

3 Summary of Major Comments and Responses

3.1 General

3.1.1 During the Stage 3 PE, two focus group meetings, a community group meeting, two project briefing sessions and reporting to HEC of STDC were held and various channels were established to collect comments and opinions from the public and different stakeholders on the outcomes of the impact assessment, latest proposed schematic layout including location of portals supporting facilities, new ventilation shaft etc., location of temporary explosive magazine, traffic impact mitigation measures, and an in-depth introduction of the Drill-and-Blast Operation including previous examples, sequence of works, safety precautionary and control measures. Major comments received during the Stage 3 PE are categorized, summarized and responded as follows:

3.2 Major Comments

Relocation of STSTW to Release Land for Beneficial Uses is Supported

3.2.1 There were comments expressing support to the relocation of STSTW and help meeting the shortage of land supply in Hong Kong

Public Engagement Activities

3.2.2 There were suggestions that an additional community group meeting / public forum should be held at Chevalier Garden as the residents living there would be the most affected one. Moreover, there were also recommendations to set up a Community Liaison Group so as to strengthen communication between the local residents and the Government on the project.

Odour Impact during the Operation of the Relocated STSTW

3.2.3 Some residents and stakeholders near the proposed relocation site raised concerns on the odour impact due to the exhaust from the ventilation shaft during operation of the relocated STSTW. There were also concerns about whether the location of the ventilation shaft and its exhaust from the relocated STSTW would affect the health of nearby residents or other sensitive receivers.

Traffic Impact during Construction of Caverns and Operation of STSTW

3.2.4 There were worries about the traffic impact to local transport network, especially on A Kung Kok Street.

3.2.5 Regarding the temporary traffic management schemes, some residents and stakeholders noted that the temporary roads connecting Ma On Shan Road is close to nearby residential developments. Moreover, the height of the proposed temporary noise barriers should be as high as possible to further minimize the potential traffic noise and air quality impact on them.

- 3.2.6 Some professionals and members of the general public were concerned about the methods to transport the excavated rocks away from the project site.

Rock Excavation Method and Handling of Excavated Rock from Caverns Construction

- 3.2.7 Some residents and stakeholders enquired that whether other methods to excavate rocks in Nui Po Shan had been studied.
- 3.2.8 There were enquiries on how the excavated rock would be handled. They were of the view that the excavated rock should be treated properly to increase the cost-effectiveness of the project. It is proposed that, given the high quality of the excavated rock, it should be used as aggregates for concrete production.
- 3.2.9 There were recommendations to reuse the excavated rocks in local beautification and greenery projects in Sha Tin District or landscaping at the portal of the caverns, so that the public could appreciate these high-quality rocks.

Concerns on Ecological Impact due to Caverns Construction and Operation of Cavern STW in Caverns

- 3.2.10 Some stakeholders raised concerns on whether there were any important ecological species found in the vicinity of the project area, and whether the ecology in the surrounding area would be affected by rock excavation.
- 3.2.11 There were enquires on potential impacts to groundwater level during construction and operation of STW, which would affect the groundwater and the stream at Mui Tsz Lam.
- 3.2.12 Some stakeholders worried that decommission and demolition of the existing STSTW would affect the egret in Penfold Park and their flight route.

Enquiry on Methods Adopted in Ground Investigation

- 3.2.13 Some stakeholders raised enquires on the method of ground investigation on the rock layer at the project site through geophysics.

Other Environmental Impact due to Caverns Construction and Operation of Cavern STW

- 3.2.14 There were enquiries whether carbon audit would be carried out.
- 3.2.15 Some residents near the proposed relocation site raised concerns on the current ground investigation works as they create noise nuisances to the surrounding environment.

Sewage Treatment in the Relocated STSTW

- 3.2.16 There were suggestions to establish an anaerobic digestion system in the Relocated STSTW as the system could be a source of renewable energy, so as to reduce carbon footprint and energy consumption. There were also suggestions to locate the above-mentioned facilities outside the caverns to reduce the potential risk.
- 3.2.17 There were concerns whether vapour that might be produced in the Relocated STSTW, and if there was any assessment on this.
- 3.2.18 Some stakeholders enquired whether the treated effluent discharged from the Relocated STSTW would be reused.

Design Effluent Standard and Export Route of the Relocated STSTW

- 3.2.19 There were enquiries about the arrangement of the emergency sewage by-pass of the Relocated STSTW.
- 3.2.20 There were enquiries about whether the effluent standard of the Relocation STSTW would be improved.

Cost-effectiveness of the Relocation Project

- 3.2.21 Some stakeholders raised concerns about the estimated cost and the cost-effectiveness of the Relocation Project. There were also enquiries about whether the estimated cost of the relocation project would be exceeded in the future.
- 3.2.22 Some stakeholder suggested that the cost of the relocation project would be reduced if a temporary magazine would be set up in the vicinity of the project area.

Re-use of Facilities in the Existing STSTW

- 3.2.23 Some members of the public and professionals enquired if the facilities in the existing STSTW could be re-used in the Relocated STSTW.

Future Land Use of the Existing STSTW Site

- 3.2.24 There were enquiries on the future land use of the existing STSTW site after completion of the relocation project.

Duration of the Relocation Project

- 3.2.25 There were enquiries about the duration of the relocation project.

Ma Liu Shui Reclamation Proposal by the Civil Engineering and Development Department

3.2.26 There were enquiries on the relationship between the relocation of the STSTW to cavern project managed by the DSD and the Ma Liu Shui reclamation proposal managed by the Civil Engineering and Development Department (CEDD).

Emergency Evacuation of the Relocated STSTW

3.2.27 There were enquires on the emergency evacuation arrangement of the Relocated STSTW.

Other Community and Stakeholder Aspirations/ Concerns

3.2.28 There were enquiries about result of the Quantitative Risk Assessment.

3.2.29 There were enquiries about the creativity and innovativeness of the relocation project.

3.2.30 There were concerns about the radon gas that might be emitted from the granite. It was suggested to handle such potential hazardous gas carefully.

3.2.31 Some stakeholders proposed to construct a hiking trail in association with the project to increase of its social value.

3.2.32 There were suggestions to reduce the works area in Ma On Shan Area 73 so as to release the area for recreational and cultural development.

3.2.33 It was recommended to use the treated effluent of the Relocated STSTW as toilet flushing water instead of sea water.

3.2.34 Some residents living at the nearby residential estates opined that relevant Government department had previously promised them to provide motorcycle parking spaces adjacent to Mui Tsz Lam Road but yet to materialize. In view of the lack of motorcycle parking spaces in the area, the residents inquired that whether DSD would provide such uses in association to the relocation project.

3.3 Responses to Major Comments on Relocation Proposal

Relocation of STSTW to Release Land for Beneficial Uses is Supported

- 3.3.1 There is a pressing need to optimise the supply of land for various uses by sustainable and innovative approaches to support social and economic development in Hong Kong. One practicable approach is rock cavern development.
- 3.3.2 Relocating the STSTW to caverns could release about 28 hectares of land for more beneficial and compatible land uses, benefit the community and improve the environment of Sha Tin. Odour management of the relocated STSTW could be enhanced with caverns as a natural barrier. Meanwhile, opportunity could be taken to review if more advanced technologies would be adopted for the sewage and sludge treatment facilities to further improve the sewage treatment service.

Public Engagement Activities

- 3.3.3 The DSD will listen to the views of the public with the people-oriented principle. Different public engagement activities, including roving exhibitions, community group meeting, focus group meetings and project briefing sessions were held to inform the public and stakeholders on the latest progress of the relocation project and solicit public views. The DSD will continue to communicate with the public through different channels, e.g. Community Liaison Groups and keep the public and District Council Members informed of the project progress. Details and arrangement of the communication with the public will be further elaborated and discussed with relevant stakeholders and District Council Members in due course.

Odour Impact during the Operation of the Relocated STSTW

- 3.3.4 The relationship between the proposed location of the ventilation shaft and its surrounding environment has been assessed by means of mathematical model. Moreover, a wind tunnel test for analyzing the wind speed and wind direction at the proposed location of the ventilation shaft has been conducted. Based on the analysis results of the mathematical model and the wind tunnel test, through implementing proper odour control measures, the anticipated odour level of nearby residential estates / villages (e.g. Chevalier Garden, Kam Tai Court, Tai Shui Hang Village, A Kung Kok Fishermen Village and the Castello etc.) would be far below the allowable limit of 5 odour units as stipulated in the Environmental Impact Assessment Ordinance – Technical Memorandum. Moreover, during the operation of the future STSTW in caverns, various odour control measures, including the installation of deodourising units, will be adopted to clean up the exhaust air and effectively eliminate the potential odour impact to the surrounding areas.

- 3.3.5 In addition, the ventilation shaft is proposed to be located at a remote location on the hill, surrounded by mountain ranges. Upon the completion of the relocation project, the ventilation shaft would be screened off by these mountain ranges and vegetation from the surrounding residents.
- 3.3.6 A model deodorizer was displayed during the roving exhibition at Chevalier Garden, community group meeting at Heng On Estate Community Centre, project briefing session at Tak Sun Secondary School and the site visit to Stanley Sewage Treatment Works to demonstrate to the public on the odour measurement and effectiveness of deodorizer in removing the odour.

Traffic Impact during Construction of Caverns and Operation of STSTW

- 3.3.7 Two temporary traffic management options were suggested in the previous stages, and these two options were further studied. In the preliminary design stage, two temporary roads, including one via Ma On Shan Area 73, and another one via the open area adjacent to A Kung Kok Street, were proposed. These options enable the construction vehicles to enter / exit the construction site directly from / to Ma On Shan Road so as to minimize the use of A Kung Kok Street. Trucks transporting excavated rock will also be restricted from using A Kung Kok Street in morning peak hours.
- 3.3.8 Regarding the vehicles taking sludge away from the future STSTW in cavern, as the traffic volume of the sludge carrying vehicles will be at a similar level as compared with the existing STSTW, the operation of the future STSTW in cavern would not cause any adverse traffic impact to the nearby road network.

Rock Excavation Method and Handling of Excavated Rock from Caverns Construction

- 3.3.9 The excavated rock from the caverns construction at Nui Po Shan will not be treated as construction waste as the rock is in good quality. It is now considering to re-use the excavated rock for different use. Moreover, the possibility of re-using the excavated rocks in some local beautification project will also be investigated and discussed with other relevant Government department during the detailed design stage.
- 3.3.10 Drill-and-Blast Method and the use of Tunnel Boring Machine (TBM) are the most common methods for rock excavation. Considering that the maximum width of a TBM is 17.6 metre, while the designed width of this cavern is 32 metre, it will be much more convenient, beneficial and cost effective to excavate the rock by Drill-and-Blast Method. It is pointed out that the current blasting technique is very advance and safe. For example, the volunteers working in the Society for the Prevention of Cruelty to Animals (SPCA) expressed that the cats and dogs (with more sensitive hearing than humans) were not disturbed by the blasting work for the Stage 2A of the Harbour Area Treatment Scheme in the close proximity.

Concerns on Ecological Impact due to Caverns Construction and Operation of Caverns STW

- 3.3.11 The temporary ingress / egress is located at the roadside with low ecological value, while other major works are carried out underground. This will not impose any direct impact on the Ma On Shan Country Park and the surrounding conservation areas. The permanent ecological loss throughout the entire construction of the future STSTW in cavern is approximate 4 hectares, which includes 1.3 hectares of developed area, and the loss on the woodland and vegetated land is insignificant. In addition, a number of mitigation measures are proposed to minimize the ecological impact due to the construction work on the surrounding environment. During the preliminary ecological survey, three flora species with important ecological value, including *Cibotium Barometz*, *Canthium Dicoccum* and *Peristylus Calcaratus*, are found in the works area of the relocation project. It is therefore suggested to implement appropriate mitigation measures, e.g. preserve or transplant the affected species as far as possible.
- 3.3.12 As the caverns are located about 80 to 200 metre beneath Nui Po Shan, excavation in rock would have relatively minor potential impacts on groundwater as compared to excavation in soft ground. The rock itself is a natural barrier with very low permeability which can prevent potential groundwater drawdown in any soil and aquifer layers above the rock stratum. Thus it would not adversely affect the groundwater level within the soil layer as well as the water level of the adjacent streams. Since the majority of the Sha Tin Cavern Sewage Treatment Work is situated in very competent rock stratum in Nui Po Shan, the impact on groundwater would be minor. Nonetheless, precautionary measures would be taken in caverns design and construction to minimize the potential impacts from the change in groundwater level. Preventive measures such as pre-grouting and post-grouting, which have been successfully applied in other tunnel projects in Hong Kong, would be conducted to minimize any impact from the cavern construction activities to the adjacent groundwater table as and when necessary. Furthermore continuous monitoring will be carried out and the data will be submitted to the Geotechnical Engineering Office (GEO) of CEDD for their review and record. According to the preliminary assessment, as the geology of Nui Po Shan is firm, and the relocation project is not located within the water gathering ground, there is very insignificant impact on the hydrology and ecology of the surrounding environment.
- 3.3.13 The effects of the demolition of the existing STSTW on the egretty and egrets flight path have been assessed. The assessment result shows that as the demolition of the existing STSTW will not have significant impact on the egretty in Penfold Park as they are at certain distance. In addition, the assessment on the egrets flight path also indicates that most egrets forage along Shing Mun River, Ma On Shan and Tai Po, and only a few of them would forage at area at the vicinity of the existing STSTW. As such, it is concluded that the decommissioning project will have minimal impact on the surrounding environment.

Enquiry on Methods Adopted in Ground Investigation

3.3.14 Further ground investigation works are currently being conducted to collect and understand the rock stratum and its properties where the future STSTW is located. Moreover, gravity survey and seismic reflection investigation are also being conducted on site. Based on the results of the preliminary ground investigation works, the rock where the future STSTW is located is mainly composed of strong granite. In addition, Horizontal Directional Coring will also be used to comprehensively investigate the condition of the rock layer, and to reduce the risk during the construction stage.

Other Environmental Impact due to Caverns Construction and Operation of Caverns STW

3.3.15 Carbon auditing is not required under the Environmental Impact Assessment Ordinance. However, this will be conducted during the next stage of the project. In addition, carbon auditing and the possible carbon footprint of the future STSTW will also be studied after its commissioning.

3.3.16 The DSD feels regretful for any nuisances caused during the ground investigation (GI) works, which is likely caused by the transportation of construction materials by helicopters. DSD and his consultants immediately followed up with the GI contractor on the complaint and implemented mitigation measures. DSD will continue to monitor situation. However, if the situation remains unsatisfactory, public is encouraged to express the view to DSD for further actions.

Sewage Treatment in the Relocated STSTW

3.3.17 Study on provision of anaerobic digestion system within caverns, which will generate renewable energy but also flammable dangerous gas, had been carried out. However, it is revealed that manufacturing of dangerous goods below ground level is not acceptable under prevailing regulation.

3.3.18 The consultant is currently investigating the performance and application of various biological sewage treatment technologies in order to determine the most effective option.

3.3.19 Odourous gas will be treated before being emitted from the ventilation shaft of the future cavern STSTW. By making reference to the current practice, sewage treatment process would not constitute to the generation of water vapour.

3.3.20 The whole Sha Tin District adopts seawater flushing. Switching the use of seawater to treated effluent will require a higher level of treatment than secondary to meet flushing water standard, with much higher construction and operation costs, as well as operation power consumption owing to the additional treatment processes. The benefits, nonetheless, are not apparent as such a switching will not give rise to conservation of freshwater resources.

Design Effluent Standard and Export Route of the Relocated STSTW

- 3.3.21 At present, during emergency condition, treated effluent will be discharged into the Tolo Harbour through the emergency bypass. Such emergency arrangement will continue to be adopted after the relocation.
- 3.3.22 The sewage treatment level of the existing STSTW is secondary, and is able to fulfil the relevant water quality requirements. For the relocated STSTW, maintaining the treatment level the same as that of the existing STSTW will result in a water quality at least not inferior to the present situation. Raising the treatment level to tertiary treatment will give higher quality effluent but at the same time will incur significantly higher construction and operation costs.

Cost-effectiveness of the Relocation Project

- 3.3.23 The actual construction cost of the relocation project will still rely on various factors including the use of the latest sewage treatment technology, which may reduce the construction or the operation costs of the sewage treatment plant. The DSD also shares the public concerns on over-expenditure, and will adopt a multi approach to control the cost of the relocation project, including further investigation of different types of sewage treatment technology to minimize the construction and operation cost of the sewage treatment plant. A holistic approach will be taken in the detailed design stage with an objective to design a sewage treatment works with the lowest life cycle cost.
- 3.3.24 In order to further reduce the construction cost of the relocation cost, a temporary magazine will be placed at the vicinity of the construction site. Details and arrangement of the temporary magazine will be discussed with the Environmental Protection Department (EPD) and the Mines Division of the CEDD.

Re-use of Facilities in the Existing STSTW

- 3.3.25 The possibility of re-using facilities in the existing STSTW would be studied. However, as most of the existing facilities has been operating for 40 years at the time of the completion of the relocation project, it is unlikely that many of these existing facilities could be reused.

Future Land Use of the Existing STSTW site

- 3.3.26 Currently, there is no plan on the future land use of the existing STSTW Site. However, the Government would undertake a detailed planning and engineering study for the released site at a later stage so that the latest community needs and public opinions could be considered in the planning.

Duration of the Relocation Project

3.3.27 The construction works of the relocation project would tentatively commence in coming few years upon the completion of the pre-construction preparation works, design works and approval of funding from the Legislative Council. Caverns excavation works would reach its peak in some three years after the commencement. The electrical and mechanical works for the sewage treatment facilities would commence immediately after blasting work is completed. The whole construction works of the relocation project is expected to complete in around 10 years.

Ma Liu Shui Reclamation Proposal by the CEDD

3.3.28 The Ma Liu Shui Reclamation Proposal by the CEDD and the relocation of the STSTW to caverns project by the DSD, covering different engineering scopes, are two separate and independent projects.

Emergency Evacuation of the Relocated STSTW

3.3.29 Understanding the public's concern on the risk in operation, DSD would further study and formulate the emergency evacuation arrangement.

Other Community and Stakeholders Aspirations / Concerns

3.3.30 The result of the Quantitative Risk Assessment shows that the risk level of storage transport and use of explosive under this project is "as low as reasonably practicable" ("ALARP") which is far lower than similar projects.

3.3.31 Various new sewage treatment technologies are now being investigated. In addition, caverns will be designed in an innovative and creative way.

3.3.32 By making reference to overseas examples, caverns could be equipped with proper ventilation system to effectively reduce the possible impact of radon. Moreover, test has been conducted in the Stanley Sewage Treatment Works, which is located inside a cavern, and result showed that ventilation system could effectively reduce the concentration of radon in the cavern.

3.3.33 The possibility of constructing a hiking trail will be further studied.

3.3.34 Regarding the motorcycle parking spaces, DSD has already relayed message to Transport Department (TD).

Chinese Version of Responses to Major Comments

3.3.35 The Chinese version of the responses to major comments is shown in **Appendix U**.