

**The Government of the Hong Kong Special Administrative Region
Civil Engineering and Development Department**

Agreement No. CE 21/2005 (CE)

**Formation, Roads and Drains in Area 54, Tuen Mun – Phases 1 and 2 –
Environmental, Traffic and Drainage Impact Assessment Review –
Investigation**

Additional Services No.2

**Environmental Impact Assessment for Tuen Mun Area 54
Sewage Pumping Station**

Executive Summary

August 2008

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Figure 1.1 Location of Proposed Tuen Mun Area 54 Sewage Pumping Station

1 Introduction

Project Background

- 1.1 According to the Territorial Development Strategy Review in 1996, the housing supply capacity of approved plans and programmes would not be adequate to meet the estimated housing demand after 2001. In response to the estimated shortfall in flat supply, the Government identified a list of areas, including Tuen Mun Area 54, having potential for housing development.
- 1.2 The New Territories West Development Office (NTWDevO) of Territory Development Department (TDD) completed the "Planning and Development Study of Potential Housing Site in Area 54, Tuen Mun" (the Study) in 1999 under Agreement No. CE21/97. The Study put forward proposals on housing types, development parameters and planning layouts and assessed the development impacts on transport network, infrastructural capacities and environmental quality.
- 1.3 In order to convey the sewage collected from Tuen Mun Area 54 to the existing sewers at Ming Kum Road, a new sewage pumping station, close to Tsz Tin Road, will be constructed and operated, with a capacity of about 90,000 m³ per day. The design average dry weather flow of proposed sewage pumping station would be 0.32 m³/s. **Figure 1.1** shows the location of the proposed Tuen Mun Area 54 sewage pumping station (TM54SPS).

Objectives of the Environmental Impact Assessment

- 1.4 The proposed TM54SPS is classified as a Designated Project under Schedule 2, Part I, F3(b) of the Environmental Impact Assessment Ordinance (EIAO), i.e. a sewage pumping station with an installed capacity of more than 2,000 m³ per day and a boundary of which is less than 150 m from an existing or planned residential area. An Environmental Impact Assessment (EIA) study is thus required for the proposed TM54SPS (hereafter referred to as "the Project").
- 1.5 The EIA study has been undertaken to provide information on the nature and extent of environmental impacts arising from the construction and operation of the Project and all related activities taking place concurrently.
- 1.6 This Executive Summary provides a summary of the key findings of the EIA study, including an assessment of potential air quality, noise, water quality, waste, cultural heritage, visual and landscape impacts from the construction and operation phases of the Project, and recommendations for mitigation measures to comply with environmental legislations and standards.

Description of the Project

- 1.7 The proposed TM54SPS is located in the central part of Site 4A of Tuen Mun Area 54, north of Kei Lun Wai, south of Tsz Tin Tsuen and west of Site 2 of Tuen Mun Area 54.
- 1.8 According to the Review of Tuen Mun and Tsing Yi Sewerage Master Plans, the TM54SPS will receive sewage from the proposed development in Area 54, the four recognized villages within Area 54 namely Tsz Tin Tsuen, Po Tong Ha, Kei Lun Wai and Siu Hang Tsuen, and the proposed Tuen Mun North Sewage Pumping Station in Area 52.
- 1.9 The proposed TM54SPS is required to convey the sewage collected from Tuen Mun Area 54 to the existing trunk sewers at Ming Kum Road.
- 1.10 The construction works for the Project are scheduled to commence in early 2011 for completion in early 2014.

2 Summary of the EIA Findings

- 2.1 The following sections summarize the environmental impacts and outcomes arising from the construction and operation of the Project and the recommended mitigation measures.

Air Quality

- 2.2 In view of limited work site area, low amount of excavated soil generated during construction and the existing nearby air sensitive receivers (ASRs) located far away from the site, insignificant construction dust impact at the existing ASRs in the vicinity of the work site is expected with adoption of dust suppression measures stipulated in *Air Pollution (Construction Dust) Regulation* and good site practices. There would have two other projects to be undertaken concurrently within 500m of the study area. The concurrent activities includes (i) Site 2 site formation and superstructure works under the project "Formation, Roads and Drains in Tuen Mun Area 54 – Phase 1 and 2, Private and Public Rental Housing Development in Tuen Mun Area 54"; and (ii) Village sewerage works under the project "Sewerage Upgrading Works in Tuen Mun under Agreement No. CE 38/2006 (DSD)". As no adverse dust impacts are predicted from these two projects after the implementation of dust suppression measures, the cumulative dust impacts on the nearest ASRs such as Unicorn Garden and Kei Lung Wai would comply with the TSP criteria.
- 2.3 During operational phase, major air quality impact would be related to the potential odour emission from the TM54SPS. The odour sources, namely wet wells and screening chambers, would be enclosed and the vented air would be treated in the deodourizing unit with 90% odour removal efficiency, before discharging into the atmosphere. The computer dispersion model results showed that the predicted odour levels at the nearest ASRs around the TM54SPS would be below the EPD odour criteria of 5 ou over 5-second average. Adverse residual odour impact would not be expected. A standby deodourizing unit (90% odour removal efficiency) would be provided to cater for breakdown and maintenance of the duty deodourizer.

Noise

- 2.4 Potential noise impact arising from the construction of the TM54SPS at the noise sensitive receivers (NSRs) in the vicinity of the construction site was assessed. With the adoption of quieter plant, the predicted construction noise levels at the NSRs N1 and N2 would comply with the construction noise criteria stipulated in Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM). Good site practices were also proposed to further abate the impacts on the NSRs. As mentioned in Section 2.2, there are two other projects to be undertaken concurrently. The village sewerage works at Kei Lun Wai and Unicorn Garden (within 300m of the study area) would be scheduled to prevent overlapping with the construction of TM54SPS, the cumulative noise impact from site formation and superstructure works at Site 2 was only considered in the cumulative construction noise impact assessment. Results indicated that the cumulative construction noise levels at representative NSRs would comply with EIAO-TM construction noise criteria.
- 2.5 During the operational phase, the transformer is housed in enclosed reinforced concrete structure with soundproof door. The pumps and mechanically raked screens are also housed in reinforced concrete structure with soundproof door and acoustic silencers would be provided for the louvers of the pump house. Silencer would also be provided for the exhaust fan of deodorization unit. The predicted operational noise levels at all NSRs would comply with the daytime, evening time and nighttime noise criteria. Adverse residual operational noise impacts would not be expected.

Water Quality

- 2.6 Water quality impacts from construction of the TM54SPS can be controlled to acceptable levels by implementing the recommended mitigation measures. All the effluents and sediment-laden runoff generated from the works area shall be treated and their quality should be monitored before

discharge. No acceptable water quality impacts would be expected from the land-based construction activities. Site inspections should be undertaken routinely to inspect the works area in order to ensure the recommended mitigation measures are properly implemented.

- 2.7 With the incorporation of all the proposed precautionary measures in the design of the sewage pumping station, minimal residual operational water quality impact is expected.

Waste Management Implications

- 2.8 Waste generated by the construction activities are likely to include C&D materials from the construction works, general refuse from workforce, chemical waste from construction plant and equipment. Provided that these identified waste arising are handled, transported and disposed of using approved methods and that the recommended good site practices are strictly followed, adverse environmental impacts are not expected during the construction phase.

Landscape and Visual Impact

- 2.9 There are no tree would be affected within the site boundary.
- 2.10 The landscape resources of Farmland / Orchard (LR1) and landscape character area of Farmland Landscape Character Area (LCA2) will be moderate impact by the construction of an incongruous building mass, temporary works areas, additional construction traffic, storage of construction material and general loss of farmland plantation. After the implementation of mitigation measure both LR1 and LCA2 landscape Impact will be lessen as sight as additional tree will be planted along the boundary of the proposed pumping station for screening and possible loss of greenery.
- 2.11 Residents in existing villages of Union Garden and Kei Lun Wai (V1) will have moderate adverse residual impact during construction due to the close distant views to the proposed TM54SPS. The residual visual impact will be slight after implementation of mitigation measures during operation. The proposed TM54SPS will appear impact on the front row/ close distance/ high level building. As planned high rise Public Housing Development at Site 2 (R1), planned high rise Public and Private Housing Residential Site 3 & 4 (R2), planned high rise Public Housing Residential Site 1 & 1A (R3) building mass and planned road L54B (T1) infrastructure will be dominated in entire area of operation stage. The landscape and visual mitigation measures will be implemented with screening on boundary and roof greening to mitigate both impacts on at grade or elevated level. Therefore the proposed Project is expected to be compatible with the rest of new development.
- 2.12 After the proposed mitigation measures have been implemented, the proposed heavy standard sized tree planting would carry out ultimate screening, all residual adverse landscape and visual impacts in operational phase will be insubstantial significance. Except on VSRs Village development - Union Garden and Kei Lun Wai (V1), planned primary and secondary schools (GIC1) and planned open space (O1) in site 4A will have slight adverse visual impact which will be lessen as insubstantial after 10 years of implementation of mitigation measures.

Cultural Heritage

- 2.13 As the site of the proposed TM54SPS falls within the boundary of the Kei Lun Wai Archaeological Site, construction of the proposed TM54SPS would likely have direct impact on the archeological resources within the archaeological site. It is recommended that Site 4A of Tuen Mun Area 54 be added to the programme of archaeological survey and rescue excavation to be undertaken by the Antiquities and Monuments Office (AMO) of Leisure and Cultural Services Department (LCSD) for the proposed development at Tuen Mun Area 54 prior to the commencement of construction works. As the archaeological survey cannot be conducted in this EIA stage due to land access constraint, the proposed works area for the TM54SPS which is located within Site 4A would therefore be assessed in the future archaeological survey and rescue excavation.

- 2.14 Since there are no built heritage resources within the study area, impact on built heritage resources is not expected.

3 Environmental Monitoring and Audit

- 3.1 Environmental monitoring and audit are recommended for dust, odour and construction noise, to check compliance with relevant statutory criteria and to ensure the effectiveness of the mitigation measures. Site inspection and audit are also recommended for water quality and waste management during construction. Details of the recommended mitigation measures, monitoring procedures and locations are presented in a stand-alone Environmental Monitoring and Audit (EM&A) Manual. This will enable the Contractor to have early warning and provide necessary action to reduce impacts at specific areas if the critical assessment criteria are approached. The effectiveness of on-site control measures would also be evaluated through a monitoring exercise. All the recommended mitigation measures will be incorporated in an EM&A programme during implementation.

4 Overall Conclusion

- 4.1 The findings of this EIA Study have determined the likely nature and extent of environmental impacts predicted to arise from the construction and operation phases of the Project. The EIA has, where appropriate, identified mitigation measures to ensure compliance with environmental legislation and standards.
- 4.2 Overall, the EIA Study for the proposed TM54SPS has predicted that the Project, with the implementation of the proposed mitigation measures for construction and operation phases, would comply with all applicable environmental standards and legislation. This EIA has also demonstrated the acceptability of the residual impacts from the Project and the protection of the population and environmentally sensitive resources. Environmental monitoring and audit mechanisms have been recommended to verify the effectiveness of recommended mitigation measures.