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ENVIRONMENTAL IMPACT ASSESSMENT ORDINANCE (CHAPTER 499)
SECTION 5(1)(b)

PROJECT PROFILE

SUBMARINE CABLE LANDING INSTALLATION IN TONG FUK LANTAU
FOR
ASIA PACIFIC CABLE NETWORK 2 (APCN 2)
FIBRE OPTIC SUBMARINE CABLE SYSTEM

Project No. OJ05800

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**PROJECT PROFILE
FOR DESIGNATED PROJECT ON
SUBMARINE CABLE LANDING INSTALLATION IN TONG FUK LANTAU
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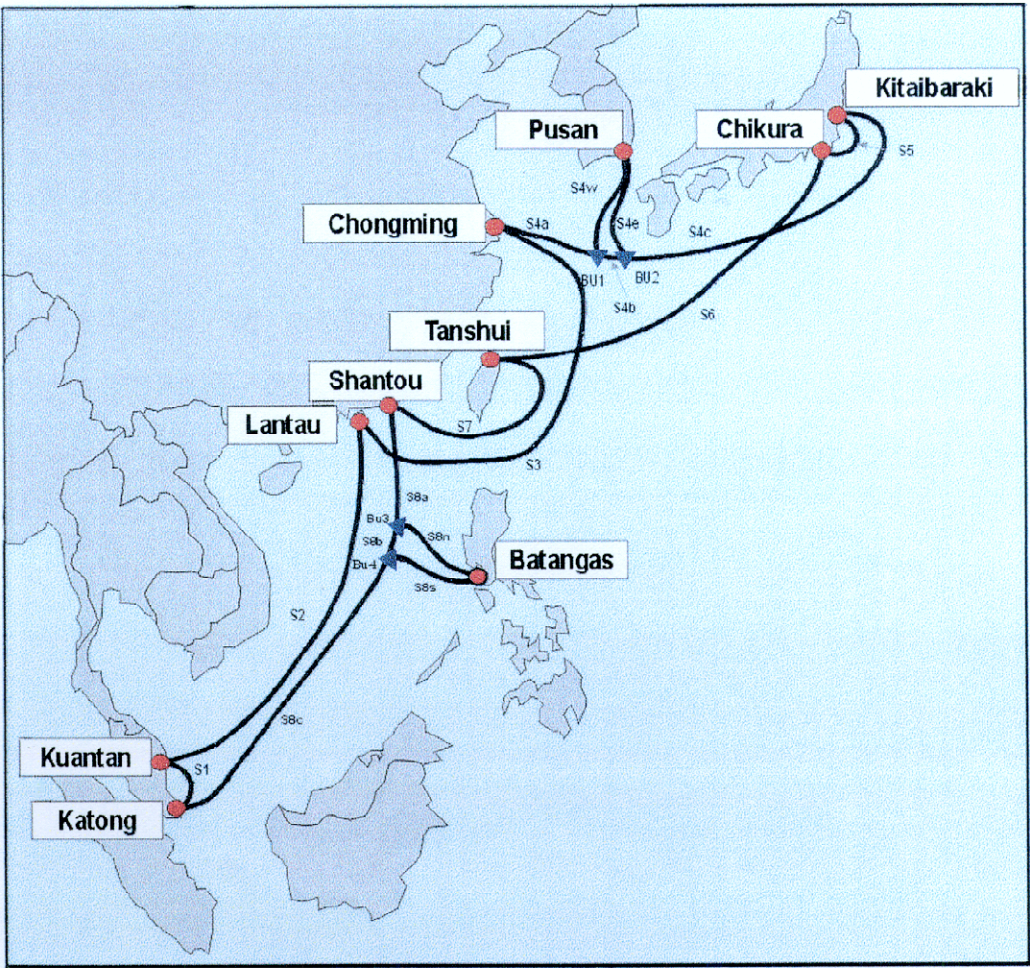
1. BASIC INFORMATION

1.1 PROJECT TITLE

Cable Landing Work in Tong Fuk Lantau for APCN 2 Fibre Optic Submarine Cable System.

1.2 PURPOSE AND NATURE OF THE PROEJECT

The purpose of the work is to lay a new Fibre optic telecommunication cable (The APCN 2 Submarine Cable System is an international fibre optic telecommunication system) connecting Hong Kong and six other geographical areas in South East Asia (Figure 1). The system is a ‘ladder’ design with an ‘in’ and ‘out’ cable present at each landfall. The two cable segments making their landfalls in Hong Kong are Segment S2 extending southward from Hong Kong to Kuantan, Malaysia, and Segment S3 connecting northward to Chongming of Shanghai, China.



1.3 NAME OF PROJECT PROPONENT

EGS has been retained by the NEC Corporation, who is contracted for this work by the APCN-2 Purchaser, including CWHKTI, to apply for the EIAO permit on it's behalf

EGS (Asia) Ltd.

9th Floor South, Somerset House
Taikoo Place, 979 King's Road
Quarry Bay, Hong Kong

1.4 LOCATION AND SCALE OF PROJECT AND HISTORY OF SITE

1.4.1 LOCATION OF PROJECT

The proposed work in this Project Profile involves landing and installing the two segments of this fibre optic submarine telecommunication cable to the existing manholes belonging to Cable & Wireless HKT International (CWHKTI), formerly called 'Hong Kong Telecom International (HKTI)'. These landfalls are located at Tong Fuk, Lantau Island (Figure 2):



Figure 2

The operation will be carried out at 2 sites near Tong Fuk where the two existing manholes are located. One site is at the Terminal Beach which is about 150m east of the CWHKTI Cable Station. The address is 270 Tong Fuk Lot 1933). The second site is at the Tong Fuk public beach just outside the eastern boundary of the swimming area. These two planned cable landings are illustrated in Appendix 1.

1.4.1.1 POSITIONS OF PROPOSED CABLE ROUTE AND THE SEA EARTH

The positions of the 2 proposed cable routes starting from Tong Fuk extending southward beyond the Hong Kong boundary and entering into South China Sea can be indicated by the following geographic positions.

Proposed APCN2 Route Position List off Hong Kong (Segment S2 – “Kuantan Leg”)

Description	Proposed Route Position		Approx. Water Depth (metre)	Estimated Seafloor Material	Target Burial Depth (m)	Approx. Distance between AC (km)	Cumulative Route Distance (km)
	Latitude (North) (deg min)	Longitude (East) (deg min)					
Terminal Beach Manhole	22 13.512'	113 55.953'	0	Rocky / sandy	2	0.0	0.0
AC 01	22 12.700'	113 56.300'	7	Soft sandy/mud	5	1.6	1.6
AC 02	22 09.300'	113 55.800'	7	Soft sandy/mud	5	6.3	7.9
AC 03	22 06.100'	113 55.300'	15	Soft sandy/mud	5	6.1	14.0
AC 04	22 00.500'	113 56.400'	27	Soft sandy/mud	5	10.6	24.6

Proposed APCN2 Route Position List off Hong Kong (Segment S3 – “Chongming Leg”)

Description	Proposed Route Position		Approx. Water Depth (metre)	Estimated Seafloor Material	Target Burial Depth (m)	Approx. Distance between AC (km)	Cumulative Route Distance (km)
	Latitude (North) (deg min)	Longitude (East) (deg min)					
Public Beach Manhole	22 13.724	113 56.162	0	Soft sand	2	0.0	0.0
AC 01	22 13.000'	113 56.700'	7	Soft sandy/mud	5	1.6	1.6
AC 02	22 12.700'	113 56.500'	12	Soft sandy/mud	5	0.7	2.3
AC 03	22 08.800'	113 56.000'	12	Soft sandy/mud	5	7.2	9.5
AC 04	22 00.500'	113 58.400'	30	Soft sandy/mud	5	15.9	25.4

Proposed Sea Earth Position for Segment S2

Description	Route Position of Sea Earth S2	
	Latitude (North) (deg min)	Longitude (East) (deg min)
Terminal Beach Manhole	22 13.512'	113 55.953'
Altering Course 01	22 13.487'	113 55.964'
Sea Earth S2	22 13.424'	113 56.022'

Proposed Sea Earth Position for Segment S2

Description	Route Position of Sea Earth S3	
	Latitude (North) (deg min)	Longitude (East) (deg min)
Terminal Beach Manhole	22 13.512'	113 55.953'
Altering Course 01	22 13.487'	113 55.964'
Sea Earth S3	22 13.433'	113 56.033'

1.4.2 SCALE OF PROJECT

The scale of the project involves the following operations at both sites, starting at the manholes on the beach and extending seawards:

- Excavation of sand and boulder from each manhole along the beach centreline to around low water. These trenches will be approximately 2m deep by 1m wide by 50m long (Figure 3, below). The cables will be press buried into these trenches:

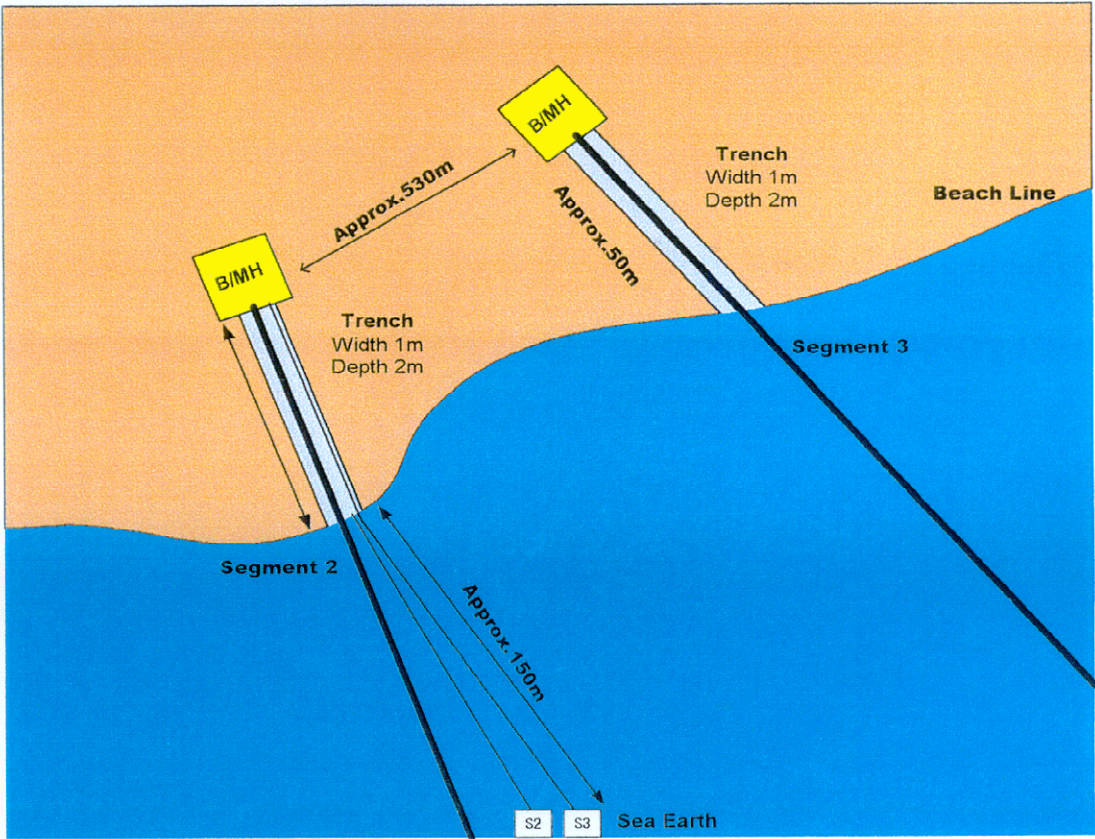


Figure 3

- Lay the cables in the trenches and pull them into each manhole;
- Backfill the excavated areas on the beach and reinstate to its original condition; and
- Continue to lay and bury the submarine cables offshore by pressing. The cables will be pressed to a target burial depth of some 2m to 5m below the sea bed out as far as the southern boundary of Hong Kong where they will be connected to the main-lay cables in international waters.

1.4.3 HISTORY OF SITE

The two sites in Tong Fuk have already been used for the landing and installation of 2 telecommunications submarine cables a few years ago using the same method; these were the APCN and FLAG Cable Systems.

1.5 NUMBERS AND TYPES OF DESIGNATED PROJECTS TO BE COVERED BY THE PROJECT PROFILE

This Project Profile covers two sites which might be classified as a Designated Project under EIA Ordinance Category C.12(a) iii) & vii) in Schedule 2 (Part 1) of the Technical Memorandum on Environmental Impact Assessment Process :

Schedule 2 (Part 1),

C.12 A dredging operation which -

- a. is less than 500 m from the nearest boundary of an existing -
 - iii) bathing beach; and
 - vii) coastal protection area

1.6 NAME AND TELEPHONE NUMBER OF CONTACT PERSONS

All queries regarding the application for EIAO permits can be addressed to:

EGS (Asia) Ltd

All copies should be made to two organizations:

NEC Corporation

AND

Submarine Cable Systems,
International Network Engineering,
Cable & Wireless HKT International

2. OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

The APCN 2 Cable System is jointly planned and owned by CWHKTI together with other world-wide international telecommunications administrations. The system is designed and constructed by NEC Corporation and has a target 'ready for service' date of August 2001.

Major project milestones are as follows:

- | | |
|---------------------------------------------------------------|----------------------------|
| • Application Submitted to Office of Telecom Authority (OFTA) | 20 Jul 1999 (by CWHKTI) |
| • OFTA's Approval-In-Principle | 19 Aug 1999 |
| • Completion of Marine Survey for confirmation of Cable Route | May 2000 (tentative) |
| • Cable Laying / Landing at Tong Fuk | Oct00 to Jan01 (tentative) |
| • Ready For Service | Aug 2001 |

WORK DETAILS:

TONG FUK TERMINAL BEACH (SEGMENT 2)

Shore end

- A trench approximately 4m wide, 2m deep and 50m long will be excavated on the beach by a powered backhoe machine; excavation will commence at the manhole and continue towards the low water mark. The approximate work location is shown on Figure 3.
- In parallel with the work in (a) above, the 42mm diameter cable will be floated close to the sea surface beneath floating buoys, starting from a working barge anchored some 200m offshore. The cable will then be pulled towards the beach and finally into the manhole entrance through the trench.
- Two earthing cables of about 42mm in diameter will also be laid into the trench from the manhole entrance out to about 200m beyond the shoreline.
- All of the fibre and earthing cables will then be fitted into articulated iron pipes of size around 100 mm in diameter (Figure 4).

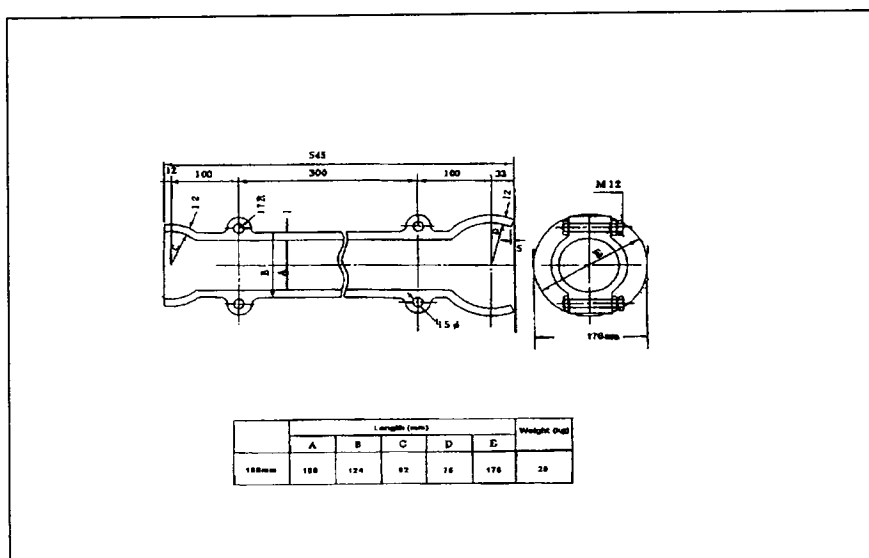


Figure 4 DRAWING OF AN ARTICULATED IRON PIPE

- The trench will then be backfilled and the whole working area on the beach reinstated to its original condition.
- The above work on the beach from (a) to (d) will be completed within three days.
- Divers will then install protection articulated iron pipes for the initial 200m of fibre cable and 50m of earthing cables, and bury them to a depth of around 2m into the sandy and boulder covered using hand tools.
- A metallic earthing electrode in a concrete box has been installed at the end of each earthing cable. The concrete box is approximately 500mm x 500mm x 1000mm in size as illustrated in: Appendix 2, and is buried beneath the seabed to a depth of about 2m. These devices serve as the earthing of the system. Offshore, the 2 earthing electrodes are separated by a distance of about 50m.

Off shore section

- i) From that 200m point offshore out towards the southern border of Hong Kong, the cables will be laid and buried by the working barge using a burial machine called 'Hydraulic Cutter' for a target burial depth of 5m. The total length of burial by this cutting method is about 9km.

The cutter itself is a heavy steel metal 'shoe' about 10m high by 2m wide by 0.3m thick, hydraulic nozzles on the front and bottom edges. When it is lowered vertically into the seabed by the working barge, pressurised water from nozzles cut into seabed material forming a hole about 300mm wide so the cutter/laid assembly could sink into desired depth. When the working barge is pulled forward by tug boat a trench is thus formed by the cutter which a cable can be laid through guiding slots from the barge into the trench.

This hydraulic cutter method of burying submarine cables had in fact been used for previous cable projects in Hong Kong; indeed, all of the APCN Cable Systems at Tong Fuk in July 1996 and the SMW3 Cable Network in Deep Water Bay in January 1999 were laid by this method. Both of those previous installations were approved by relevant Government authorities.

On the land section, NEC will connect the fibre and earthing cables to the land cables inside the beach manholes where they will then be linked to the Cable Station at 270 Tong Fuk Lot 1933 utilizing the existing underground duct facilities between the two beach manholes and the Cable Station. There will be no other land based excavation or construction work.

The total work duration for all cable burying from the manhole all the way to the southern border of Hong Kong and including the earthing cables is estimated to be around three to four weeks assuming good weather conditions.

TONG FUK PUBLIC BEACH (SEGMENT 3)

Basically, the work is the same as that at the Terminal Beach except that there will be no installation of earthing cables or electrodes. The work duration for the hand burying of the initial 200m fibre cable in water, and for the 5m burial operation by the working barge using the Hydraulic cutter is estimated to be around one week and four weeks respectively assuming good weather conditions.

3. POSSIBLE IMPACT ON ENVIRONMENT

The laying and burial operation will not utilize any foreign substances or contaminants that could pollute the water. No gaseous emission, dust or odour will be caused by the operation.

All excavated sand and boulders on the beach would be re-used for back fillings. No waste material or disposal items would remain. There will be no emissions and discharges, nor any other known serious impact to the environment.

It is expected that all the shore-end work will be performed in the day time. Therefore there will be no night-time operations on the beach and near-by areas, and no excessive noise will be generated during the work.

The cables use stable silicon optical fibres protected with multi-layers of corrosion resistant polyethylene and galvanized steel wires, and are designed for a normal working life-time of more than 25 years in sea water. There is no risk of accidents which would cause pollution, and no ecological impacts are expected.

4. MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

4.1 GAZETTED BEACH

Tong Fuk Beach is a gazetted public bathing beach. Although end of Segment C cable is buried close by, because of the cable will be buried under the beach and seabed; the submarine cable will not cause any visual obstruction or inconvenience to the users of the beach. NEC will undertake the responsibility of carrying out regular inspections along the cable routes in order to maintain them in good condition. Therefore, there will be no adverse long term or cumulative effects or impacts to the environment.

4.2 COASTAL PROTECTION AREA

End of Segment 2 ended up on Terminal Beach which is on the southern tip of Coastal Protection Area. Terminal Beach is not a public swimming area and is not easily accessible by the public. Thus the installation work there should not cause any inconvenience to the public.

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

The methods used in burying the APCN 2 Submarine Cable System described above have been used around the world for more than one century and are widely accepted as having no impact on the surrounding environment. The working period will be minimised to within four weeks per cable segment, and no waste or contaminant disposal issues and no excessive noise will be generated in these operations.

The geotechnical environment at the two Tong Fuk beaches has been confirmed to be suitable for submarine cable landing by electronic surveys. The sites have already been used for APCN and FLAG submarine cable landings some three years ago, and since then, there has been no record of complaints or incidents indicating any adverse effects to the surrounding environment.

6. PREVIOUS APPROVED EIA REPORTS

Application No.: DIR-001/1998

Project Profile : Cable Landing Work in Deep Water Bay for SEA-ME-WE 3 Fibre Optic Submarine Cable System

Applicant : Hong Kong Telecom International Limited

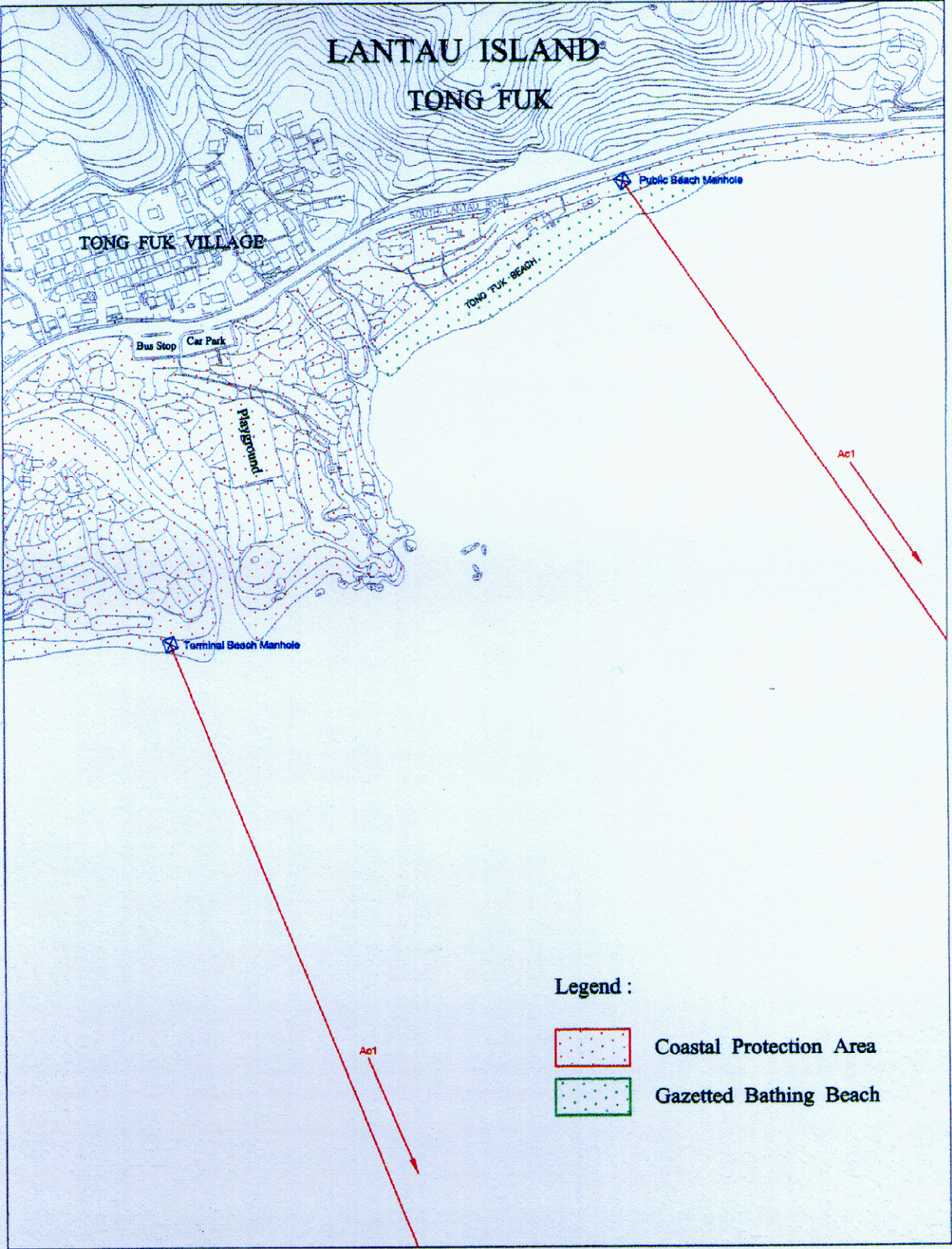
Type of Application : Section 5(11)

Date of Application : 26 May 1998

Public Inspection Period : 27 May 1998 to 09 Jun 1998

Appendix-1

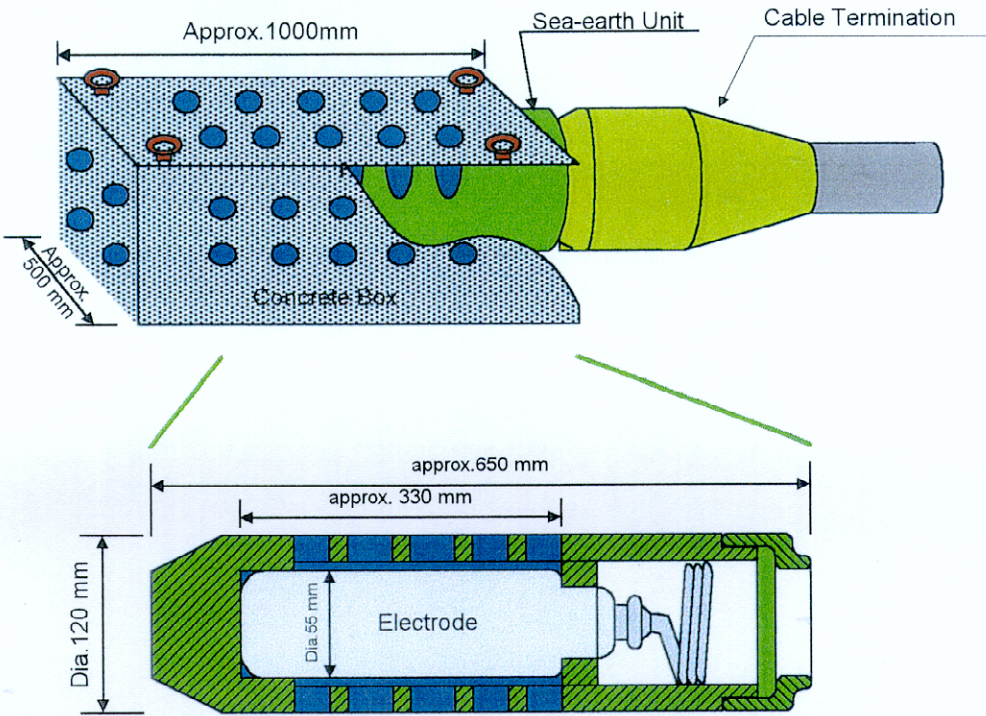
Site Location Plan



Appendix-2

Specification of Wet Type sea-earth (Example)

•Design Life:	more than 25 years
•Earth Resistance:	less than 10 Ohm
•Electrode main body Size	
Length	more than 300 mm
Diameter	approx. 55 mm
Weight	approx. 20 kg



Appendix-3

Record of Supply

No.	Project Name	Year of In-service
(1)	Omaezaki-oki (Omaezaki-offing) Ocean Bottom Seismometers System	1981
(2)	TANZCAN Project	1984
(3)	Bousou-oki (Bousou-offing) Ocean Bottom Seismometers System	1985
(4)	Izu-hantou (Izu-peninsula) Ocean Bottom Seismometers System	1994
(5)	Sagami-wan (Sagami-bay) Ocean Bottom Seismometers System	1996
(6)	Muroto-oki (Muroto-offing) Ocean Bottom Seismometers System	1997
(7)	Sanriku-oki (Sanriku-offing) Ocean Bottom Seismometers System	1998