CYBERPORT DEVELOPMENT
SITE FORMATION BY ROCK BLASTING
FOR CONSTRUCTION OF SOUTHERN ACCESS ROAD

PROJECT PROFILE FOR MATERIAL CHANGE TO A DESIGNATED PROJECT

1. BASIC INFORMATION

1.1 Project Description

As part of the Engineering Feasibility Study for the proposed development at Telegraph Bay, an environmental impact assessment (EIA) for Scheme 2 (i.e. the Cyberport Development) has been conducted and the EIA Study Report has been approved in April 1999 under the Environmental Impact Assessment Ordinance (EIAO). Subsequently, a drill and blasting method as opposed to the conventional excavation method has been proposed for the construction of the Southern Access Road and part of the site formation associated with the Southern Access Road.

As this is a material change to the methodology assumed in the above EIA report, an EIA Study needs to be carried out to address the substantial change in the construction method. This project profile is to provide preliminary information for the Director of Environmental Protection to determine the scope of the environmental issues which shall be addressed in the EIA Study, together with the technical and procedural requirements the EIA Study shall meet.

1.2 Nature of the Project, and the Proposed Addition, Modification or Alternation

The works for Cyberport Development at Telegraph Bay will involve site formation works at a southern platform to the south of the reclamation area (the existing Waterfall Bay Golf Centre) and construction of Roads D1, D2, L1, Northern Access Road and Southern Access Road. The construction of the Southern Access Road has been entrusted by the Government to Carlyle International Ltd.

Instead of employing conventional types of Powered Mechanical Equipment, drill-and-blast method is proposed to be used for the construction of the Southern Access Road (total 900m long carriageway approximately) and part of the site formation associated with the Southern Access Road.

Figure 1 shows the area of blasting works.

1.3 Name of Project Proponent

Carlyle International Limited.

1.4 Location of Project

Telegraph Bay is located on the south-west side of Hong Kong Island. The site is mostly vacant and has remained undeveloped since the reclamation was completed in 1988. The seaward edge of the reclamation is retained by a sloping seawall with a 150m long vertical seawall over the central portion. The landward side of the reclamation is surrounded by slopes covered with heavy vegetation.

At the southern end of the reclamation, there are three cut platforms for the existing Waterfall Bay Golf Centre. Rock exposures are observed on all cut slopes within this southern platform.

Short Term Tenancy of the existing Waterfall Bay Golf Centre will be terminated by December 1999 and the Golf Centre will be vacated before commencement of the construction of the Southern Access Road in December 1999.

The site location is shown in Figure 2.

1.5 Name and Telephone Number of Contact Person(s)

Contact Particulars

Project Manager

1.6 Time-table for the Addition, Modification or Alteration

Submission of Project Profile and Application for an EIA Study Brief to EPD	:	November 1999
Submission of EIA Report for Blasting	:	January 2000
Public Inspection of the EIA Report for Blasting	:	March 2000
Receipt of comments on the EIA Report from ACE	:	April 2000
Approval of the EIA Report for Blasting	:	May 2000
Application for an Environmental Permit	:	June 2000
Commencement of Blasting Works	:	July 2000

Completion of Southern Access Road	:	end 2001

2. POSSIBLE IMPACTS ON THE ENVIRONMENT

2.1 General Description of Rock Blasting for Southern Access Road

The rock blasting for the construction of the Southern Access Road will involve drilling blast holes, placing explosive charge in the blast holes, detonation, and then removal of spoils.

A series of blast holes will first be formed by means of drilling machines, which operate in a manner similar to pneumatic breakers, along the proposed split faces of rock mass. Explosive charge is then placed in the blast holes manually. After it is ensured that all safety and environmental impact mitigation measures have been taken and the site is vacated, the explosive charge is detonated. The spoils are then removed by conventional plant.

Based on an initial preliminary assessment it is proposed that blasting may be conducted in 13 blasting zones along the Southern Access Road as indicated in Figure 1.

The detonation frequency will be once per day, or once every two days, depending on the progress of forming blast holes and removal of spoils. All major construction activities associated with blasting such as forming blast holes, detonation, and spoils removal will be carried out during the normal daytime working hours on weekdays.

The time of detonation will be arranged at about 12:30 p.m., which is the lunch time for most schools and the site is vacated. Duration of detonation will last not more than one minute. The spoils will be removed after it is ensured that all explosive charge is detonated.

Preliminary assessment indicates that the volume of rock to be blasted along the Southern Access Road is estimated to be 15,000 m^3. The construction period for the blasting operation is estimated to be 3 months, if detonation frequency is about once every two days.

2.2 Description of the Environmental Changes Arising from Blasting Works

Major environmental issues associated with the blasting activity affecting the community in the neighbourhood of proposed Southern Access Road include noise, dust, vibration and risk, including flying objects.

The sensitive receivers which are likely to be affected by the proposed blasting works are as follows:

(a) SKH Lui Ming Choi Secondary School

(b) Pui Ying Secondary School

(c) Precious Blood Primary School

(d) Tsui Chin Tong School for Handicap

(e) Wah Ming House, Wah Fu Estate

(f) Wah Chui House, Wah Fu Estate

(g) Baguio Villa

(h) Kong Sin Wan Tsuen

(i) Victoria Road Government Kennels
(Hong Kong Animal Management Centre)

(j) Pok Fu Lam Kennels

2.3 Findings or Recommendations of Previous EIA Report

The key findings or recommendations of the previous EIA Study Report are summarised as below:

Construction Dust

The unmitigated 1-hour TSP criterion and 24-hour AQO are exceeded at a number of air sensitive receivers such as Precious Blood Primary School, Tsui Chin Tong School and Kong Sin Wan Tsuen.

The recommended mitigation measures include: (a) regular watering of all haul roads with complete coverage; (b) speed control for all on-site vehicle movement to 10kph in all sites; and (c) covering/dampening all stockpiles over $50m^3$ during dry/windy conditions for all sites.

Construction Noise

The unmitigated construction noise levels exceed the noise standard of 75 dB(A) by up to 3 dB(A) at a number of noise sensitive receives such as Baguio Villa, Wah Fu Estate, Kong Sin Wan Tsuen and Pui Ying Secondary School.

The recommended mitigation measures include: (a) adoption of quiet plant; (b) erection of 3m high barrier (or site hoarding) for Kong Sin Wan Tsuen; and (c) provision of portable acoustic barriers during school examination periods.

Water Quality

No adverse marine water quality impact would be expected by using control dredging techniques; collection and off-site disposal of sewage; coverage and containment of loose materials and associated runoff.

Waste Impact

The piers, jetties and marina will be constructed on piles, therefore the wastes generated and any impacts would be minimal. With the adequate waste collection,

treatment and disposal facilities, there would not be any unacceptable residual waste impacts.

2.4 Description of Possible Environmental Impacts Arising from Blasting Works

Construction Dust

General construction activities such as forming blast holes, materials handling and vehicle movement on haul roads would generate dust impact. The amount of dust due to blasting will greatly depend on the area to be blasted.

Carbon Monoxide

Carbon Monoxide is the pollutant produced in greatest quantity from explosive detonation. The amount of CO depends on the type and amount of explosive and the ventilation rate in the blast hole. The concentration of CO at the air sensitive receivers will be greatly affected by the wind speed and wind direction. Under windy day, the CO can be transported and dispersed to farther area. However, under calm wind condition, the pollutant is not easy to be blown away, resulting in higher CO concentration.

Construction Noise and Air Overpressure

Comparing with the construction noise generated by the items of PME, noise impact from blasting would be intermittent and short-term.

One major concern during blasting is the air overpressure. Air overpressure is the low frequency air vibration with value that are usually under 20 Hz. Air blast contains a considerable amount of low frequency energy which can eventually produce direct damage on structures. However, air blast usually produces fewer problems than ground vibrations. Windowpanes usually break before structural damage occurs.

Construction noise will also be generated in the process of forming blast holes by drilling plant, and removal of spoils. The noise impact, however, will be similar to that generated in rock excavation by conventional plant.

Blasting Vibration

The M&Q Division requires an assessment of blasting vibration and its effects on nearby structures.

With the detonation of explosives, ground vibration will be generated through the propagation of seismic waves. The severity of this shock wave at a particular point depends on the type of explosive, the quantity of explosive, how the explosive is initiated, the type of blasting being carried out, the ground formation, the ground composition and the distance from the blast.

Water Quality

As most of the blasting zones have been covered by vegetation, the soil is rich of organic matter. Although small amount of the soil may drain into the Telegraph Bay through the runoff in the site and in the form of flyrock, the suspended solid of the soil may exert variable biochemical and chemical oxygen demands on receiving water bodies.

Flying Objects

During blasting, flyrock will be generated. The throwing distance and dimension of the flyrock will depend on the charge density and blast hole diameter. Improper control of the flyrock will cause damage to the structure and human being.

3. DESCRIPTIONS OF MITIGATION MEASURES

3.1 Construction Dust

The dust suppression measures recommended in the previous EIA report would be required to mitigate the dust impact arising from forming blast holes, material handling and vehicle movements on haul roads.

In addition, blasting operations should be well arranged and appropriate precautions would be required to minimise dust generation, such as the use of blast nets, canvas covers and the area within 30m from the blasting area should be wetted with water prior to blasting. In addition, blasting shall not be carried out when the strong wind signal or tropical cyclone warning signal No. 3 or higher is hoisted.

3.2 Carbon Monoxide

The amount of explosive should be carefully controlled in order to achieve the Air Quality Objectives for Carbon monoxides. Also, it is recommended that blasting should not be carried out when the strong wind signal or tropical cyclone warning signal No. 3 or higher is hoisted.

3.3 Construction Noise and Air Overpressure

The noise mitigation measures recommended in the previous EIA report would be still required to mitigate the construction noise impact arising from the use of conventional types of PME.

The air overpressure can be minimised by adopting good blasting techniques. These include providing advance warning of blasts; minimising charge weight per delay; selecting patterns and sequences that avoid co-operative wave interaction, placing

earth or other types of shields between blast and receiving point; and implementing a public relations programme.

3.4 Blasting Vibration

If blasting is to be carried out by means of electric initiation in the vicinity of property, only delay electric detonators should be used.

It is also recommended that no blasting works shall be carried out within 20m from the sensitive receivers listed in Section 2.2 above. In addition, the contractor should create shields or discontinuities between structures to be protected, set the initiation sequence in a way that it progresses away from the structure to be protected and select patterns and sequences to avoid wave interaction.

3.5 Water Quality

In order to control the water quality in Telegraphy Bay during blasting, Environmental Monitoring and Audit is recommended in the runoffs and the Telegraphy Bay

3.6 Flyrock

In order to reduce flyrock and its throwing distance, blasted mat and fence should be used. Before blasting, loose material and stones in the site should be clear. In addition, the bench height, blast hole diameter, burden, stemming, spacing and charge distribution should be carefully controlled.

4. USE OF PREVIOUSLY APPROVED EIA REPORTS

The following EIA report was approved on 26 April 1999 under the EIA Ordinance and will be used as a reference for this project:

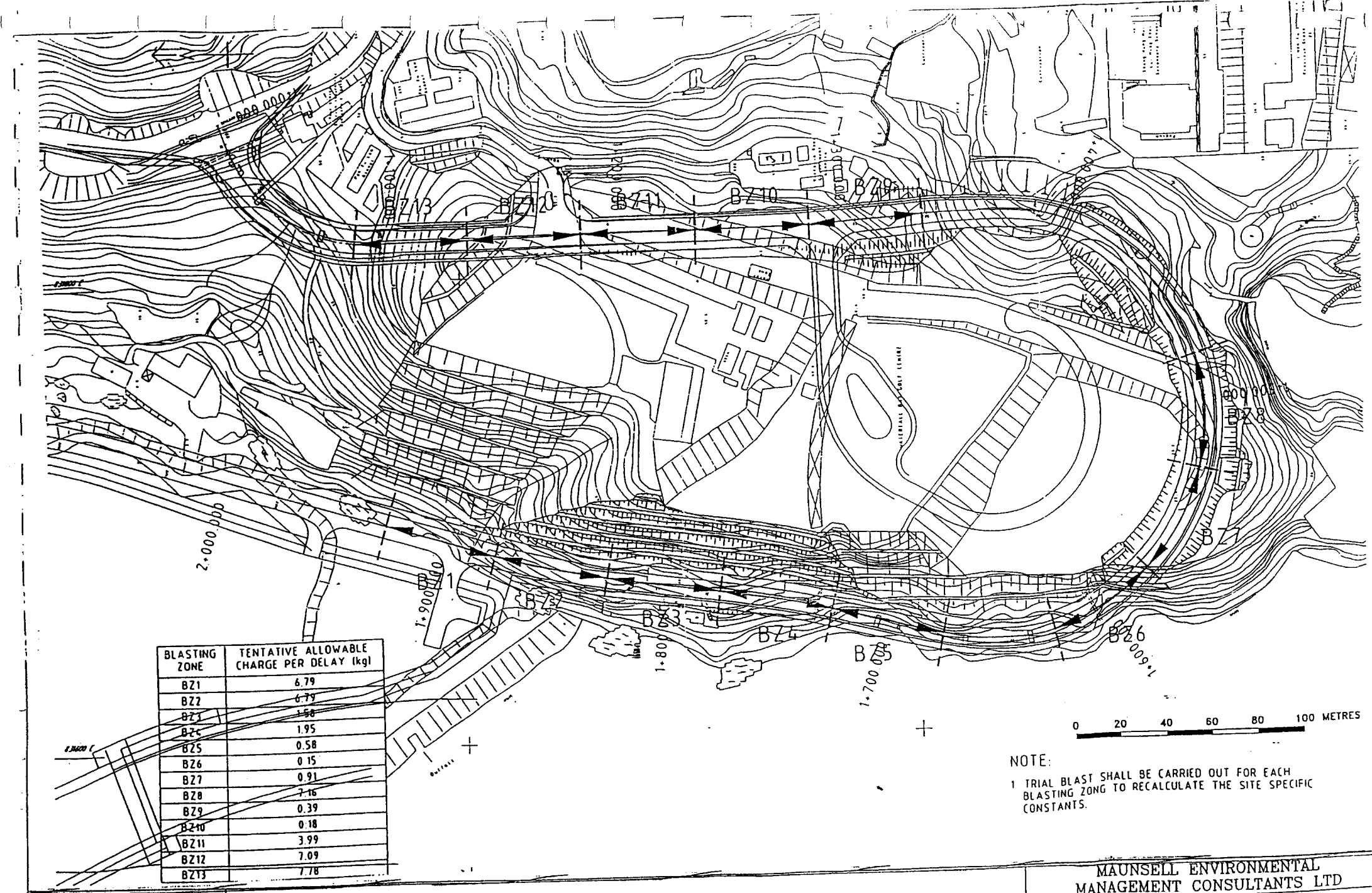
> Engineering Feasibility Study
> Infrastructural Works for the Proposed Development at Telegraph Bay
> Environmental Impact Assessment Study (Register No. AEIAR-009/1999)
> Volume 2 - Report for Scheme 2 (March 1999)

The environmental aspects that have been assessed in the previously approved EIA Report include air quality, noise, water quality, waste, ecology, landscape & visual, and cultural & heritage. The findings are summarised in Table 1 below. However, the major environmental changes arising from the material change (i.e. blasting works) during the construction phase would be air quality, noise, vibration, water quality and flyrock. It is anticipated that the impacts on ecology, landscape & visual, and cultural & heritage would be similar to that for Scheme 2 and therefore similar mitigation measures would also be required.

Table 1 Summary of Findings in Previously Approved EIA Report

Environmental Aspect	Key Impacts (without mitigation measures)	Proposed Mitigation Measures	Residual Impacts (after mitigation)
Air Quality (Construction)	Short term elevated dust levels	Water of road surfaces at least twice daily, on-site vehicle speed control, covering/dampening of stockpiles in dry/windy conditions	Acceptable
Air Quality (Operational)	Vehicle Emissions Odour from STW	No mitigation measures required Odour control measures at STW	Acceptable
Noise (Construction)	Elevated construction noise levels	Adoption of quiet plant, 3m noise barrier along northern site adjacent to NSRs, use of acoustic barrier	Acceptable
Noise (Operational)	Traffic noise impacts from Route 7 and distributor roads Fixed Noise Sources at STW & Salt Water Pumping Station 275 KV Electricity Substation	Noise barriers Enclosure of noisy equipment in building structure Use of Low Noise Transformers & enclosure of noisy equipment in acoustically treated structure	Acceptable
Water Quality (Construction)	Elevated suspended sediment concentration in the vicinity of construction works	Use of control dredging techniques as required. Collection and off-site disposal of sewage, coverage and containment of loose materials and associated runoff. Treatment of effluent prior to discharge.	Acceptable
Water Quality (Operational)	Sewage discharge to marine water	CEPT plus disinfection treatment, discharge via 300m offshore outfall prior to SSDS Stage III/IV; Preliminary treatment and discharge to SSDS deep sewer after SSDS Stage III/IV Package secondary treatment plant to treat sewage from early phases of development (up to end 2002)	Acceptable
Water Quality and Marine Impact	Marina and breakwaters	Separate EIA study to be carried out	Note 1
Wastes (Construction)	Limited dredging, spoil, excess surcharge and construction wastes	Site management, marine disposal control, segregation of waste, waste minimisation	Acceptable
Waste (Operational)	Sewage and municipal wastes	Provision of adequate collection, treatment and disposal facilities	Acceptable
Ecology	Loss of habitat, disturbance to habitat	Clearance of woodland in phases to allow for re-colonisation of affected mobile species, good site practice to minimise disturbance, compensation planting Protection of plants at Telegraph Bay	Acceptable
Cultural and Heritage	Important sites at Telegraphy Bay and Waterfall Bay	Separate study during preliminary design stage to address impacts of proposed school construction at Kong Sin Wan Avoid disturbance to important sites	Note 1

Note 1: To be determined subject to the results of separate study



BLASTING ZONE	TENTATIVE ALLOWABLE CHARGE PER DELAY (kg)
BZ1	6.79
BZ2	6.79
BZ3	1.58
BZ4	1.95
BZ5	0.58
BZ6	0.15
BZ7	0.91
BZ8	7.16
BZ9	0.39
BZ10	0.18
BZ11	3.99
BZ12	7.09
BZ13	7.78

NOTE:

1 TRIAL BLAST SHALL BE CARRIED OUT FOR EACH BLASTING ZONG TO RECALCULATE THE SITE SPECIFIC CONSTANTS.

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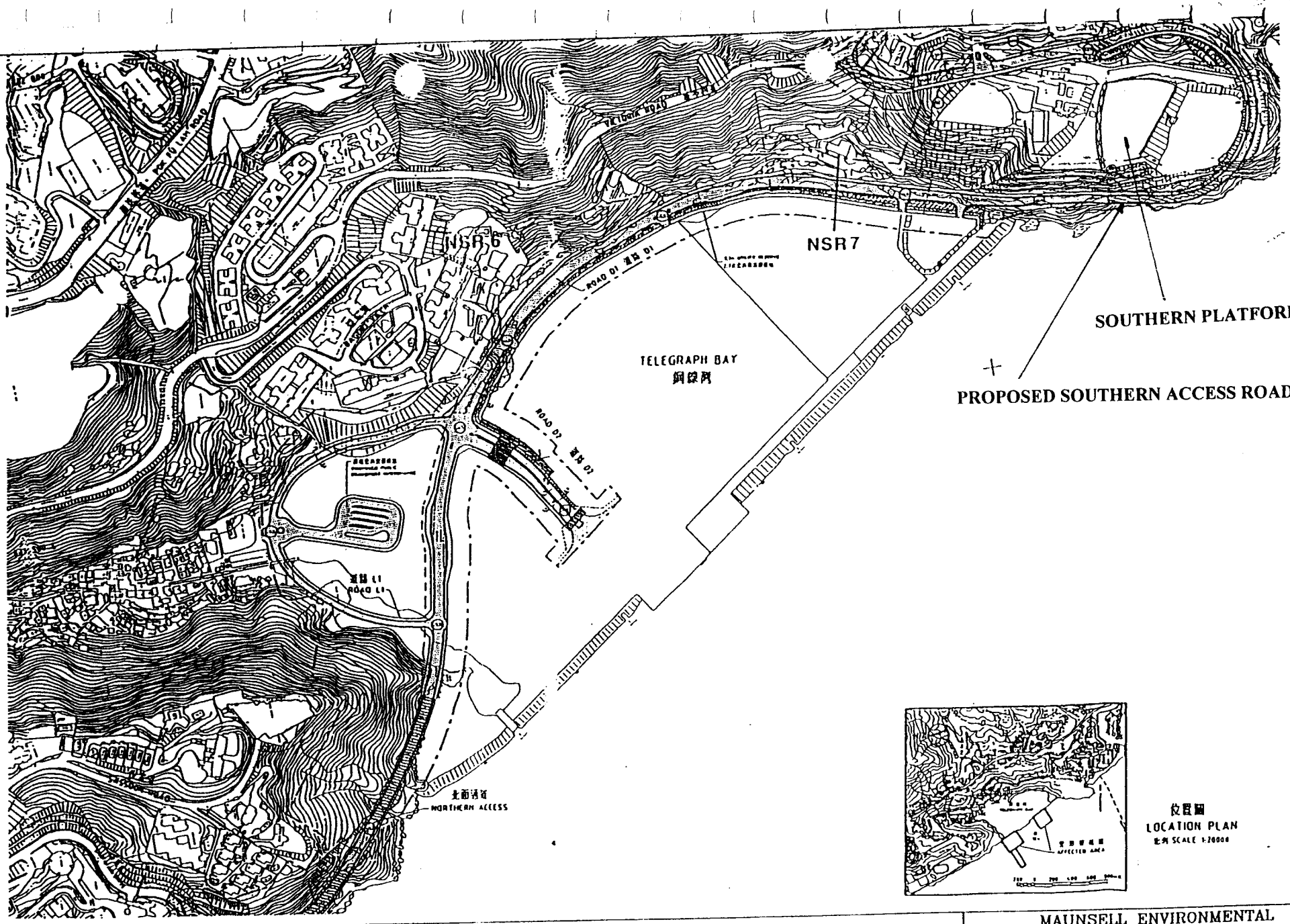
TITLE

LOCATIONS OF BLASTING ZONES (EXTRACTED FROM MGS REPORT)

MAUNSELL ENVIRONMENTAL MANAGEMENT CONSULTANTS LTD

PROJECT NO.	A08299	DATE	Aug 1999
DESIGNED/ CHECKED	CT	DRAWING NO.	Figure 1



位置圖
LOCATION PLAN

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LOCATION PLAN

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PROJECT NO.	A08299	DATE	Aug 1999
DESIGNED/ CHECKED	CT	DRAWING NO.	Figure 2