.5.1 of the SEKDCFS-EIA recommended dust control measures stipulated in the *Air Pollution Control (Construction Dust) Regulation* to be implemented during the construction phase. Relevant clauses will be incorporated into the contract specifications of the proposed SPSs. Given the small scale of the Project, and there will be less concurrent construction activities compared to that assessed in the SEKDCFS-EIA, dust levels would be controlled within the acceptable air quality criteria stipulated in Annex 4 of the *Technical Memorandum on EIA Process* (EIAO-TM) with proper implementation of the recommended measures. Dust impacts are not expected to occur during construction.

Noise

5.2.3 Section 3.6 of the SEKDCFS-EIA assessed the cumulative noise impacts during the construction of the infrastructure in SEKD. The construction activities involved in this Project will include excavation and general concreting works. The source of noise generated during construction will be associated with the use of powered mechanical equipment (PME).

5.2.4 Section 3.6.3 of the SEKDCFS-EIA recommended a list of construction phase noise mitigation measures. These include the use of quiet plant, temporary noise barriers, etc. Clauses will be incorporated into the contract specifications requiring the Contractor to carry out their works in full compliance with the *Noise Control Ordinance* and its subsidiary regulations and the relevant measures recommended. With proper implementation of the recommended noise mitigation measures, and there will be less concurrent construction activities compared to that assessed in the SEKDCFS-EIA, construction noise levels would be controlled within the acceptable noise criteria stipulated in Annex 5 of the EIAO-TM and adverse construction noise impacts are not anticipated to occur during construction stage.

Water Quality

5.2.5 Section 4.4.2 of the SEKDCFS-EIA assessed the cumulative water quality impacts during the construction phase of SEKD. Water quality impacts could potentially arise

from uncontrolled surface runoff generated from dust suppression sprays and washing of construction vehicles / equipment, erosion of open stockpiles and exposed earthworks during storm events, and wastewater and sewage generated from the construction activities.

5.2.6 Section 4.5.1 of the SEKDCFS-EIA recommended the implementation of the best practice site drainage measures as described in the ProPECC Note PN 1/94 "Construction Site Drainage" to minimize site runoff and potential water pollution. Further measures such as good site arrangement and management practices should also be implemented. Clauses will be incorporated into the contract specifications requiring the Contractor to carry out their works in full compliance with the *Water Pollution Control Ordinance* and its subsidiary regulations and the relevant measures recommended. Given the small scale of the Project, and there will be less concurrent construction activities compared to that assessed in the SEKDCFS-EIA, water quality levels would be controlled within the water quality criteria stipulated in Annex 6 of the EIAO-TM with proper implementation of the best practice site drainage measures. Adverse water quality impacts due to construction runoff are not anticipated.

Waste Management

5.2.7 Section 7.4.1 of the SEKDCFS-EIA reviewed the waste management issues related to the construction of SEKD. Waste management issues mainly relate to the disposal of all wastes and spoil generated from the construction works, including construction and demolition (C&D) material and waste such as excavated spoil (from construction of dry and wet wells), broken concrete, tar or macadam based material, grout, wood, metal scraps. The Project will not involve reclamation or earth filling with imported fill.

5.2.8 Section 7.4.1 of the SEKDCFS-EIA outlined the waste management measures during the construction phase of SEKD. Clauses will be incorporated into the contract specification requiring the Contractor to carry out their works in full compliance with the *Waste Disposal Ordinance* and its subsidiary regulations and the relevant measures recommended in Section 7.4.1 of the SEKDCFS-EIA. The Contractors will be required to segregate the C&D material and wastes properly, and reuse the C&D material as far as possible, e.g., for backfilling, to minimize disposal off site and disposal of C&D materials will follow the trip ticket system. The Contractor shall formulate and implement a recording system to monitor the amount of wastes generated, recycled, and disposed of. The Contractors should also provide training to the workers about the concepts of site cleanliness and appropriate waste management procedures. With proper implementation of the recommended waste management measures, the relevant requirements set out in Annex 7 of the EIAO-TM will be achieved and adverse impact during the construction phase of SPSs are not expected to occur.

Landscape and Visual Elements

5.2.9 Section 13.11 of the SEKDCFS-EIA summarised the landscape and visual impacts during the construction stage of the SPSs in SEKD. Slight adverse residual landscape impacts and moderate to significant adverse residual visual impacts are expected during the construction stage of the SPSs.

5.2.10 Section 13.9.3 of the SEKDCFS-EIA outlined the mitigation measures to alleviate the landscape and visual impacts during the construction phase of SEKD. Mitigation measures such as tree preservation/ transplanting, provision of site hoardings, should be implemented as appropriate. Clauses will be incorporated into the contract

specification requiring the Contractor to carry out their works in compliance with the relevant measures recommended in Section 13.9.3 of the SEKDCFS-EIA.

Cultural Heritage

5.2.11 Section 12 of the SEKDCFS-EIA suggested that the north-western part of NAKTA has a high archaeological potential based on the desktop historical review.

5.2.12 Section 12.8 of the SEKDCFS-EIA recommended archaeological site investigation with trial trench to be undertaken as agreed with Antiquities and Monuments Office (AMO) of the Leisure and Cultural Services Department (LCSD) to assess the archaeological potential of the identified / potential archaeological sites within NAKTA prior to construction. Mitigation measures such as preservation *in situ* or rescue excavation will be carried out by the Contractor for the construction of the Project at such identified areas prior to the construction of the SPS. Archaeological finds and archives should be handled following the Antiquities and Monuments Office's (AMO) Guidelines for Handling of Archaeological Finds and Archives.

Land Contamination

5.2.13 Section 8 of the SEKDCFS-EIA made reference to the findings of the Kai Tak Airport North Apron Decommissioning EIA Report (NAKTA Decommissioning EIA) (EIAO Register No. AEIAR-002/1998) approved in September 1998. The NAKTA Decommissioning EIA identified specific hotspots of land contamination within NAKTA for remediation. Under the conditions of approval of the NAKTA Decommissioning EIA, the decontamination works at the NAKTA area should be carried out such that the remediation targets are fully met. As the land decontamination works were completed satisfactorily in 2007 to meet the remediation targets, residual land contamination impacts on the remediated site are not anticipated.

5.3 During Operation Stage

Odour

5.3.1 Section 2.4.2.22 of the SEKDCFS-EIA identified that the wet wells and distribution chambers are the main odour sources of odour impact during the operation of the sewage pumping stations. Screening removal hall is also a source of odour nuisance if not enclosed.

5.3.2 With reference to Section 2.5.2.10 of the SEKDCFS-EIA, the odour sources shall be located within enclosed building structures. With proper enclosure and ventilation system to divert the odour emissions to standard odour scrubbing device (commonly used in other SPSs in other urban areas in the territory) before discharging to the atmosphere, odour impacts due to the operation of the SPSs are expected to be controlled within acceptable level stipulated in Annex 4 of the EIAO-TM) and odour impacts during the operation of the SPSs are not expected to occur.

Noise

5.3.3 Section 3.10.2 of the SEKDCFS-EIA assessed the operational phase noise impacts from the SPSs. The pumps and ventilation system of the SPSs would be the main potential noise sources during the operation.

5.3.4 Section 3.10.2.2 of the SEKDCFS-EIA outlined the noise mitigation measures for the SPS. These included:

- diverting the exhaust of the ventilation system and any opening of the SPS away from any noise sensitive receivers;
- locating all pumps and mechanical ventilation system underground or enclosing them within a structure or building;
- provision of acoustic louvers or other acoustic reduction system to the exhaust exits of the SPSs.

5.3.5 With proper implementation of these noise mitigation measures, the operational noise from the SPSs will achieve the requirements set out in Annex 5 of EIAO-TM and noise impacts during the operation of the SPSs are not expected to occur.

Water Quality

5.3.6 Section 4.4.3 of the SEKDCFS-EIA assessed the potential water quality impacts that would arising during the operation of the SPSs. The sewage pumping stations will collect sewage and pump it to the existing To Kwa Wan Preliminary Treatment Works for treatment. Implementation of the SPSs will enhance the water quality of the surrounding environment and no adverse water quality impacts are anticipated during the normal operation.

5.3.7 Nevertheless, there is a potential of water quality impacts associated with abnormal operation condition including damage to sewers, sewer blockage, equipment breakdown or power failure, and high wet weather flows could lead to sewage overflow and thus affect the water quality in the area. With reference to Section 4.4.3.61 of the SEKDCFS-EIA, the emergency overflow discharge locations of the two SPSs will be kept away from the Kwun Tong Typhoon Shelter, marina, the embayment created at the mouth of Tsui Ping Nullah, and the existing and other proposed seawater intakes.

5.3.8 The risk of failure of the SPSs that would result in an emergency discharge of untreated sewage can be minimized through implementation of the following preventive measures:

- routine monitoring, inspection and maintenance of the SPSs (e.g., once every 2 to 3 days);
- provision of standby pumps and screens;
- provision of back-up power in the form of dual power supply;
- installation of telemetric system for unmanned sewage pumping station to connect to 24-hour manned facilities;
- inclusion of hand-cleaned bar screen at overflow bypass to prevent discharge of floating solids;
- connecting overflow discharge pipe to an enclosed culvert at a point below the low water level where practical;
- keeping away the emergency overflow discharge locations from sensitive receivers;
- provision of twin rising mains for backup and repairing purpose; and
- a contingency plan for emergency discharge shall also be developed.

5.3.9 With the implementation of preventive measures to be incorporated into the design, the

chance of bypass will be extremely remote and impacts to water quality are expected to meet all relevant criteria stipulated in Annex 6 of the EIAO-TM during normal operations.

Waste Management

5.3.10 Screens will be installed at the inlet of the sewage pumping stations to prevent large solid materials in sewage from entering the pumps thus generating a small quantity of screenings that will be similar in nature to general refuse.

5.3.11 The waste generated such as screenings, debris shall be stored in enclosed bins or compaction units separately before disposal. It shall be collected by a reputable waste collector employed by the operators on a regular basis to minimize the potential of odour, pest and litter impacts. All waste packing will be undertaken inside the SPS building. With proper handling and disposal of the waste, the relevant requirements set out in Annex 7 of the EIAO-TM will be achieved and no adverse waste impacts are expected to result during the operational phase of SPSs.

Landscape and Visual Elements

5.3.12 Section 13.11 of the SEKDCFS-EIA summarised the landscape and visual impact during the operational stage of the SPSs in SEKD. Negligible to slight adverse residual landscape impacts and moderate to significant adverse residual visual impacts are expected during the operation of the SPSs.

5.3.13 With reference to Table 13.27 and Table 13.29 of the SEKDCFS-EIA, the SPS buildings will be designed as a feature in the local landscape. This could be achieved by designing the SPSs with high-quality architectural finishes. Dense boundary tree and shrub planting can also be provided as screen and visual relief.

Cultural Heritage

5.3.14 With reference to Section 12 of the SEKDCFS-EIA, no impacts to any built heritage or archaeological resources are anticipated during the operational phase of the SPSs. No specific mitigation measures are recommended.

6. SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

6.1 During Construction Stage

Table 6.1 Environmental Impacts and Mitigation Measures during Construction of the SPSs

Potential Environmental Impact	Mitigation Measures	Relevant Section
Dust	(1) Control measures stipulated in the *Air Pollution Control (Construction Dust) Regulation*; (2) Incorporation of the above in the contract specification.	5.2.2
Noise	(1) Compliance with the *Noise Control Ordinance*; (2) Use of quiet plant; (3) Use of temporary noise barriers; (4) Incorporation of the above in the contract specification.	5.2.4
Water Quality	(1) Compliance with the *Water Pollution Control Ordinance*; (2) Site drainage measures as described in the ProPECC Practice Note PN 1/94 "Construction Site Drainage"; (3) Incorporation of the above in the contract specification.	5.2.6
Waste Management	(1) Compliance with the *Waste Disposal Ordinance*; (2) C&D material and waste shall be segregated; (3) A recording system to monitor the amount of wastes generated, recycled and disposed of shall be formulated and implemented; (4) Training about the concepts of site cleanliness and waste management procedures shall be provided to workers; (5) Incorporation of the above in the contract specification.	5.2.8
Landscape and Visual Elements	(1) Tree preservation / transplanting; (2) Provision of site hoarding; (3) Incorporation of the above in the contract specification.	5.2.10
Cultural Heritage	(1) Archaeological site investigation with trial trench will be undertaken; (2) Rescue excavation (to be determined from results of archaeological site investigation)	5.2.12

6.2 During Operational Stage

Table 6.2 Environmental Impacts and Mitigation Measures during Operation of the SPSs

Potential Environmental Impact	Mitigation Measures	Relevant Section
Odour	(1) Enclose all odour sources (wet wells, distribution chambers, screening removal hall) within SPS building; (2) Install standard odour scrubbing device to remove odour prior discharge to the atmosphere;	5.3.2
Noise	(1) Locate all pumps and mechanical ventilation system underground or enclose them inside the SPS building; (2) Provide acoustic louvers or other acoustic reduction system to the exhaust exits of the SPS building; (3) Direct the exhaust of the ventilation system and any opening of the SPS away from any noise sensitive uses;	5.3.4
Water Quality	(1) Undertake routine monitoring, inspection and maintenance of the SPSs (e.g., once every 2 to 3 days); (2) Provide standby pumps and screens; (3) Provide back-up power in the form of dual power supply; (4) Install telemetric system for unmanned sewage pumping station to connect to 24-hour manned facilities; (5) Include hand-cleaned bar screen at overflow bypass to prevent discharge of floating solids; (6) Connect overflow discharge pipe to an enclosed culvert at a point below the low water level where practical; (7) Keep away the emergency overflow discharge locations from sensitive receivers; (8) Provide twin rising mains for backup and repairing purpose; (9) Develop a contingency plan for emergency discharge.	5.3.8
Waste Management	(1) Waste (screenings/debris) shall be stored in enclosed bins or compaction units and disposed of regularly. (2) All waste packing shall be undertaken inside the SPS building.	5.3.11
Landscape and Visual Elements	(1) Design the SPS building as a feature in the local landscape with high-quality architectural finishes; (2) Boundary planting.	5.3.13

7. CONCLUSION

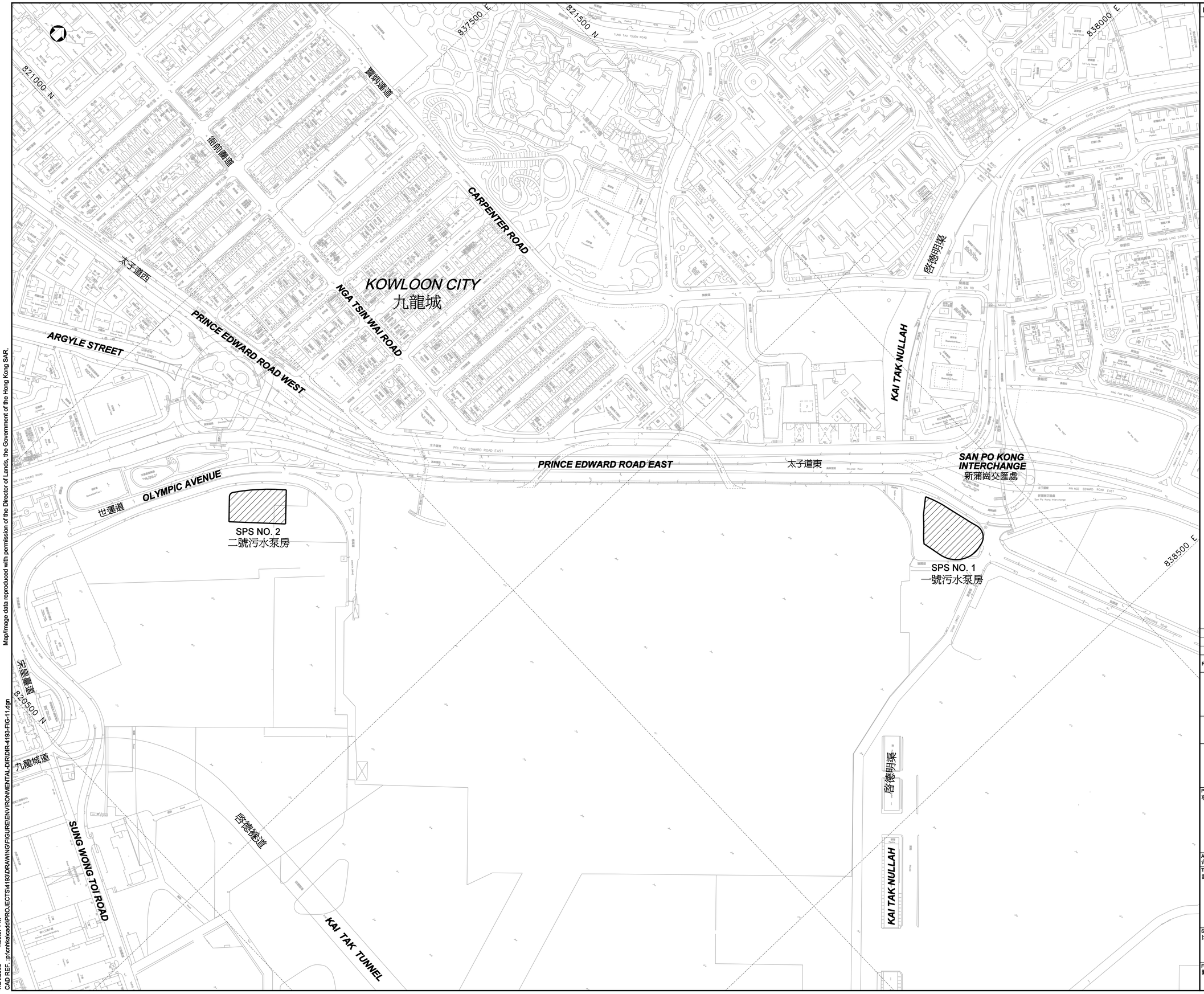
7.1 Overall Conclusion

7.1.1 All of the potential environmental impacts arising from the Project have been adequately assessed as part of the entire South East Kowloon Development under the SEKDCFS-EIA, including dust, odour, noise, water quality, sewerage system, waste management, land contamination, cultural heritage, landscape and visual elements, environmental monitoring and audit (EM&A), and schedule of recommended mitigation measures. No adverse environmental impacts are expected to occur.

7.1.2 The information and findings in the SEKDCFS-EIA are considered to be still relevant to the current Project. The relevancy of the SEKDCFS-EIA to this Project has been given in Section 2. This Project Profile has made reference to the SEKDCFS-EIA.

7.1.3 With proper implementation of the recommended mitigation measures, no adverse environmental impacts will arise during the construction and operation of the sewage pumping stations.

Figure



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CAD REF. : p:\cnhka\cadd\PROJECTS\4193\DRAWING\FIGURE\ENVIRONMENTAL-DIR\DIR-4193-FIG-11.dgn

DO NOT SCALE DRAWINGS, VERIFY ALL DIMENSIONS ON SITE

LEGEND:
圖例 :

PROPOSED SEWAGE PUMPING STATION SITE LOCATION
擬建污水泵房位置

REV	DESCRIPTION	BY	DATE	CHK'D	AUTH

渠務署
Drainage Services Department

污水工程部
Sewerage Projects Division

ATKINS 阿特金斯顧問有限公司 Atkins China Ltd

PROJECT
項目
SEWAGE INTERCEPTION SCHEME IN KOWLOON CITY - SEWAGE PUMPING STATIONS
九龍城污水分流計劃 - 污水泵房

AGREEMENT No.
合約編號 CE 4/2007 (DS)

TITLE
計劃
LOCATION PLAN
位置圖

SCALE AT A3 比例	DESIGN 設計	DRAWN 繪圖	CHECKED 核對	AUTHORISED 批准
1 : 4000	WW	AC	KML	XY
	DATE 日期 JUL 2008	DATE 日期 JUL 2008	DATE 日期 JUL 2008	DATE 日期 JUL 2008

FIGURE No.
圖號 1.1

REVISION

Plan Design Enable

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