9.1 INTRODUCTION

This Section presents the results of qualitative assessments of potential environmental impacts for those issues which although not explicitly required by the Study Brief are required under the provisions of the *EIAO*. These includes hazard assessment, noise impact assessment, ecological and fisheries impact assessment and cultural heritage impact assessment.

9.2 APPROACH AND SCOPE

The approach and scope for assessment of "other"issues has been agreed in the first Steering Group Meeting[46] and has been presented in *Box 3.7a* of the *Inception Report* and summarised below.

Table 9.2a: Approach and Scope for the Assessment of Other Issues

Air Quality Impact	Construction phase impacts due to emissions of dust will be addressed qualitatively and with respect to the recommended measures detailed under the *Air Pollution Control Ordinance (APCO)*. Emissions resulting from emergency flaring of biogas will also be addressed. No modelling will be required. See *Section 3.5*.
Hazard Assessment	Risks associated with the storage and use of chemicals on the site will not be assessed provided that the quantities of chemicals needed on the site do not result in the treatment works being classified as a potentially hazardous installation (PHI). Information on the types and quantities of chemicals that will be stored will be presented in the report.
Noise Impact	Noise associated with construction will be considered in a qualitative manner but a detailed assessment is not required. Reference will be made to mitigation measures to control construction phase noise levels. Operational noise is not considered adverse and will not be addressed.
Ecological and Fisheries Impact	Impacts to terrestrial and aquatic ecology, including fisheries, during the construction and operation of the project will not be addressed[a].
Water Quality Impact	Impacts to water bodies other than Victoria Harbour during the construction phase will be addressed qualitatively. Impacts to Tolo Harbour associated with interruptions to the operation of the THEES will be addressed quantitatively by comparing with the loads discharged with the critical and target loadings detailed in Sha Tin to Kai Tak Effluent Export Scheme study.[47] See *Section 4.6*.

Note:

(a) Agricultural and Fisheries Department (AFD) have advised that an ecological impact assessment is not required (AFD's fax of 22 August 1997 to EPD. Reference: (32) in AF POL 13/13).

[46] Agreement No. CE 90/97. Sha Tin Sewage Treatment Works, Stage III Extension EIA Study: 1st Steering Group Meeting. 44/F, Conference Room, Revenue Tower. 5 August 1998.

[47] Balfours International (Asia) (1998) *Sha Tin to Kai Tak Effluent Export Scheme*. August 1998.

9.3 CONSTRUCTION DUST IMPACT

Potential environmental impacts related to dust emission during the construction of the Project has been assessed in *Section* 3 and will not be duplicated here.

9.4 CONSTRUCTION WATER QUALITY IMPACT

Potential water quality impacts during the construction phase has been discussed in *Section* 4. In general, the majority of potential impacts during the construction phase would occur as a result of polluted site run-off and uncontrolled discharge of wastewater to the storm drains. Provided the best site management practices proposed in *Section 4.5.4* are enforced, adverse water quality impacts are not envisaged. No monitoring of water quality is needed during the construction phase although an environmental audit programme is recommended.

9.5 NOISE IMPACT

Owing to the considerable distance of the Project from noise sensitive receivers (NSRs), the potential for noise impacts to be generated from the Project is not considered to be adverse. On this basis noise modelling is not required for the construction noise assessment, and quantitative noise assessment during the operational phase is not required.

9.5.1 *Legislation and Standards for Construction Phase Noise*

All works during the construction period will have to be in compliance with the relevant legislative standards and regulations, which are briefly discussed in this section.

It is anticipated that the construction works will be undertaken between the hours of 0700 and 1900, and at present there are no legislative standards in Hong Kong for the control of construction noise during these normal working hours. Hence, a limit of $L_{Aeq, 30min.}$ 75 dB is proposed in accordance with the *Practice Note for Professional Persons - Noise from Construction Activities - Non-statutory Controls, Environmental Protection Department, June 1993* (ProPECC PN2/93) for sensitive receivers for residential uses. For schools and educational institutions, a limit of $L_{Aeq, 30min.}$ 70 dB and 65 dB are proposed during normal school hours and examination periods respectively.

Apart from the *Technical Memorandum on Noise From Construction Work Other Than Percussive Piling* (TM1) and *Technical Memorandum on Noise From Percussive Piling* (TM2), which are published under the *Noise Control Ordinance (NCO)* and control construction noise during the restricted hours (1900-0700), there is also a new technical memorandum namely the *Technical Memorandum on Noise From Construction Work in Designated Areas* (TM3) which controls the use of Specified Powered Mechanical Equipment (SPME) other than percussive piling and the undertaking of Prescribed Construction Work (PCW) during restricted hours.

Construction plant or equipment classified as SPME under TM3 are hand-held breaker, bulldozer, concrete lorry mixer, dump truck and poker vibrator. Prescribed construction work includes erection or dismantling of formwork or scaffolding; handling of rubble, wooden boards, steel bars, or scaffolding material; hammering and disposal of rubble through plastic chutes. More

stringent noise limits are stipulated in this technical memorandum to control construction noise generated from SPME and PCW.

9.5.2 *Evaluation of Impacts*

The major noise construction activities of the Project will be generated from site formation, foundation and building activities. Information from DSD has indicated that the civil works for the Project will consist of piling works, pipe laying, earthworks and concrete works. The piles to be used are all of non-displacement (bored-and-cast-in-situ) types with steel bar/H-section reinforcement and their sizes will not exceed 1,200 mm diameter. Based on the above information and the relatively long distance between the works areas and the sensitive receivers (at least 150 metres), it is envisaged that the construction phase impacts will not be adverse, (i.e. not exceeding the construction noise criterion during normal working hours, as noted in the 2nd paragraph of *Section 9.5.1*).

However, if construction works have to be carried out during the restricted hours, the contractor will have to apply for a Construction Noise Permit (CNP) from the Noise Control Authority (EPD) and adopt appropriate mitigation measures to ensure that the required noise limits stated in the permit will not be exceeded for further (details refer to the TM1 and TM3 stated above).

Mitigation measures to further improve the environmental performance of the construction works are recommended in *Section 9.5.3*.

9.5.3 *Mitigation Measures*

Although it is envisaged that noise criterion can be met without mitigation measures, construction noise could be further minimized by the use of quiet construction methods and equipment. Construction activities should be limited to the daytime hours (0700 to 1900) on Monday to Saturday. Also, good site practice and noise management by DSD's Contractors can effectively reduce the construction noise impacts at the identified NSRs. Overall, the following measures should be followed during the construction stage of the Project:

- only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction phase;
- machines and plant (such as trucks) 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, where possible, be orientated so that the noise is directed away from nearby NSRs;
- silencers or mufflers on construction equipment should be utilised, if found necessary to further reduce noise, and should be properly maintained during the construction phase;
- mobile plant should be sited as far away from NSRs as possible; and
- where necessary, mobile noise barriers should be positioned within a few metres of noisy plant items to achieve $L_{Aeq\ 30\ minutes}$ 75 dB(A) at the NSRs.

All applicable clauses from the noise control section of EPD's *Recommended Pollution Control Clauses for Construction Contracts* should be included in the Contract Specifications.

9.6 HAZARD ASSESSMENT

During the operation of the Sha Tin STW, a number of chemicals will be used and stored for the various sewage treatment processes. The types and quantities of chemicals stored on site are presented in *Table 9.6a*.

Table 9.6a ***Chemicals Stored on Site***

Type and Storage Form of Chemicals	Chemical Applied Location	Storage Location	Anticipated Storage Quantities
Soda ash (Na_2CO_3) or sodium bicarbonate ($NaHCO_3$) or NaOH solution (around 50% concentration); soda ash and sodium bicarbonate to be stored in powdered form and packed in plastic woven bags	Bell mouths immediately downstream of the flume channels at inlet works	Underneath the existing flume channels	• Na_2CO_3: 25 tonnes • ($NaHCO_3$): 40 tonnes • NaOH: 30 m^3
Methanol (in liquid form)	Anoxic zone in aeration zone	South-east adjacent to primary settling tanks No. 14	30 m^3
Ferric chloride solution (around 40% concentration)	Sludge digestion	Near to existing thickening house	30 m^3
Ferric chloride solution (around 40% concentration).	Sludge dewatering	Sludge dewatering house	150 m^3
Polymer; stored in powder form and packed in bags	Sludge dewatering	Sludge dewatering house	3.7 tonnes
Polymer; stored in powder form and packed in bags	Sludge thickening	Sludge thickening	3 tonnes

According to the *Hong Kong Planning Standards and Guidelines* (HKPSG)[48], the chemicals listed above are not classified as hazardous materials. As a result, the facilities do not qualify for classification as a potentially hazardous installation (PHI).

However, two of the above listed chemicals, sodium hydroxide and methanol, are controlled under the *Dangerous Goods (General) Regulations, CAP 295* due to their corrosiveness and flammability. Licences from the Fire Services Department (FSD) would be required as the proposed storage quantity exceed the limit specified in the *Regulations*. Under the *Dangerous Goods (General) Regulations*, special safety precautions will be required. For instance, storage tanks and containers for the above chemicals should be checked regularly to ensure that no spillage has occurred. Distinctive labels and warning signs should be attached to the exterior of the storage containers. Remedial action plans should be developed

[48] Planning Department (1993) *Hong Kong Planning Standards and Guidelines: Chapter 11 - Miscellaneous*. November 1993.

and provided to the workers so that remedial actions can be carried out effectively in the event of accidental spillage. It is recommended that DSD reviews the full requirements under the *Regulations* and implements a dangerous substance control plan to comply with these requirements.

9.7 *Ecological and Fisheries Impact*

As described in *Section 2*, the Project is to be constructed on existing reclaimed land reserved for the Stage III Extension works. As a result, potential ecological impacts are considered to be minimal. The Director of Agriculture and Fisheries has been consulted on the ecological and fisheries aspects of the Project. It was advised that no adverse marine ecological impacts would be generated from the Project and that an ecological and fisheries impact assessment is not required[49].

9.8 *Cultural Heritage Impact*

As the Project is located on reclaimed land reserved for the Stage III Extension works and the surrounding areas are mostly used for temporary carparks and open spaces. No cultural heritage impact are envisaged in the Study Area.

9.9 *Conclusions*

This section assesses other potential environmental issues not explicitly required by the Study Brief. It is concluded that potential dust, water quality and noise impacts during the construction phase should not cause major impact to sensitive receivers in the Study Area, provided that the legislative requirements stipulated in relevant regulations and standards are complied with and the mitigation measures proposed in this EIA Study are followed. The chemicals to be used during the operation phase of the Project are not listed as hazardous materials under the *Hong Kong Planning, Standards and Guidelines* and hence a quantitative hazard assessment was not required. The requirements as stipulated in the *Dangerous Goods (General) Regulations* should be followed for some of the chemicals to be used. No ecological and cultural heritage impacts are envisaged as the Project is to be implemented on reclaimed land originally reserved for the expansion of the STW.

[49] Agricultural and Fisheries Department (AFD) have advised that an ecological impact assessment is not required (AFD's fax of 22 August 1997 to EPD. Reference: (32) in AF POL 13/13).