

**Development of Anderson Road Quarry site
Rock Cavern Developments**

Project Profile

Civil Engineering and Development Department

January 2014

Project Profile

Table of Contents

1. BASIC INFORMATION.....	1
1.1 Project Title.....	1
1.2 Purpose and Nature of Project.....	1
1.3 Name of Project Proponent.....	1
1.4 Location and Scale of Project.....	1
1.5 Number and Types of Designated Project to be Covered by the Project Profile.....	2
1.6 Name and Telephone Number of Contact Person.....	2
2. OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME.....	3
2.1 Project Implementation.....	3
2.2 Project Timetable.....	3
2.3 Interaction with Other Projects.....	3
3. POSSIBLE IMPACT ON THE ENVIRONMENT.....	4
3.1 Air Quality.....	4
3.2 Noise.....	4
3.3 Water Quality.....	4
3.4 Waste.....	5
3.5 Ecology.....	5
3.6 Landscape and Visual.....	6
4. MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT.....	7
4.1 Existing Environment.....	7
5. ENVIRONMENTAL PROTECTION MEASURES TO BE INCORPORATED IN THE DESIGN AND ANY FURTHER ENVIRONMENTAL IMPLICATIONS.....	8
5.1 General.....	8
5.2 Air quality.....	8
5.3 Noise.....	9
5.4 Water Quality.....	9
5.5 Waste.....	10
5.6 Ecology.....	12
5.7 Landscape and Visual.....	12
5.8 Severity, Distribution and Duration of Environmental Effects and Further Implications.....	12
6. USE OF PREVIOUSLY APPROVED EIA REPORTS.....	14

FIGURES

- 227724/E/0020 Project Location Plan (Rock Cavern Developments)
- 227724/E/0030 Location of Development of Anderson Road Quarry site

1. BASIC INFORMATION

1.1 Project Title

1.1.1 Development of Anderson Road Quarry site- Rock Cavern Developments.

1.2 Purpose and Nature of Project

1.2.1 Rock cavern developments were recommended in the Planning Study on Future Land Use at Anderson Road Quarry (the Planning Study) under the Consultancy agreement No. CE4/2010(TP). A total of eight caverns are proposed within the site boundary of the Development of Anderson Road Quarry site (ARQ Development). They will be dispatched at two locations on the existing cut slopes on hill side of the development. One of the caverns will be located at +200mPD, three of them will be located at +190mPD and the remaining four caverns will be located at +310mPD. The location of ARQ Development is shown in **Figure No. 227724/E/0030**.

1.2.2 The main purpose in utilizing caverns is to fully utilise the existing rock feature available.

1.3 Name of Project Proponent

1.3.1 New Territories East Development Office of Civil Engineering and Development Department, the Government of the Hong Kong Special Administrative Region.

1.4 Location and Scale of Project

1.4.1 The locations of the proposed rock caverns are shown on **Figure No. 227724/E/0020**.

1.4.2 The proposed caverns are located on the hillside of the proposed ARQ Development.

- One cavern is proposed at +310mPD for commercial use (e.g. food and beverage). Its dimensions are about 25m(W) x 5m(H) and 10m (D).
- Three caverns are proposed at +310mPD for commercial use (e.g. food and beverage). Their dimensions are about 16m(W) x 4m(H) x 10m(D).
- One of the caverns is proposed at +200mPD as quarry exhibition area/resource centre. Its dimension is about 25m(W) x 11m(H) and 35m(D).
- Three caverns are proposed at +190mPD for commercial use (e.g. food and beverage). Their dimensions varies between 22-25m(W) x 11m(H) x 25-35m(D). The proposed caverns would have a direct connection, in the form of a landscape deck, with the adjacent development.

1.5 Number and Types of Designated Project to be Covered by the Project Profile

1.5.1 This Project comprises the following element which are considered as Designated Project as per Schedule 2, Part I of the EIAO:

(i) *Item Q.2 – Underground rock caverns.*

1.6 Name and Telephone Number of Contact Person

1.6.1 Contact Person is: -

Mr CHIANG Nin-Tat, Eric (Chief Engineer/NTE2)
New Territories East Development Office, CEDD
Suite 1213, Chinachem Golden Plaza
77 Mody Road
Tsimshatsui
Kowloon
Tel. No.: 2301 1383
Fax No.: 2721 8630

2. OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

2.1 Project Implementation

2.1.1 The Project Proponent (PP) will engage consultants to ascertain the feasibility of implementing the proposed rock cavern developments recommended under the Planning Study.

2.1.2 Specialist Environmental Consultants will be employed for undertaking the Environmental Impact Assessment (EIA) study according to the Study Brief to be issued by the Director of Environmental Protection and to respond on behalf of the PP on issues related to the EIA.

2.2 Project Timetable

2.2.1 The proposed construction period for the rock cavern developments is tentatively scheduled to commence in 2018 for completion in 2021.

2.3 Interaction with Other Projects

2.3.1 ARQ Development with a proposed construction period from 2016 to 2026 is identified as the potential concurrent project (as given in **Table 2.1** below). Any cumulative impacts due to the concurrent project during both construction and operational phases of the Project would be identified and assessed accordingly. The list of potential concurrent project will be reviewed and updated during the EIA study.

Table 2.1: List of concurrent project

Concurrent Project	Construction Period
Development of Anderson Road Quarry site	2016 – 2026

3. POSSIBLE IMPACT ON THE ENVIRONMENT

3.1 Air Quality

Construction Impacts

- 3.1.1 Dust generation is the major potential air quality impact during the construction phase. It would arise from construction activities such as material handling, excavation, vehicle movement and erosion of unpaved area and stockpiles. These activities would potentially pose adverse air quality impacts to the nearby air sensitive receivers (ASRs).

Operational Impacts

- 3.1.2 Emission from the ventilation shaft of the cavern would be the major source of air quality impact during the operational phase.

3.2 Noise

Construction Impacts

- 3.2.1 The source of potential noise nuisance during construction is primarily from the use of powered mechanical equipment on site. The construction activities would involve the use of plant for excavation and associated works which have the potential to pose adverse noise impacts to the surrounding noise sensitive receivers (NSRs).

Operational Impacts

- 3.2.2 Fixed noise from the ventilation shafts of the caverns would be the major noise source during the operational phase.

3.3 Water Quality

Construction Impacts

- 3.3.1 Potential water pollution sources during the construction phase include site runoff, sewage from on-site sanitary facilities and accidental spillage of chemicals.

Operational Impacts

- 3.3.2 The major water pollution sources during the operational phase would potentially arise from sewage generated from commercial uses within the proposed rock cavern. Nevertheless, as the sewage will be collected by the proposed sewerage system under the ARQ Development, no significant water quality impacts are anticipated.

3.4 Waste

- 3.4.1 The major waste sources that would be generated during the construction phase of the Project include construction and demolition (C&D) materials and waste, chemical waste and general refuse. The timing and quantities of waste to be generated will depend on the construction programmes of the works.
- 3.4.2 The waste generated during the operational phase of the Project will be those typical of commercial activities, such as general refuse and food waste.

3.5 Ecology

- 3.5.1 The proposed rock cavern developments are situated on the existing rock slopes within the ARQ Development. Rehabilitation plantation strips have been established on these rock slopes under the current Quarry Rehabilitation Contract No. GE/96/10. Vegetation established in these rehabilitation plantations may provide some suitable roosting and foraging sites for wildlife use (especially for fauna colonizing the nearby natural habitats in Tai Sheung Tok Hill), but the attractiveness may be limited due to current operation of the quarry site.
- 3.5.2 The potential ecological impact to the existing rock slopes would be considered to be negligible, while ecological impacts to the rehabilitation plantation arising from the rock cavern development will be associated with:

Construction Phase:

- (a) Direct habitat loss and habitat fragmentation;
- (b) Disturbance to wildlife and vegetation due to possible air pollution, water pollution, noise and human activities;
- (c) Vegetation clearance;
- (d) Toxic pollutants during construction; and
- (e) Soil compaction.

Operation Phase:

- (a) Habitat loss/ disturbance of potential foraging sites at the rehabilitation plantation; and
- (b) Disturbance to wildlife and vegetation due to possible air pollution, water pollution, noise and human activities during operation.

3.6 Landscape and Visual

Construction Phase

- 3.6.1 During the construction phase, the potential landscape and visual impacts are likely to result from stockpiling of construction and demolition materials, including existing topsoil for reinstatement works, removal of existing vegetation, and storage of construction equipment and plants.

Operational Phase

- 3.6.2 The Project itself will lead to potential landscape and visual impact through visual intrusion and/ or obstruction and also changes to the existing natural landscape.

4. MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

4.1 Existing Environment

4.1.1 The proposed rock cavern developments are situated on the existing rock slopes within ARQ Development. The existing and planned sensitive receivers are listed in **Table 4.1** and shown in **Figure No. 227724/E/0020**. Any other sensitive receivers to be identified during the EIA study will also be considered.

Table 4.1 Representative sensitive receivers in the vicinity of the Project

Description	Nature of Sensitive Receiver	Type of Sensitive Receiver
Planned residential development at Development of Anderson Road (DAR)	R	ASR, NSR
Planned residential development at ARQ Development	R	ASR, NSR
Shun Lee Estate	R	ASR, NSR
Shun On Estate	R	ASR, NSR
Shun Tin Estate	R	ASR, NSR
Sau Mau Ping Estate	R	ASR, NSR
Po Tat Estate	R	ASR, NSR

Note: R – residential

5. ENVIRONMENTAL PROTECTION MEASURES TO BE INCORPORATED IN THE DESIGN AND ANY FURTHER ENVIRONMENTAL IMPLICATIONS

5.1 General

5.1.1 The EIA study will investigate those environmental impacts and proposed the appropriate mitigation measures with the intention that all works recommended by the Project would be environmentally acceptable and cost effective. The residual impacts, if any, would be confined with the allowable limits. Environmental monitoring and auditing of the potential impacts that may arise from implementation of the works proposed by the Project would be provided for the construction and operational phases. Subject to the findings of the EIA study, the following mitigation measures will be incorporated in the design and construction of the Project.

5.2 Air quality

Construction Phase

5.2.1 In order to prevent adverse impacts on air quality, the control measures stipulated in the Air Pollution Control (Construction Dust) Regulations would be implemented wherever applicable to limit the dust emissions from the site. Subject to investigation, the following mitigation measures will be considered during the construction period to minimize impacts on air quality on nearby ASRs.

- Stockpiles of dusty material will not extend beyond site boundaries;
- In the process of material handling, any material which has the potential to create dust will be treated with water or sprayed with a wetting agent where practicable;
- Stockpiles of sand and aggregate will be enclosed on three sides and water sprays will be used to dampen stored materials and when receiving raw material;
- The site will be frequently cleaned and watered to minimise fugitive dust emissions;
- Motorised vehicles on the site will be restricted to a maximum speed of 15 km/hr and shall be confined to designated haul routes which will be paved or surfaced with hardcore; and

Operational Phase

5.2.2 Based on the best available information at this stage, the cavern developments are unlikely to be emission sources during the operational phase. However, the operational nature of the caverns may subject to change and could only be confirmed in later stage. If the operational nature of cavern developments is changed and identified to be emission sources, further assessment will then be carried out to determine the potential mitigation measures required.

5.3 Noise

Construction Noise

5.3.1 In order to mitigate the potential adverse noise impacts arise from the construction works, the following general mitigation measures will be put in place:

- Good site practices to limit noise emissions at the source;
- Use of quiet plant;
- Use of shrouds/ temporary noise barriers to screen noise from relatively static PMEs;
- Locating noise emitting plant at maximum distance from noise sensitive receivers; and
- Regular maintenance of site plant/equipment.

Operational Phase

5.3.2 To minimise the potential noise impact from the fixed noise sources, the following good practices should be adopted:

- Louvres should be oriented away from adjacent NSRs; and
- Direct noise mitigation measures including silencers, acoustic louvers and acoustic enclosures should be allowed for in the design of the ventilation shafts.

5.4 Water Quality

Construction Phase

5.4.1 In order to prevent adverse water quality impacts, the following general mitigation measures would be put in place.

- Good site practice in accordance with the ProPECC PN 1/94 "Construction Site Drainage" and "Recommended Pollution Control Clauses for Construction Contracts" issued by EPD, and the procedures in the Environment, Transport

and Works Bureau (ETWB) Technical Circular (Works) CTCW) No. 5/2005 "Protection of Natural Stream/Rivers from adverse impact arising from construction works";

- Runoff from the construction site would be properly collected and treated to ensure the effluent complies with Water Pollution Control Ordinance. Silt trap and oil interceptor would be provided to remove oil, lubricants, grease, silt, grit and debris from the wastewater before being pumped to the public storm water drainage system. The silt traps and oil interceptors would be cleaned and maintained regularly;
- Open stockpiles of materials on site would be avoided, or where unavoidable covered with tarpaulin or similar fabric during rainstorms;
- Where possible, works entailing soil excavation would be minimised during the rainy season;
- Oil interceptors would be provided and properly maintained for collecting spillage or leakages from site workshops. The waste oil removed would be collected by licensed collectors; and
- Mobile toilets or other appropriate means would be provided to store sewage before disposal through licensed collection agent or discharging to main

Operational Phase

5.4.2 The following general mitigation measures are to be considered:

- Provision of sand/silt and oil/grease traps, porous pavements and detention ponds at suitable locations to prevent ingress of pollutants to the storm water system; and
- Adopting proper sewerage system to collect sewage flows from the developments.

5.5 Waste

Construction Phase

5.5.1 Waste arising during the construction phase will largely consist of spoil generated during earthworks, and general construction waste/ surplus materials (such as C&D materials, chemical waste and general refuse).

5.5.2 The following measures would be considered to reduce the quantities of C&D materials for disposal off site:

- All C&D materials would be sorted and re-used wherever possible;
- Waste hauliers would be required to obtain the necessary registration and licences under the Waste Disposal Ordinance and the Waste Disposal (Chemical Waste) (General) Regulation from the Environmental Protection Department;
- Nomination of an approved person to be responsible for good site practice, arrangements for collection and effective disposal to an appropriate facility of all waste generated at the site;
- Separation of chemical wastes for special handling and appropriate treatment at a licensed facility;
- A recording system for the amount of wastes generated recycled and disposed of (including the disposal sites);
- In order to monitor the management of C&D materials and disposal of solid wastes at public filling facilities and landfills, a trip-ticket system would be implemented by the Contractor;
- A Waste Management Plan (WMP) would be prepared in accordance with ETWB TC(W) No. 19/2005 "Environmental Management on Construction Sites";
- Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse of materials and their proper disposal would be arranged where practicable;
- Any unused chemicals or those with remaining functional capacity would be recycled;
- Reusable non-timber formwork would be adopted to reduce the amount of C&D materials; and
- Proper storage and site practices to minimize the potential for damage or contamination of construction materials.

Operational Phase

- 5.5.3 During the operational phase, good waste management practices should be implemented to control the environmental impacts associated with waste handling which include sorting and segregation of wastes for reuse and disposal to maximise the opportunities for re-using and recycling materials. Provided that good waste

management practices are in place, environmental impacts associated with waste management are not expected during the operational phase of the Project.

5.6 Ecology

5.6.1 The proposed locations of the cavern developments are currently bare rock slope surface. Based on the best available information at this stage, ecological impacts arise due to the cavern developments are considered unlikely. However, the operational nature of the caverns may subject to change and could only be confirmed in later stage. If the nature of cavern developments is changed and identified to be a cause of ecological impacts, further assessment will then be carried out to investigate any potential impact to the ecological resources and determine the potential mitigation measures required.

5.6.2 As regards ecological impact, the principal of avoidance would be used wherever possible, including avoidance of any identified sensitive site or important foraging sites for fauna. For impact which is considered unavoidable, further mitigation measures would be considered, including translocation of important fauna species, transplantation of rare/protected floristic resources, confining construction works to a specific area/season, alternative design/construction methods, good site practices etc.. Compensation would be considered for the loss of important species or habitats, if any, on like-for-like basis whenever possible.

5.7 Landscape and Visual

5.7.1 During construction phase, effective mitigation measures to reduce the potential landscape and visual impacts of the works include erosion control measures, minimization of works site areas, trees preservation, screening of works located near particularly sensitive uses.

5.7.2 Subject to further investigation during the EIA study, measures to mitigate the potential permanent landscape and visual impact include, but not limited to, appropriate aesthetic design and treatment on aboveground structures, landscaping works, tree transplanting/ compensatory planting for any loss of tree, if any, due to the works etc.

5.8 Severity, Distribution and Duration of Environmental Effects and Further Implications

5.8.1 Subject to the findings of the assessments, effective control and mitigation measures would be identified to ensure potential impacts are reduced to an acceptable level. The potential severity, distribution and duration of environmental effects such as

beneficial and adverse effects, short and long term effects, secondary and induced effects, as well as cumulative effects would be considered and addressed in the EIA, where applicable. Feedback from public consultation conducted by the PP would also be documented in the EIA.

6. USE OF PREVIOUSLY APPROVED EIA REPORTS

6.1.1 No previously approved EIA report exists for the proposed rock cavern development. However, reference would be made to the EIA report of the ARQ Development which is expected to be approved by mid 2014.

<u>EIA Study Brief Application No.</u>	<u>Title</u>
ESB-247/2012	Development of Anderson Road Quarry

Figures
