

Proposed Installation of  
Integrated Mobile Phone Base Station  
Nearby  
Fan Lau Country Trail  
South Lantau Country Park  
Lantau Island

Project Profile

China Mobile Hong Kong Company Limited

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## **1.0 BASIC INFORMATION**

### **1.1 Project Title**

Proposed installation of Integrated Mobile Phone Base Station nearby Fan Lau Country Trail, South Lantau Country Park, Lantau Island, New Territories.

### **1.2 Purpose and Nature of the Project**

The project is a development involving mobile phone network operator China Mobile Hong Kong Company Limited (open for participation by other mobile operators) aimed to improve the mobile phone coverage for hikers and visitors and to ensure that tele-communications for the general public is maintained in case of emergency. This requires a Integrated Mobile Phone Base Station to be constructed nearby Fan Lau Country Trail, South Lantau Country Park.

### **1.3 Name of Project Proponent**

China Mobile Hong Kong Company Limited (CMHK)

### **1.4 Location and Scale of Project**

The proposed Integrated Mobile Phone Base Station will be constructed nearby Fan Lau Country Trail, South Lantau Country Park, Lantau Island, New Territories as shown in the location plan at Attachment I. The station will comprise of an equipment platform ( 4.0m(L) x 3.0m(W) x 0.8m(D) ) with an area of 12.0 square metres. The equipment platform, consist one fibre glass equipment shelter and one transmission antenna post of 7 metres in height, will be erected on the hill at level around 88.0mPD.

The location plan of the construction works are shown in Attachment I.

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

Only one designated project to be covered by this project profile. The proposed project is a designated project in accordance with EIAO, Schedule 2, Part 1, Section Q as it involves building works in an existing country park and it is not considered exempt under Section Q1 (a) to (j). Therefore, an Environment Permit under the EIA Ordinance must be obtained prior to the commencement of construction.

### **1.6 Name and Telephone Number of Contact Person**

The contact person for this project is Ms. Denise Chan of China Mobile Hong Kong Company Limited, Telephone number 9204 4772 and facsimile number 2421 4962 & Mr. Lam Man Kit of JEG Engineering Company Limited, Telephone number 2117 9500 and facsimile number 3103 8077.



## **2.0 OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME**

### **2.1 Planning and Implementation of the Proposed Project**

The project is planned and managed by China Mobile Hong Kong Company Limited and they will install their own mobile phone network at the proposed station.

Upon the grant of a Short Term Tenancy and Environmental Permit by the District Lands Office (DLO) and Environment Protection Department (EPD) respectively, China Mobile Hong Kong Company Limited will start and complete the construction work in accordance with the work schedule.

Besides, CMHK will obtain BD approval before commencement of work.

### **2.2 Work Schedule**

The construction works including the equipment and antennae installation are proposed to commence at the beginning of 2010 and to be completed within 4 months. It is proposed that the mobile phone station will be put into operation in the middle of 2010. The proposed work schedule as shown in Attachment II.

### **2.3 Interactions with Broader Programme Requirements Other Projects**

There is no planning project near our proposed site. As such, cumulative environmental impacts would not result.



### **3.0 MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT**

#### **3.1 Noise**

The proposed mobile base station will be located in remote hilltop locations. The separation distance of the nearest Noise Sensitive Location from the works area is over 200m (Village House at Fan Lau Tsuen), residents in there will only be subject to negligible nuisances within the construction works; after the works completed, operation of the mobile station will not produce noise effect so residents in village will not be subject to noise impact.

#### **3.2 Air Quality**

The proposed mobile base station will be located away from Fan Lau Tsuen which are over 200m, therefore, within the construction works, residents in village will not expected to be affected, hikers in the country parks will only be subject to negligible nuisances; after the works completed, operation of the mobile station will not have air pollution impact.

#### **3.3 Ecology**

During the ecological survey it was noted that the site (the equipment platform and the receiver pole) and surrounding areas have habitats mainly of wild grass of common habitats in Hong Kong; none of creature / insect or their habitats were found.

#### **3.4 Landscape and Visual**

The main visual sensitive receivers in the area are located to the Fan Lau Country Trail in South Lantau Country Park. The relative impact on the visual landscape of this station is small due to the proposed mobile base station is covered by the natural rockwork.



## **4.0 POSSIBLE IMPACTS ON THE ENVIRONMENT**

### **4.1 Process Involved**

The Station base will be traditional reinforced concrete raft with all concrete works cast in-situ. The antenna tower will be made of galvanized mild steel members and will be prefabricated members to be bolt connected on site.

Raft Foundation will be proposed for the station building as the structure is not large and massive. No haul road will be formed for the construction and operation of the project. Delivery of construction materials and equipments will be by helicopter and hand-carry only.

Small-sized excavator will be arranged for the site formation works and excavation works as the excavation work is mainly to excavate the raft of size 7m(L) x 7m(W) x 0.8m (max.) depth, the excavation work will be completed within 1 month. The excavation work will only start when the forecast weather for the coming week is good. During the excavation work, the exposed base soil surface will be covered by canvas sheeting, also the excavated rocks to be moved to appropriate location, and to be removed as soon as possible to disposal landfill site by workers.

### **4.2 Summary of Potential Environmental Impacts**

The construction and operational impacts associated with the mobile base stations are summarized in below and described in details in the following sections:

- Noise
- Liquid Effluents, Discharges, or Contaminated Runoff
- Generation of Waste or By-products
- Unsightly Visual Appearance
- Ecological Impacts
- Risk of Accidents which Result in Pollution or Hazard
- Others

### **4.3 Environmental Protection Measures to be Incorporated in the Design and any Further Environmental Implications**

#### **4.3.1 Noise**

Noise Sensitive Receivers (NSRs) are not closed to the Project Works Sites and the site works are expected to be small in scale. Thus noise generated during the construction works are not expected to result in impacts to NSRs. The nearest Noise Sensitive Receivers (NSRs), village house in Fan Lau Tsuen, which is located over 200m from the Project Works.

#### **4.3.2 Liquid Effluents, Discharges, or Contaminated Runoff**

During construction works, measures will be undertaken to avoid untreated site discharges from inadvertently entering stream courses, including the implementation of temporary site drainage measures to control runoffs from the site in according with the ProPECC Note PN 1/94 "Construction Site Drainage". Actually, these would not be any major activity for this project for liquid effluents, and only a few workers are required for this work. No kitchen or canteen allowed. Besides, there will be no effluent discharge during the operation of the mobile base station and no water quality impacts are expected.



#### **4.3.3 Generation of Waste or By-products**

During construction phase, only a small amount of construction and demolition (C&D) materials such as timber formwork, general refuse etc. will be generated during construction of the mobile base station. As this design is mainly pre-fabricated members to be bolted on site, very small amount of waste will be expected. Disposal of the non-inert portion of C&D materials will be removed by site worker.

Only very small quantities of chemical waste will be generated along with municipal waste from construction works. Correct handling, storage and removal of this waste will be undertaken and adverse impacts on the environment are not anticipated.

During operation phase, the mobile base station will be unmanned with no waste generation expected during the operation. Debris that may be generated from the annual maintenance works, such as general maintenance & grass cutting; they will be removed by contractors directly upon completion of works and disposed of properly.

#### **4.3.4 Unsightly Visual Appearance**

The new transmission tower will rise to a height of approximately 7m on the hill at level 88.0 mPD. In order to further minimize the visual impact of the station, the transmission pole will be painted or coated in "Antique" (B.S. 10B25 or Pantone 462U) or similar colour (Grass Green) to match the surroundings. Also, the proposed mobile base station is covered by the natural rockwork, so the relative impact on the visual landscape of this station is small.

#### **4.3.5 Ecological Impacts**

In order to further minimize the primary ecological impacts from the construction and operation of the mobile base station, the site boundary and work sites have been minimized. Only negligible nuisance of impact to the wild grass while the excavation works of mobile station construction works. None of creature / insect or their habitats was found therefore no life impact will be occurred.

#### **4.3.6 Risk of Accidents which Result in Pollution or Hazard**

The operation of the proposed Mobile Base Station will strictly comply with the code "Code of Practice for the Protection of Workers and Members of Public Against Non-Ionizing Radiation Hazards from Radio Transmitting Equipment" issued by OFTA. The proposed location of the antenna transmitter and microwave receiver are far away from footpath. In this case, the non-ionizing radiation has no signification impact on the public.



#### **4.3.7 Others**

##### **Odour**

No odour impacts are expected to occur as a result of this project.

##### **Disruption of Water Movement or Bottom Sediment**

By nature of the project, it will not result in any impact on water movement or bottom sediment.

##### **Gaseous Emissions & Dust**

Only a small quantity of gaseous emissions (SO<sub>2</sub> and NOX) from the equipment would be generated during construction. These emissions will not impact Air Sensitive Receivers (ASRs). The site was considered as small scale and there is no major excavation work around this area. Limited amount of soil stockpiling is expected but will be covered by tarpaulin sheets and have them bonded to ground. Therefore generation of dust would be within acceptable limit.

##### **Night-time Operations**

It is expected that all construction works will be performed during normal working hours only.

##### **Traffic Generation**

Helicopter and hand-carry method to be used for transport of materials, no serious traffic jam for vehicular access will be occurred.

##### **Manufacturing, Storage, Use, Handling, Transport, or Disposal of Dangerous Goods**

No dangerous goods will be involved in this Project.



## **5.0 PREVIOUSLY APPROVAL SIMILAR ENVIRONMENTAL ASSESSMENTS**

References have been made to the following Project Profiles submitted for Applications for Permission to Apply Directly for an Environmental Permit:

- 1) Proposed Installation of Integrated Mobile Phone Base Station at Tai Tong Nursery, Tai Tong Shan Road, Yuen Long, N.T. (Application no. DIR 176/2009)
- 2) Proposed Installation of Integrated Mobile Phone Base Station at Shek Pik Fire Lookout, Lantau Island, N.T. (Application no. DIR 152/2007)
- 3) Proposed Installation of Integrated Mobile Phone Base Station at Tai Long Au, Sai Kung East Country Park, Tai Po, N.T. (Application no. DIR 151/2007)
- 4) Proposed Installation of Integrated Mobile Phone Base Station at South Lantau Island Country Park, Man Cheung Po, Tai O, Hong Kong (Application no. DIR 148/2007)
- 5) Proposed Installation of Integrated Mobile Phone Base Station at Pat Sin Leng Country Park Chung Pui, Tai Po (Application no. DIR 144/2006)
- 6) Proposed Installation of Integrated Mobile Phone Base Station at Twisk Management Centre within Tai Lam Country Park, Tsuen Wan. (Application no. DIR 111/2004)
- 7) Proposed Installation of Integrated Mobile Phone Base Station at Yuen Ng Fan, Sai Kung East Country Park (Application no. DIR 110/2004)

## **6.0 CONCLUSION**

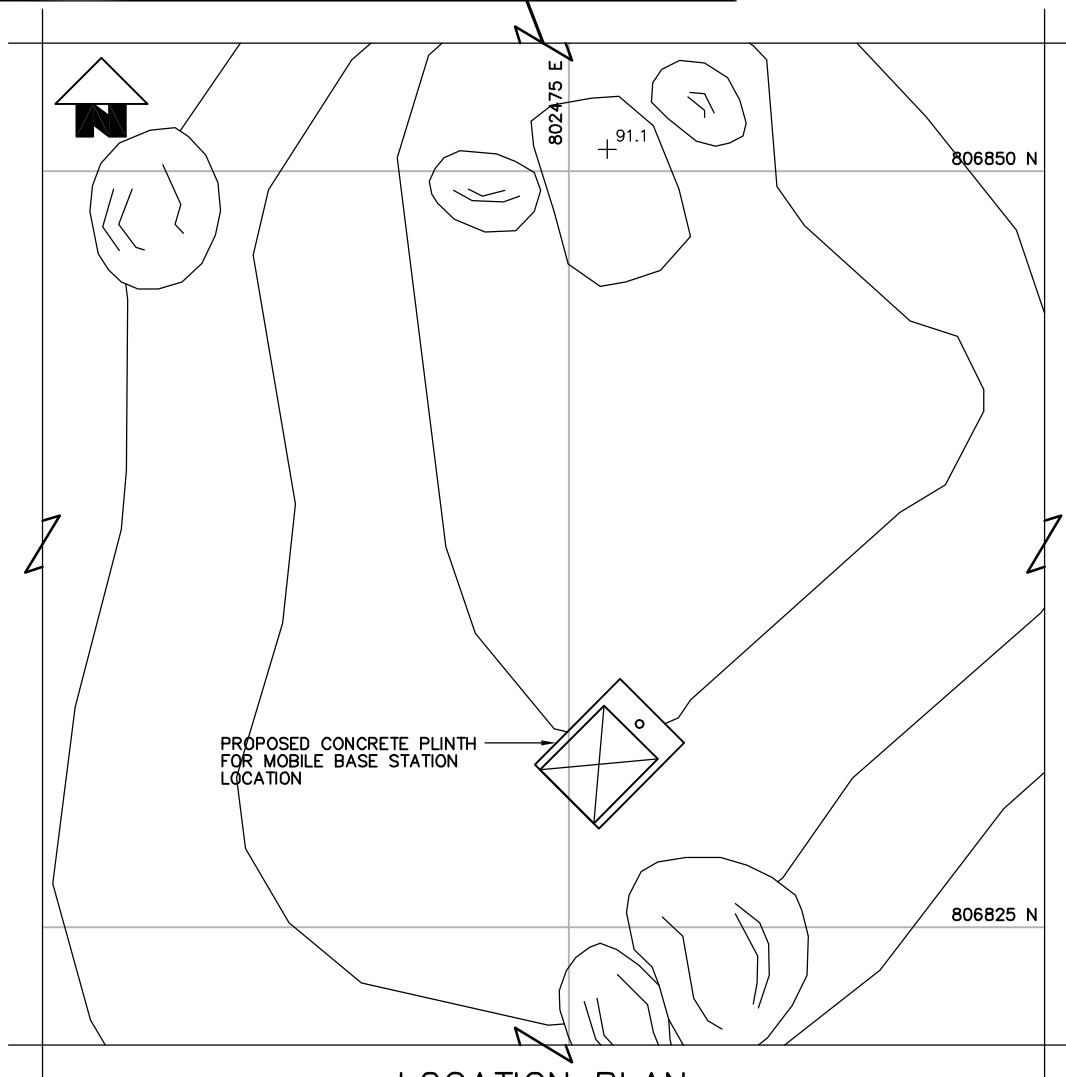
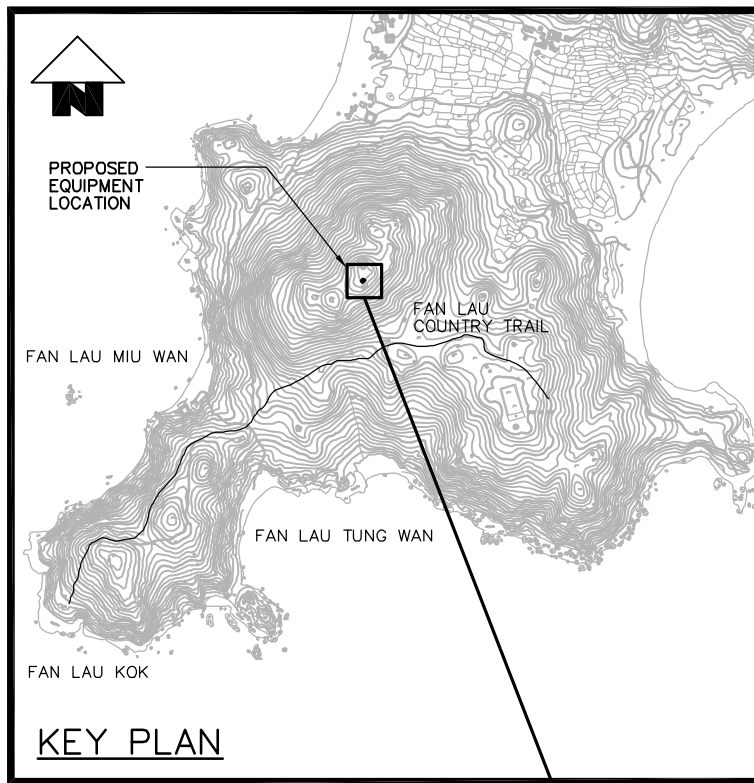
The environmental impacts expected from the mobile base station are considered to be minor. With the implementation of the recommended mitigation measures, no adverse residual environmental impacts are anticipated.

As impacts are not expected to be adverse and with the mitigation measure proposed, the requirements of the Technical Memorandum on Environmental Impact Assessment Process will be achieved and complied with full. As such, CMHK is applying directly for an Environmental Permit under Section 5(11) of the EIAO.



**Attachment I**      **Site Location Plan of Construction Works**





**LOCATION PLAN**

1 : 250

PROJECT :  
CMHK CO. LTD. PROPOSED  
BTS IN FAN LAU COUNTRY  
TRAIL, SOUTH LANTAU  
COUNTRY PARK

創域工程有限公司  
*JEG Engineering Co. Ltd.*

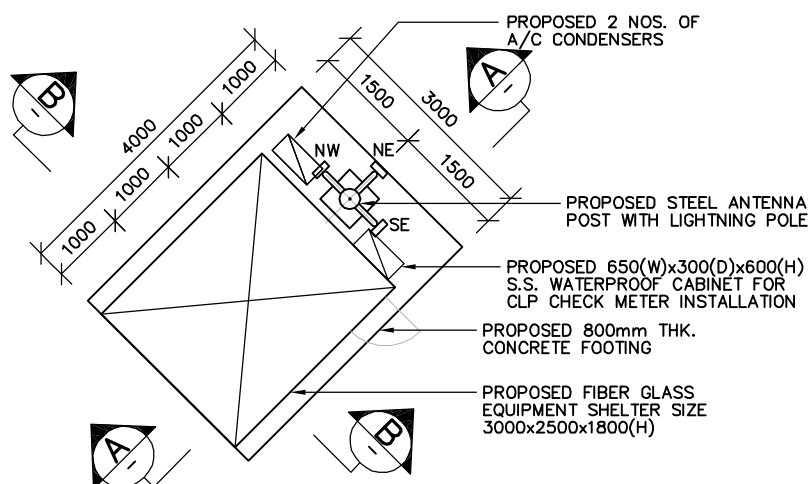
PROJECT No.  
**J8001**

SCALE :  
AS SHOWN

DRAWING No. :  
S559-D1

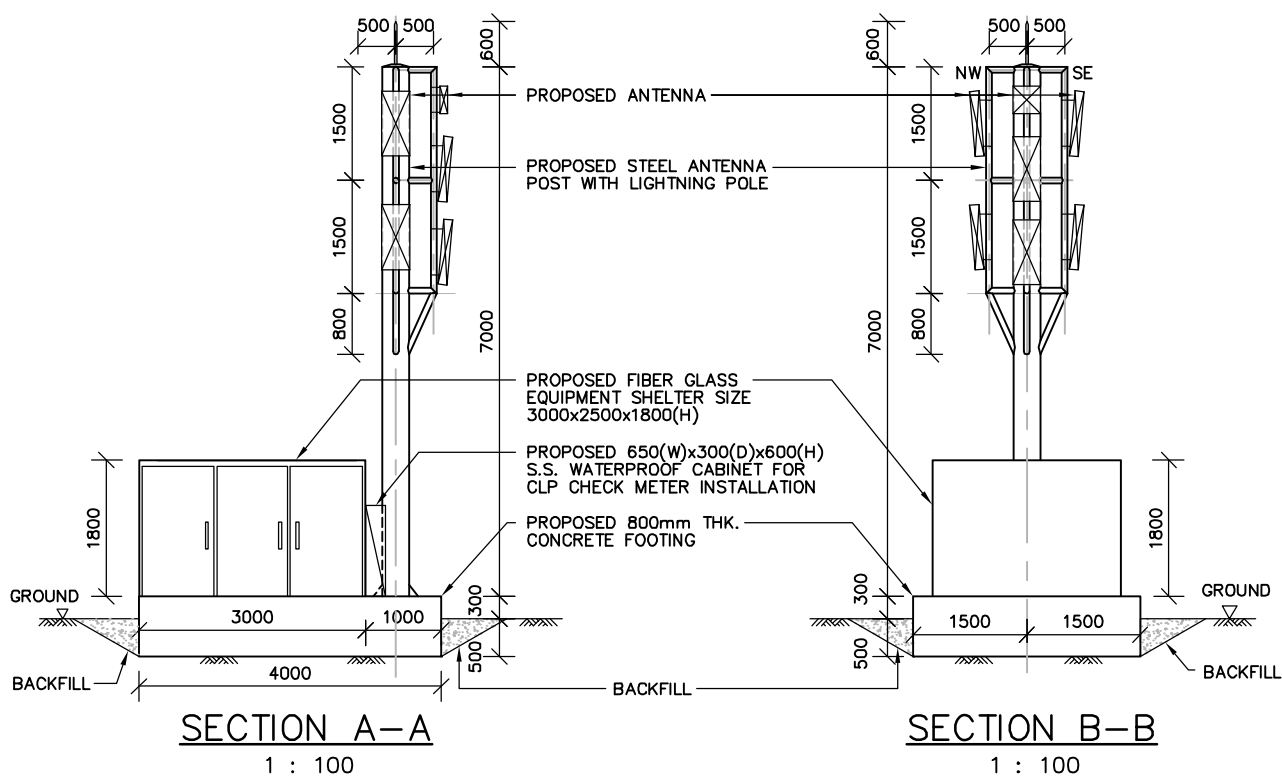
DATE :  
SEP., 2009





## EQUIPMENT SHELTER & ANTENNA STEEL POSTS LOCATION PLAN

1 : 100



PROJECT :  
CMHK CO. LTD. PROPOSED  
BTS IN FAN LAU COUNTRY  
TRAIL, SOUTH LANTAU  
COUNTRY PARK

創域工程有限公司  
JEG Engineering Co. Ltd.

PROJECT No.  
**J8001**

SCALE :  
AS SHOWN

DRAWING No. :  
S559-D2

DATE :  
SEP., 2009



**Attachment II**    **Works Schedule**



Proposed Installation of Integrated Mobile Phone Station nearby Fan Lau Country Trail, South Lantau Country Park, Lantau Island			
ID	Task Name	Duration	
1	Submit the project profile for permission to apply directly for Environmental Permit	Around 45 days	
2	Permission to apply directly for Environmental Permit	Around 30 days	
3	Apply submission to BD for approval	Around 90 to 100 days	
4	Notification of commencement work	Around 7 to 14 days	
5	Construction of proposed works	Around 100 to 120 days	
6	Testing and commission of equipments	Around 5 to 10 days	

Title: Working Schedule table

Date: Nov-09

Remarks: The expected duration of this working schedule table will be varied because of the approval period.



**Attachment III**    **Site Mark-up Photo**



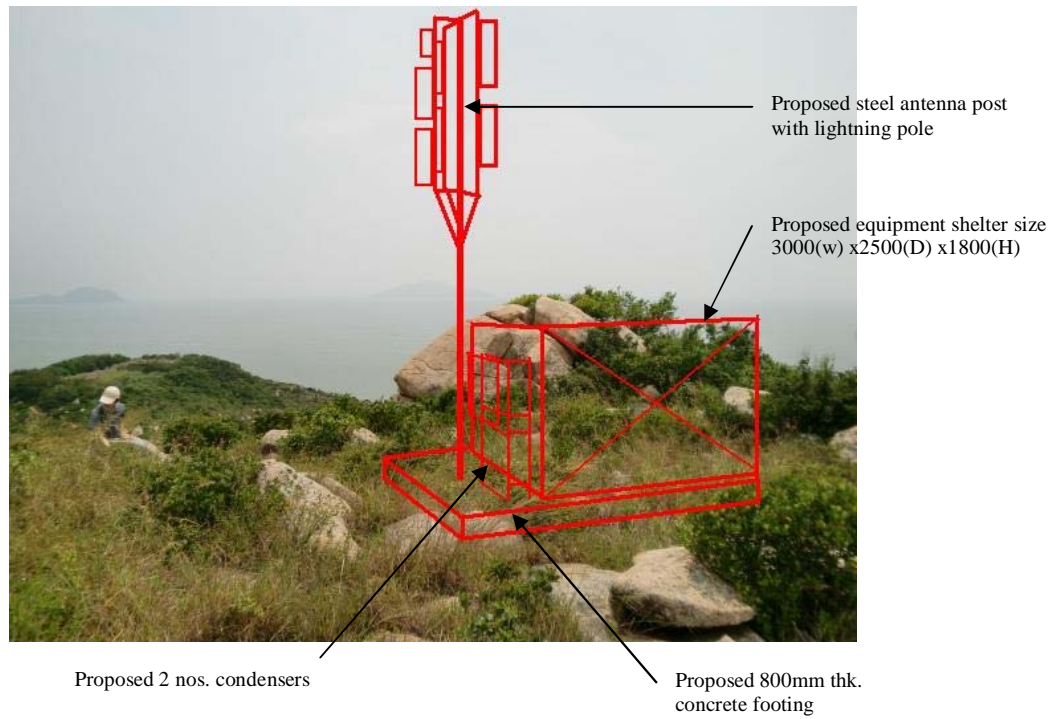


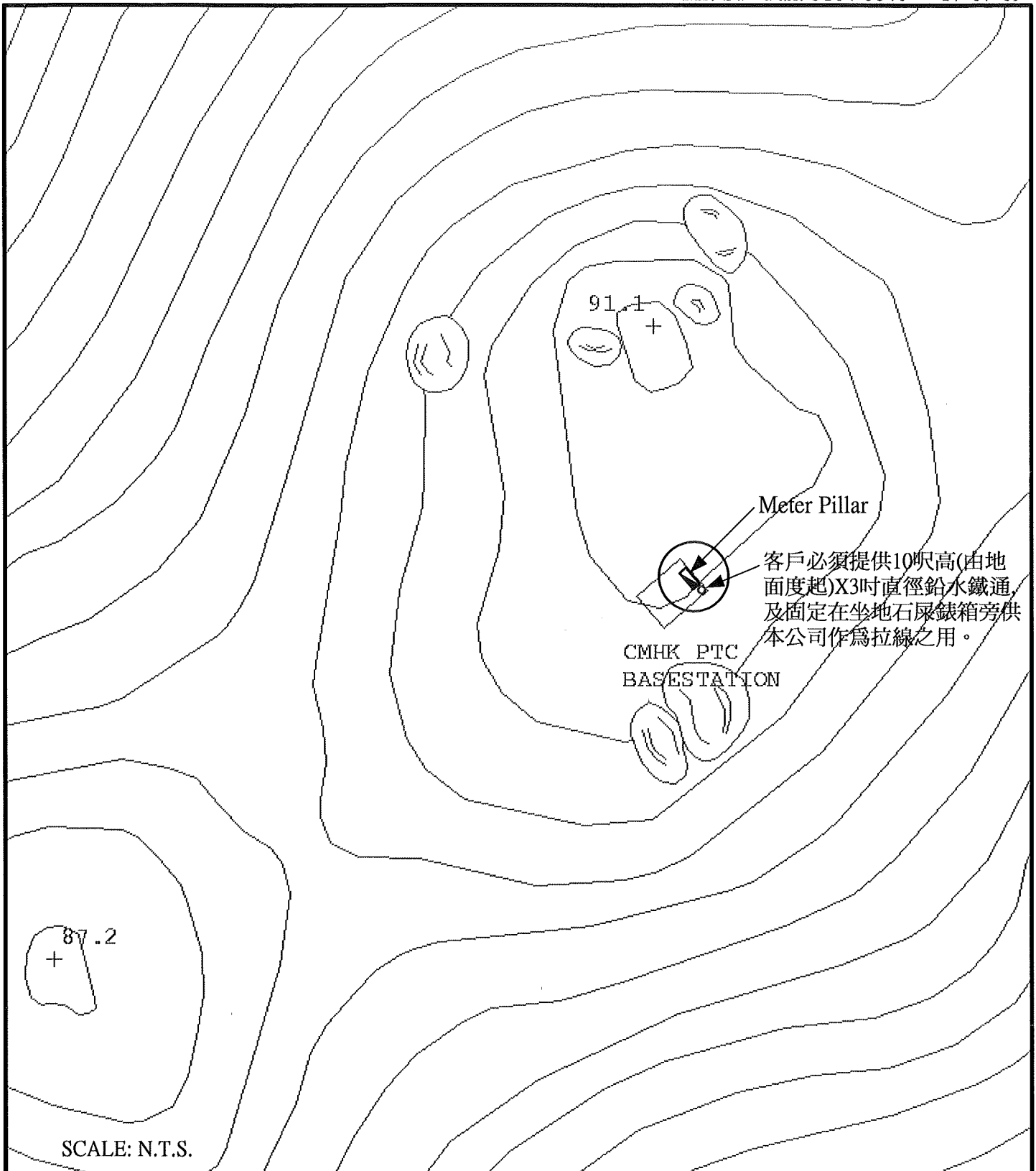
Photo 1: Showing the proposed equipment and antenna post location



**Attachment IV**

**Power Supply Facilities Proposal from  
China Light & Power Company Limited**





## CLP Power Hong Kong Limited

PROJECT TITLE

NSLV: FAN LAU VILLAGE MOBILE AREA

DRAWING No.

LT-090232-1

SERVICE ORDER No.

2001076573

## LEGEND :



Proposed Meter Pillar To Be Provided By Applicant (T/GEN/25500/D/E33/3044/01-A) (T/GEN/25500/D/E33/0238/01-A)



## **Attachment V**

## **Calculation of Plane Wave Power Density**



# Calculation of Plane Wave Power Density at CP-Fan Lau Site 2385a



$$S = \frac{RGP}{4\pi r^2} \text{ W/m}^2$$

$$S_n(r, \theta) = \frac{S(r, \theta) r_n}{r} \text{ W/m}^2$$

S - Plane Wave Power Density ( Far - Field ); Sn - Plane Wave Power Density ( Near - Field )

R - Radiation Pattern( Normalised to unity in the direction of maximum radiation)

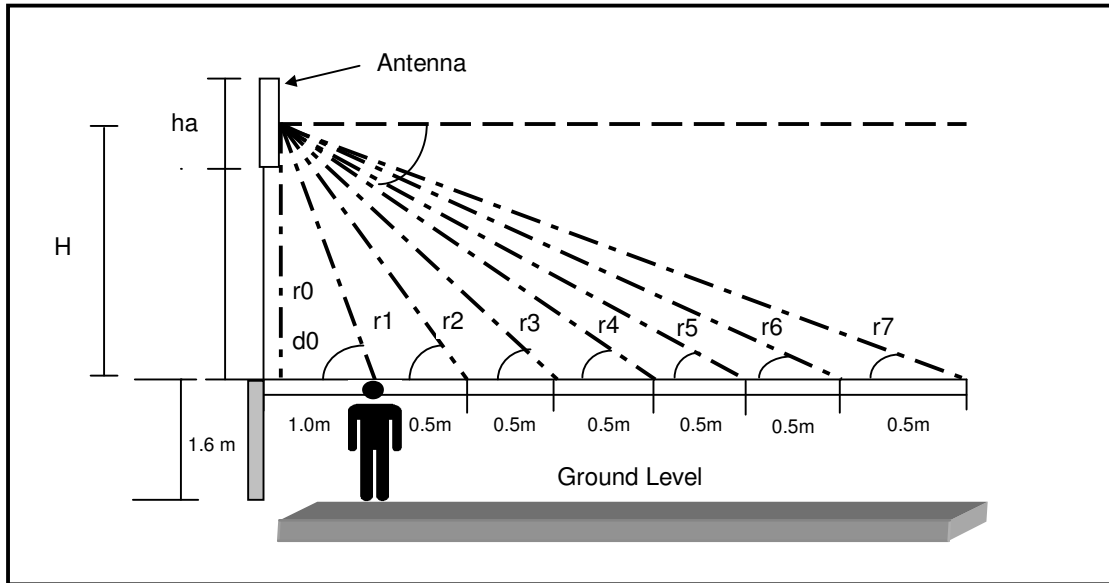
G - Antenna Gain

P - Antenna input power

r - Distance from the observation point to the antenna.

d - Distance from antenna to the cut over point

r<sub>n</sub> - Rayleigh Distance ( ha<sup>2</sup> / 2 λ )



Ant / Sector Name :- S1 & S3

## Antenna Specification :-

Ant. Type = CNNPX303F

Ant.Length = 0.86 m

Ant.Height = 7 m

## Antenna Configuration :-

D/t = 7 °(α)

G = 10.82 dBd = 12.078

P = 6.761 W

H = 4.661 m

ha = 0.86 m

r<sub>n</sub> = 2.25 m

Loss :	dB
Cable loss	1.52
Jumper cable	0.2
Triplexer	0
Splitter	0
Total	1.72

dx (m)	r <sup>2</sup> (m <sup>2</sup> )	r(m)	α-φ (°)	Attu.(dB) (Ref Pattern)	Rx	S(W/m <sup>2</sup> )	Sn(W/m <sup>2</sup> )
0.0	21.72	4.66	-97	-45.0	0.00003	0.0000095	0.00000458
1.0	22.72	4.77	-84	-24.6	0.00347	0.0009915	0.00046899
1.5	23.97	4.90	-79	-23.2	0.00479	0.0012973	0.00059742
2.0	25.72	5.07	-73	-24.1	0.00389	0.0009827	0.00043690
2.5	27.97	5.29	-68	-25.5	0.00282	0.0006547	0.00027910
3.0	30.72	5.54	-64	-28.3	0.00148	0.0003128	0.00012726
3.5	33.97	5.83	-60	-30.6	0.00087	0.0001666	0.00006444
4.0	37.72	6.14	-56	-29.6	0.00110	0.0001889	0.00006934
4.5	41.97	6.48	-53	-26.7	0.00214	0.0003310	0.00011519
5.0	46.72	6.84	-49	-22.3	0.00589	0.0008189	0.00027014

Refer to the "ICNIRP Guideline on Limits of Exposure to RadioFrequency", the general public exposure limits is 9.151 W/m<sup>2</sup> for our 1845.2 - 1855.0 MHz system.



# Calculation of Plane Wave Power Density at CP-Fan Lau Site 2385a



$$S = \frac{RGP}{4\pi r^2} \text{ W/m}^2$$

$$S_n(r, \theta) = \frac{S(r, \theta) r_n}{r} \text{ W/m}^2$$

S - Plane Wave Power Density ( Far - Field ); Sn - Plane Wave Power Density ( Near - Field )

R - Radiation Pattern( Normalised to unity in the direction of maximum radiation)

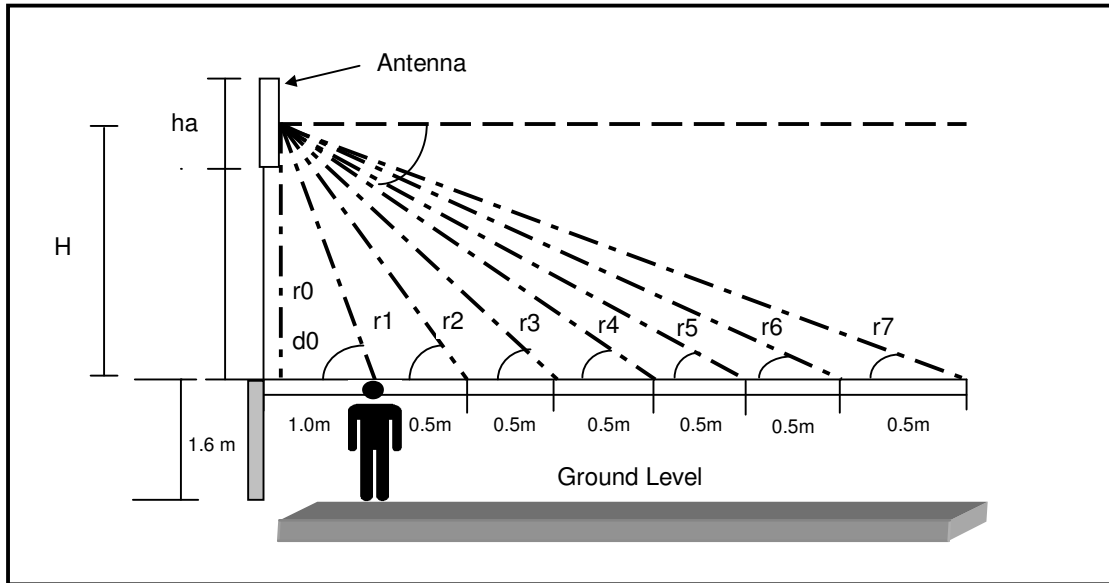
G - Antenna Gain

P - Antenna input power

r - Distance from the observation point to the antenna.

d - Distance from antenna to the cut over point

r<sub>n</sub> - Rayleigh Distance ( ha<sup>2</sup> / 2 λ )



Ant / Sector Name :- S2

## Antenna Specification :-

Ant. Type = CNNPX303F

Ant.Length = 0.86 m

Ant.Height = 7 m

## Antenna Configuration :-

D/t = 12 °(α)

G = 10.82 dBd = 12.078

P = 6.761 W

H = 4.661 m

ha = 0.86 m

r<sub>n</sub> = 2.25 m

Loss :	dB
Cable loss	1.52
Jumper cable	0.2
Triplexer	0
Splitter	0
Total	1.72

dx (m)	r <sup>2</sup> (m <sup>2</sup> )	r(m)	α-φ (°)	Attu.(dB) (Ref Pattern)	Rx	S(W/m <sup>2</sup> )	Sn(W/m <sup>2</sup> )
0.0	21.72	4.66	-102	-45.0	0.00003	0.0000095	0.00000458
1.0	22.72	4.77	-89	-39.7	0.00011	0.0000306	0.00001449
1.5	23.97	4.90	-84	-24.6	0.00347	0.0009398	0.00043279
2.0	25.72	5.07	-78	-23.4	0.00457	0.0011546	0.00051331
2.5	27.97	5.29	-73	-24.1	0.00389	0.0009037	0.00038527
3.0	30.72	5.54	-69	-25.1	0.00309	0.0006536	0.00026587
3.5	33.97	5.83	-65	-27.5	0.00178	0.0003401	0.00013158
4.0	37.72	6.14	-61	-30.3	0.00093	0.0001608	0.00005902
4.5	41.97	6.48	-58	-30.6	0.00087	0.0001348	0.00004693
5.0	46.72	6.84	-54	-27.8	0.00166	0.0002308	0.00007614

Refer to the "ICNIRP Guideline on Limits of Exposure to RadioFrequency", the general public exposure limits is 9.151 W/m<sup>2</sup> for our 1845.2 - 1855.0 MHz system.