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ACE-EIA Paper 2/2021
For advice on 13 September 2021

Environmental Impact Assessment Ordinance (Cap. 499)
Environmental Impact Assessment Report

**Relocation of Diamond Hill Fresh Water
and Salt Water Service Reservoirs to Caverns**

PURPOSE

This paper presents the key findings and recommendations of the Environmental Impact Assessment (EIA) report on “Relocation of Diamond Hill Fresh Water and Salt Water Service Reservoirs to Caverns” (hereafter known as “the Project”) submitted under Section 6(2) of the Environmental Impact Assessment Ordinance (EIAO) (Application No. EIA-271/2021). The Project is a Designated Project by virtue of Item Q.2, Part I, Schedule 2 to the EIAO, as it involves construction of underground rock caverns. The Water Supplies Department (WSD) (“the Applicant”) and its consultants will present the report at the meeting of the EIA Subcommittee.

ADVICE SOUGHT

2. Members’ views are sought on the findings and recommendations of the EIA report. The Director of Environmental Protection (DEP) will take into account the comments from the public and the Advisory Council on the Environment (ACE) in deciding whether or not to approve the EIA report under Section 8(3) of the EIAO.

BACKGROUND

3. In 2011-12 Policy Address, the Government announced to adopt a multi-pronged approach to expand our land resources, including actively explore the use

of rock caverns to re-provision existing public facilities and release such sites for housing and other uses. A feasibility study “*Enhancing Land Supply Strategy: Reclamation outside Victoria Harbour and Rock Cavern Development*” has been carried out by Civil Engineering and Development Department (CEDD) which identified three Government facilities namely, (i) Diamond Hill Fresh Water and Salt Water Service Reservoirs (DHSRs); (ii) Sham Tseng Sewage Treatment Works; and (iii) Sai Kung Sewage Treatment Works as potential sites for relocating to caverns.

4. The Applicant commenced a detailed feasibility study in December 2014 and confirmed that relocating the DHSRs and associated facilities to caverns is technically feasible. The relocation of DHSRs to caverns would generate social benefits from the release of about 4 hectares of land to address the territorial housing needs and the local community needs. The Applicant submitted the EIA report for the Project for approval under the EIAO on 17 May 2021. DEP, in consultation with relevant authorities, considered that the EIA report has met the requirements in the EIA Study Brief and the Technical Memorandum on EIA Process (TM), for the purpose of its exhibition for public inspection under Section 7(4) of the EIAO on 13 July 2021.

NEED FOR THE PROJECT

5. There is a need to optimise the supply of land by sustainable and innovative approaches to support the social and economic development of Hong Kong, as stated in the 2011-12 Policy Address. Relocation of the service reservoirs and the associated facilities can provide approximately 4 hectares valuable land in urban area for residential development or other beneficial uses.

ENVIRONMENTAL BENEFITS

6. According to the EIA report, the Project will bring about the following potential environmental benefits:

- (i) The released site will provide opportunities for developing for enhancing the community with ample open spaces, a better connectivity to Government, Institution or Community (G/IC) facilities and easy access to the natural environment;

- (ii) The reliability water supply system in Upper Wong Tai Sin district (Fresh Water) and in Central Kowloon (Salt Water) could be enhanced; and
- (iii) Rocks generated from the Project will provide valuable source of construction materials to support the local construction industry.

DESCRIPTION OF THE PROJECT

7. The existing DHSRs are located at Shatin Pass Road in Tsz Wan Shan and are proposed to be relocated to caverns at hillside northwest of Ma Chai Hang Fresh Water Services Reservoirs. The layout plan of the Project is shown in **Figure 1**. The key component of the Project are as follows:

- (i) Construction of tunnels, ventilation system, caverns for accommodating the relocated DHSRs and the associated facilities;
- (ii) Construction of the relocated DHSRs and associated pumping stations and water main laying works; and
- (iii) Terminating the operation of the existing DHSRs and the associated facilities.

8. Construction of the Project is tentatively scheduled to commence in mid-2022 for completion in 2027. Demolition of the existing facilities and construction of the infrastructures at the released site are not included in the Project and will be carried out by other parties.

CONSIDERATION OF ALTERNATIVE OPTIONS

9. The EIA report has considered alternative options for the development of the Project, including cavern locations, access portal locations and construction methodologies to avoid and minimise environmental impacts. The recommended options have taken into account environmental considerations, land matters, site constraints and comments received during the community engagement exercise. The key approaches that have been adopted by the Applicant to avoid or minimise environmental impacts are summarised as below:

Avoidance of Impacts

- (i) Locate the access tunnel portal to avoid encroaching into Lion Rock Country Park (LRCP);
- (ii) Integrate “Means of Escape” inside the access tunnel such that emergency exit tunnel /portal could be eliminated and hence avoid encroaching into semi-natural watercourse and woodland habitat; and
- (iii) Locate the access tunnel portal and ancillary facilities to further away from the flora species of conservation interest to avoid removal and transplantation of these species.

Minimisation of Impacts

- (i) Locate the access tunnel portal such that the improvement of access road to Ma Chai Hang Fresh Water Service Reservoirs and the watermain laying works at Chui Chuk Street are not required and hence minimise the disturbance to local residents in the vicinity of the proposed access tunnel portal;
- (ii) Shorten the access tunnel and reduce the footprint of the relocated DHSRs to minimise the volume of excavation and hence the generation of construction and demolition (C&D) material; and
- (iii) Adopt drill-and-blast method for the construction of tunnel and cavern to shorten the duration of construction impacts.

SPECIFIC ENVIRONMENTAL ASPECTS TO HIGHLIGHT

Air Quality

10. Fugitive dust impacts may arise from construction activities including site clearance, rock drilling, blasting operation, breaking works, excavation works, handling and transportation of C&D material, stockpiling and wind erosion.

11. Quantitative fugitive dust impact assessment has been conducted in the EIA. The assessment results indicated that, with implementation of mitigation measures including the use of cavern covers/blast nets, frequent watering and the

use dust collector with dust removal efficiency of 95%, the predicted dust impact would comply with Air Quality Objectives and adverse air quality impact arising from the construction of the Project is not anticipated. No dust and odour emission impact is expected during operation phase of the Project.

Ecology

12. Habitats identified within the Study Area of the Project included secondary woodland, shrubland, plantation, developed area and watercourse, of which two types of habitats, i.e. plantation and developed area, were located within the Project Area. The ecological values of the identified habitats within the Project Area is rated as low.

13. The proposed works would not encroach into the boundary of Lion Rock Country Park, and therefore no direct impact on wildlife and habitats within the country park is anticipated. Permanent loss of plantation and developed area are about 0.25 hectares and 0.03 hectares respectively. The magnitude of impact is thus relatively small.

Landscape and Visual

14. A broad-brush tree survey has been conducted which identified approximately 865 nos. of trees, with no tree of particular interest, within the Project Area. Among these trees, approximately 300 nos. of tree are recommended to be removed, while other would be preserved. Trees will be compensated at a ratio of not less than 1:1 ratio in terms of quantity of removed trees. Around 40 no. of compensatory trees could be planted on site and the remaining compensatory trees would be planted at Ma Chai Hang Fresh Water Service Reservoirs.

15. Mitigation measures such as compensatory tree planting, landscape planting, rooftop and vertical greening and careful design of ancillary facilities are recommended. With implementation of all proposed mitigation measures, adverse impacts on landscape and visual impacts during construction and operation phases are not anticipated.

Hazard to Life

16. Potential hazards are related to storage and use of explosives (Category 1 Dangerous Goods) for the construction of the tunnel and caverns. Explosives will be delivered daily to the Project site and loaded immediately for blasting and there

will not be overnight storage of explosives. Moreover, no works area will be located in the vicinity of any Potentially Hazardous Installation¹ and there would not be manufacturing of any dangerous goods during both construction and operation phases of the Project. Hence, potential hazard is minimal and Quantitative Risk Analysis is not necessary.

Other Environmental Impacts

17. Other environmental impacts including noise, water quality, waste management and land contamination are relatively minor and have been satisfactorily addressed in the EIA report. With the implementation of the recommended mitigation measures, the Project will comply with the relevant requirements under the TM.

ENVIRONMENTAL MONITORING AND AUDIT

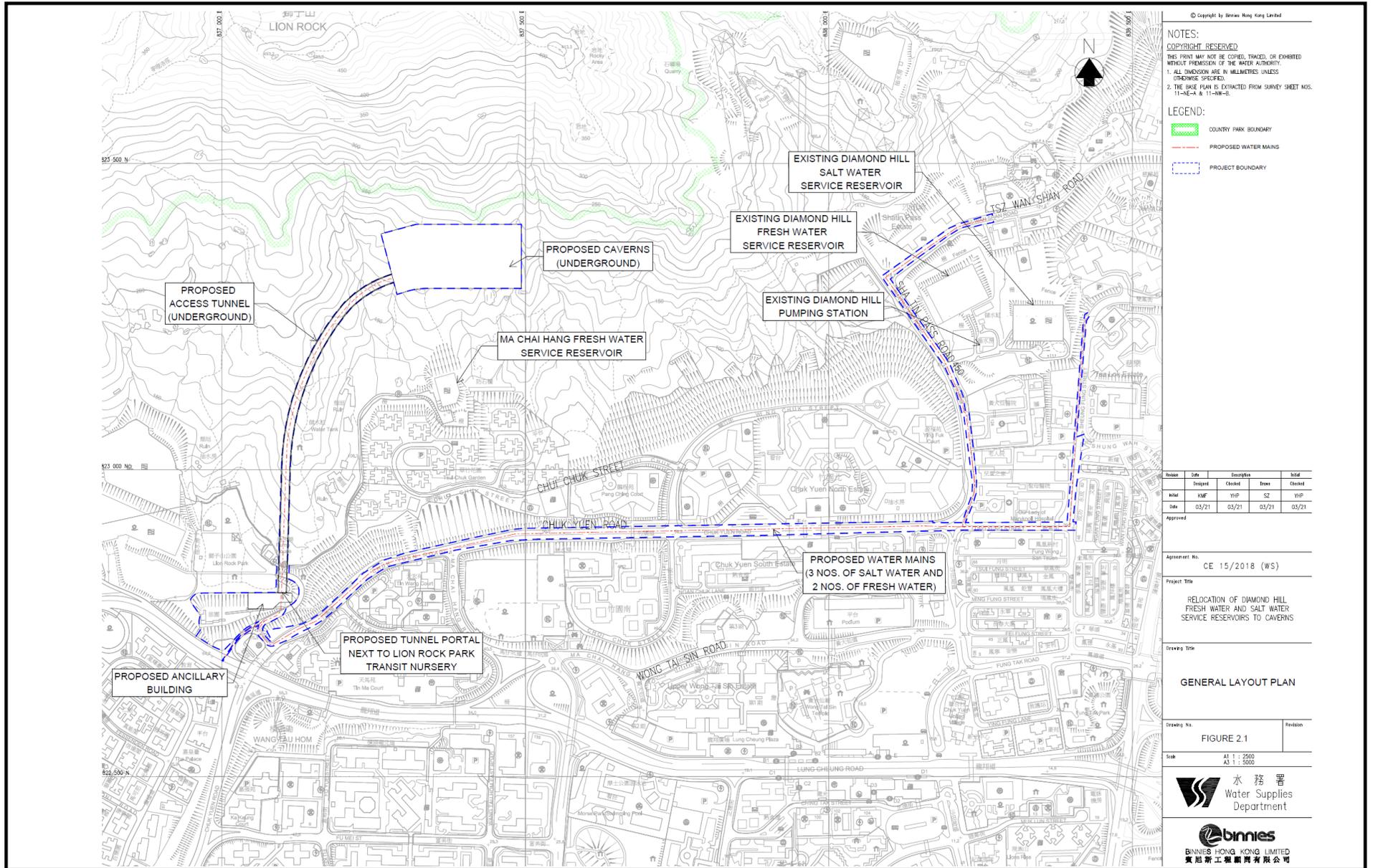
18. The EIA report has included an Environmental Monitoring and Audit (EM&A) Manual, which recommends an EM&A programme during the construction and operation phases of the Project. Key recommended EM&A requirements cover air quality, noise, water quality, waste management, ecology, landscape and visual aspects.

PUBLIC CONSULTATION

19. The Applicant has made the EIA report, EM&A Manual and Executive Summary available for public inspection under the EIAO from 27 July to 25 August 2021. During the inspection period, a total of two sets of public comments were received by the Environmental Protection Department (EPD). A summary of all public comments received by EPD during the public inspection period and a gist of the main concerns raised in the public comments will be provided separately.

August 2021
Environmental Assessment Division
Environmental Protection Department

¹ Potentially Hazardous Installation is an installation which stores hazardous materials in quantities equal to greater than a specified threshold quantity which varies with different substances. Examples include LPG storage facilities, chlorine stores, explosives depots, etc.



Project Title:	Relocation of Diamond Hill Fresh Water and Salt Water Service Reservoirs to Caverns
Figure 1	Project Layout Plan [Remarks: This figure is prepared based on Figure 2.1 of the EIA Executive Summary]

EIA Application No.:	
EIA - 271/2021	

