

project proponent and approved under the EIAO to confirm that there will be no insurmountable environmental impacts associated with the construction and operation of the RTS.

- 8.1.3** There is no major difficulty, on technical grounds, for applying the Automated Refuse Collection System, as evidenced by the application to 2 public housing estates in the pilot scheme. The use of ARCS for combined sites will have institutional and financial issues to be resolved, though not insurmountable. South East Kowloon Development, being a newly developed area, will provide a good opportunity of applying the Automated Refuse Collection System than in other developed and congested areas. As such, an institutional framework should be formulated to target for a wider application. A further study, based on the initial findings of this report, is recommended to allow the implementation to follow.

9. SEWERAGE AND SEWAGE TREATMENT IMPLICATIONS

- 9.1.1** The philosophy of conventional "shallow" gravity sewers coupled with sewage lift stations is proposed to be provided for the sewerage of SEKD. This approach provides conventional gravity sewers to cater for the developments within each subcatchment area, and subsequently drains the sewage to a local lift station which would be situated adjacent to a major stormwater drainage culvert or underground road. At the lift station, the collected flows would be pumped over the drainage culverts into the next subcatchment, to discharge into a manhole where the sewage would flow by gravity into the next lift station. Ultimately, the collected sewage would be directed collectively to either the To Kwa Wan PTW or the Kwun Tong PTW.

- 9.1.2** Based on the population and landuse distribution for the SEKD development, and also on the population projections in the hinterland by the RCEKSMP study, it is shown that there may be a potential capacity constraints at To Kwa Wan PTW by 2016. For Kwun Tong PTW, depending on which current PWWF projections are adopted, there may be a potential capacity constraint by year 2016. Provision for expansion areas at both the Kwun Tong and To Kwa Wan PTWs has been allowed for to make allowance for any future upgrading should this be found necessary. The outcomes of the HATS study will determine the requirements for expansion of the PTWs.

10. RISK ASSESSMENT

10.1 Ma Tau Kok Gas Works

- 10.1.1** In order to establish the acceptability of the proposed South East Kowloon Development, a quantified risk assessment of the risk from the Ma Tau Kok Gas Works to the surrounding population has been carried out.

- 10.1.2** The risk assessment has considered two cases, as follows:
- Base Case - current operation of MTK Gas Works for the South East Kowloon Development population.
 - Mitigated Case - current operation of MTK Gas Works, but with buried gas outlets, for the South East Kowloon Development population.

- 10.1.3** The levels of individual risk for the current and mitigated current cases do not exceed the "Acceptable" limit (10^{-5} per year) of the Hong Kong Risk Guidelines and therefore no parts of the development lie within any unacceptable areas of individual risk.

- 10.1.4** The 10^{-7} and 10^{-8} individual risk contours around the works extend to cover areas including Site 3V and Wyler Garden (both residential). 10^{-8} contour around the pigging station extends to cover areas including the district open space in Site 3Y2 and the community facilities in Site 3N5. Site 3Y3 (school) is on the fringe of the contour and is barely affected. The district open space acts as a buffer zone around the pigging facilities to minimise the risk.
- 10.1.5** The mitigation measure results in a smaller area covered by the individual risk contours and consequently a smaller area covering the new development. The influence of the gas export pipework near to the gas holder is reduced considerably and persons in the development are now barely affected by the risk from the works site. The contours around the pigging station remain unchanged. Since the areas around the pigging station are relatively lowly populated, this layout is considered favourable from a risk point of view.
- 10.1.6** The proposed South East Kowloon Development for the mitigated case should be permitted to proceed, subject to the recommendations below:
- With the risk mitigation measure at the gas works, there is virtually no risk to the SEKD. However, it is unusual for a planning study to result in mitigation at a hazardous site, rather the development should accommodate the areas of risk in its layout. Hence, the Project must liaise with HKCG to ensure that the mitigation measure is implemented particularly before occupation of the residential blocks adjacent to the gas works. However, there is uncertainty regarding the timing of relocation of the MTK Gas Works. If before the South East Kowloon Development is complete when the works is closed or relocated no mitigation measures will be necessary.
 - Since the proposed naphtha jetty would be located very close to the marina (offshore population), a minimum safety distance of 100 m between the naphtha jetty and the marina population is recommended.
 - No further development resulting in population increases nearby the site should be permitted unless supported by a hazard assessment, to be submitted to relevant government departments for consultation.

10.2 Relocation of DG Vehicle Ferry Pier

- 10.2.1** The additional risk for the relocated DG vehicle ferry pier for LPG and hydrocarbons transport has been assessed using SAFETI Expert. Both individual and societal risks to residents, third party workers, road users and any other exposed people have been assessed for the present usage and location of the ferry pier (2001) and the proposed location and predicted usage for the year 2012.
- 10.2.2** The proposed location of the relocated DG vehicle ferry pier would be more than 100m from nearby high rise residential buildings. The route to the relocated DG vehicle ferry pier would follow the same road to the existing DG vehicle ferry pier and then an additional 0.7km on a new waterfront road through the Hoi Bun Road Extension, with limited population adjacent to this road. This route is considered optimal for the proposed location but has not been assessed in detail since it is beyond the scope of this study.

Individual Risk (IR)

- 10.2.3** For the current (2001) and future (2012) case, the maximum level of individual risk is less than the "Acceptable Limit of the HK Risk Guidelines for individual risk (1×10^{-5} per year).
- 10.2.4** The IR is less than 10^{-5} per year and so is considered acceptable.

F-N Results

- 10.2.5** The FN curves for all materials and the combined trade lie in the acceptable region of the HKRG. Therefore the societal risk is acceptable.

Potential Loss of Life

- 10.2.6** The PLL results show an increase from 8.1×10^{-7} for the existing location to 7.3×10^{-6} and 7.9×10^{-6} per year for the proposed location for the year 2001 and year 2012 cases respectively. Whilst this is roughly an order of magnitude increase in risk it is not significant since the level of societal risk is acceptable.

Risk Mitigation

- 10.2.7** Since the societal risk for the proposed DG ferry pier lies in the acceptable region of the HK RG and the individual risk does not exceed the acceptable limit, no mitigation is necessary and the proposed relocation should be permitted to proceed.

10.3 Chlorine Unloading Point and DG Godown

- 10.3.1** In order to formulate a more compatible and environmental friendly theme, the current scheme has recommended the relocation of two existing users that may pose potential hazard to human life. These two users are namely the Chlorine Loading/Unloading Point and the Kerry Dangerous Goods Godown, both located at the Kowloon Bay waterfront.

- 10.3.2** Government Supplies Department is planning to relocate the chlorine unloading point outside the SEKD area permanently to River Trade Terminal in Tuen Mun. Confirmation with Government Supplies Department that permanent relocation of the chlorine unloading point outside SEKD will be made prior to population intake reclamation of the SEKD. As such, risk associated with the co-existence of the interim chlorine unloading point and the SEKD population will no longer exist.

- 10.3.3** The area where the Kerry DG Godown is located is being planned to be zoned as CDA, or mainly residential. From the planned uses point of view, the DG Godown will no longer exist within the SEKD.

11. ECOLOGY

- 11.1.1** Due to the highly disturbed / urbanised nature of the site and absence of flora of conservation interest, no ecological sensitive receivers are identified in terms of terrestrial habitats and vegetation and fauna. Potential impacts of the project on terrestrial ecology include loss of 151.2 ha of urbanised area and 16.5 ha of grass (planted). Impacts to loss of habitat and associated flora and fauna are considered minor, and no mitigation or monitoring programme is required.

- 11.1.2** Baseline conditions of the assessment area which covered 3 WCZs were established through literature reviews and field surveys. Information indicate that marine habitats, both intertidal and subtidal, within the Southeast Kowloon New Development Area are of low ecological value. Based on the results of the benthic survey, which indicate the abiotic conditions of KTAC and Kwun Tong Typhoon Shelter and the highly disturbed nature of the benthic environment in the Kowloon Bay area, no sensitive marine species or marine habitats are identified in the New Development Area of SEKD. 127 hectares of seabed will be reclaimed, and 3.6 km of vertical seawalls will be lost after the complete of the project. Potential impacts of the project on aquatic ecology are considered minor. No mitigation is required. Monitoring and audit activities for water quality will serve to protect against unacceptable