

**PROJECT PROFILE**

**工程項目簡介**

CLP Power Hong Kong Limited  
中華電力有限公司

**TETRA Radio Base Station at Tai  
Long Au, Sai Kung East Country  
Park, Tai Po, New Territories**

**大埔西貢東郊野公園大浪坳陸地集群無線通訊  
基站**

September 2009

二零零九年九月

**Environmental Resources Management**

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September 2009

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GMS#0103151

For and on behalf of


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# **1 BASIC INFORMATION**

## **1.1 PROJECT TITLE**

TETRA Radio Base Station at Tai Long Au, Sai Kung East Country Park, Tai Po, New Territories (the Project)

## **1.2 NAME OF PROJECT PROPONENT**

CLP Power Hong Kong Limited (CLP)

## **1.3 NAME AND TELEPHONE NUMBER OF CONTACT PERSON**

Name: Mr Chu Wing Yuen

Title: Telecommunications Manager, Technical Services Department,  
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Phone No: 2678 6018

## **1.4 PURPOSE AND NATURE OF THE PROJECT**

CLP proposes to construct and operate a TETRA radio base station at Tai Long Au, Sai Kung East Country Park, Tai Po (the Project), to improve the TETRA radio coverage and safety for CLP field staff. Currently electricity supply within the area is mainly transmitted via overhead lines (OHL). Operational staff is required to perform regular OHL patrol, maintenance and emergency repair along the OHL. There are a large number of 11kV OHL transmission poles within the Sai Kung East Country Park (SKECP) but TETRA radio coverage within the SKECP is provided by the base stations at Shek Uk Shan in the Sai Kung West Country Park and Sai Kung Town only. The closest radio base station at Shek Uk Shan is more than 5 km to the west of the Project and the coverage of TETRA radio system within the northern part of the SKECP is insufficient. The deficiencies in telecommunications support for CLP operation staff are particular noticeable when the mobile phone networks cannot be used as a fallback option for communication purposes, especially during festive days or in adverse weather conditions when network congestion is frequently experienced as a result of high usage. This will prevent CLP operation staff and CLP contractor personnel from having the most needed services in a timely manner in case of an emergency situation when working within the areas. For the above reasons, a dedicated in-house telecommunication service provided by CLP itself is of great importance for ensuring supply reliability and field staff safety.

The proposed radio base station will improve the coverage of CLP's TETRA radio system in SKECP. The improvement of radio coverage is essential to ensure the continued operational safety of CLP staff. The upgrade also

facilitates remote monitoring and control of the power transmission system such that power supply reliability in the area can be enhanced.

#### **1.5 LOCATION AND SCALE OF PROJECT AND HISTORY OF THE PROJECT SITE**

The Project Site is located within the SKECP at Tai Long Au (*Figure 1.1*). It lies north of Tai Mun Shan, east of Chek Keng and southwest of Sharp Peak (or Nam She Tsim) at a level of approximately +214 mPD.

The Project will occupy an area of approximately 22.8m<sup>2</sup> (6.0 m (L) x 3.8 m (W)), and all structures of the Project will be built on a concrete platform of 0.35m depth. The scale of the construction activities for the Project will be very small and will mainly involve the construction of a concrete platform, fabrication of an equipment shelter and installation of antennae and the associated mast (*Figures 1.2 and 1.3*). The construction works will require the use of only small powered mechanical equipment (PME) and hand tools. No haul road will be constructed. The Project Site layout plan is shown in *Figure 1.4*.

The proposed radio base station will be unmanned. During its operation, maintenance of radio equipment will only be required on an *ad hoc* basis at an extremely low frequency. The maintenance will mostly be light-duty work using hand tools by a maximum of two workers travelling to the radio base station on foot from the nearest access road.

#### **1.6 NUMBER AND TYPES OF DESIGNATED PROJECTS TO BE COVERED BY THE PROJECT PROFILE**

The proposed TETRA radio base station at Tai Long Au qualifies as a Designated Project under *Schedule 2, Part I, Category Q Item Q.1* of the *Environmental Impact Assessment Ordinance (EIAO)* – a project within an existing Country Park.

CLP has appointed European Aeronautic Defence and Space Company Secure Networks Limited (EADS) to design the radio station and carry out the construction works. The design and permitting work for the Project has commenced. The tentative start date for the construction is December 2009 and the tentative operation commencement date is February 2010. An indicative programme showing the key milestones for the Project as currently envisaged is provided in *Table 2.1*.

**Table 2.1** *Indicative Project Programme*

<b>Key Stage of the Project</b>	<b>Duration</b>
Construction of concrete platform	3 weeks
Fabrication of equipment shelter	2 weeks
Electrical and mechanical installation inside equipment shelter	1 week
Installation of antenna tower	3 weeks
Telecommunication equipment installation	2 weeks
System testing and commissioning	2 weeks

There is no vehicular access leading directly to the Project Site. During the construction stage, all necessary equipments and materials will be delivered by helicopter to the Project Site with the assistance of construction workers on the ground. Minor excavation works and the construction of the concrete platform will be carried out using small PME items and hand tools. Fabrication of the fibre glass equipment shelter and the installation of electrical, telecommunication and mechanical equipment will be undertaken using hand tools.

It is understood that a radio repeater station has been planned by Architectural Services Department (ArchSD) to the northeast of the Project Site and an Environmental Permit (EP-315/2008) has been granted for its installation. It is however observed from a site visit conducted in July 2009 that the works for the installation of the radio repeater station have not yet commenced and no update on the implementation programme for the radio repeater station is available from ArchSD at the time of the preparation of this Project Profile. With reference to the approved Project Profile of the ArchSD's radio repeater station (DIR-167/2008), major works included small scale excavation (5.2m X 2.6mX 1.0m), construction of a concrete platform with ready-mix concrete and the erection of the equipment hut and antenna. The whole project was expected to be completed within a four-month period. Given the small scale of the works and the short construction programme for ArchSD's radio repeater station, potential cumulative impact is not anticipated.

The existing environment of the Project Site and its surroundings are shown in *Figure 3.1*. The existing Water Supplies Department (WSD) Tai Long Au Fresh Water Tank is located to the east of the Project Site. A mobile phone base station and ArchSD's proposed radio repeater station are located to the northeast of the Project Site. No residential uses are identified within 500 m from the Project Site boundary. Lam Uk Wai, Tseung Uk Wai and Tai Long are located to the southeast of the Project Site (more than 500 m away from the Project Site). Chek Keng village and Hong Kong Youth Hostels Association (HKYHA) Bradbury Hall are located to the west of the Project at more than 1km from the Project Site. A small stream is also found at approximately 350 m to the southwest of the Project Site.

The existing Project Site and its surrounding area, apart from the areas occupied by the WSD Tai Long Au Fresh Water Tank and the Integrated Mobile Phone Base Station, are covered by grasses, shrubs and young trees. There is no direct vehicular access to the Project Site and the closest paved vehicular road is Pak Tam Road at about 4 km to the west of the Project Site.

The construction of the Project is expected to involve the clearance of existing vegetation from an area of approximately 22.8m<sup>2</sup>, construction of the concrete platform, equipment fabrication and installation.

During the construction phase, a maximum of 10 workers (all personnel included) are expected to be on the Project Site at any one time. During the operational phase, the TETRA radio base station will be unmanned. *Table 4.1* identifies the potential environmental impacts that may arise from the construction and operation of the proposed radio base station. The key potential impacts are related to air quality, noise and site runoff during the construction phase. Potential operational phase impact is limited to landscape and visual impact caused by the antennae and the associated structures of the station. Further details on the consideration of the potential environmental impacts are provided in subsequent sections.

**Table 4.1** *Potential Environmental Impacts Arising from the Project*

Potential Impact	Construction	Operation
• Gaseous Emission	-	-
• Dust	✓	-
• Odour	-	-
• Noise	✓	-
• Night-Time Operations	-	-
• Traffic (Land)	-	-
• Liquid Effluents, Discharge or Contaminated Runoff	✓	-
• Generation of Waste or By-products	✓	-
• Manufacturing, Storage, Use, Handling, Transport, or Disposal of Dangerous Goods	-	-
• Hazard to life	-	-
• Disposal of Spoil Material	✓	-
• Unsightly visual Appearance	-	-
• Cultural and Heritage	-	-
• Terrestrial Ecology	✓	-
• Cumulative Impacts	-	-
<b>Note:</b>		
'✓' = Possible; '-' = Not Expected		

## 4.1 AIR QUALITY

### 4.1.1 Construction Phase

No air sensitive receivers (ASRs) are identified within 500m of the Project Site boundary. The closest residential use in the area is the village houses at Lam Uk Wai, which is at a distance of about 675 m to the southeast of the Project.



Dust may arise from the general construction works including minor excavation and the formation of a concrete platform. As the scale of construction works (eg manual installation of prefabricated equipments) are small, air quality impact to the surrounding environment is expected to be minimal. Inhabited villages are more than 500m away from the boundary of the construction site, and construction dust impact is therefore not anticipated. With the implementation of dust suppression measures stipulated under the *Air Pollution Control (Construction Dust) Regulation* and the adoption of good site practice, no adverse air quality impact of construction work is expected.

#### **4.1.2** *Operational Phase*

Since the TETRA station will only require low frequency maintenance involving the use of hand tools, air emission is not anticipated during the operation of the Project.

### **4.2** *NOISE*

#### **4.2.1** *Construction Phase*

No noise sensitive receivers (NSR) are identified within 500m of the boundary of the construction site. Only daytime work will be carried out for the construction of the Project. As a result of the small scale of the Project, only a limited number of small equipment is expected to be used. Due to the lack of direct vehicular access to the Project Site, all equipment and materials required for construction of the base station will be delivered by a helicopter. The need for material delivery by helicopter is expected to be required infrequently (most likely at the commencement and the end of the construction stage) and the associated noise disturbance will be transient and insignificant. Adverse impacts from construction noise are not envisaged.

#### **4.2.2** *Operational Phase*

Noise impact is not expected during the operation of the Project. The infrequent maintenance of the radio equipment will only involve the use of hand tools or devices and the noise impact during such events is expected to be negligible.

### **4.3** *WATER QUALITY*

#### **4.3.1** *Construction Phase*

The WSD Tai Long Au Fresh Water Tank adjacent to the Project Site is an enclosed structure and the water stored therein will not be affected by construction activities. No freshwater streams passing through the Project Site have been identified. The only stream within 500m of Project Site boundary was found at approximately 350 m to the southwest of the Project Site. The works that may have the potential to generate silty surface runoff are expected to include minor excavation works and the construction of the concrete platform, especially during the wet season. Adverse water quality

impact is however not expected with the implementation of proper site runoff control measures considering the small scale and short duration of works activities. Water quality impact on the identified stream from the works is also unlikely given the large separating distance from the Project Site.

#### **4.3.2**      *Operational Phase*

No effluent discharge will be generated during the operation of the radio base station and no water quality impact is anticipated.

### **4.4**            *WASTE MANAGEMENT*

#### **4.4.1**      *Construction Phase*

The construction activities associated with the Project may generate the following broad categories of waste:

- construction and demolition (C&D) materials, mainly inert materials from the minor excavation works;
- very small quantities of chemical wastes, such as batteries and lubricating oils from the maintenance of construction equipment; and
- small quantities of general refuse, including food waste from the on-site work force and the packaging from the construction materials.

Owing to the small scale of works, the amount of C&D materials generated will be limited. It is expected that all inert materials generated from the construction works will be properly segregated and reused on the Project Site for backfilling. Other wastes will be disposed off-site by a helicopter and the associated potential impacts are negligible.

The construction activities will involve only a very small number of construction equipment. The quantities of chemical waste to be generated from regular maintenance of equipment should be minimal and no impact is expected in this respect. With proper housekeeping measures and refuse collection in place, minimal or no impact is expected to result from refuse generated during the construction phase of the Project.

#### **4.4.2**      *Operational Phase*

With the infrequent need for maintenance of the Project and the small number of workers involved, no waste management issue is anticipated during the operation of the Project.

## 4.5 ECOLOGY

### 4.5.1 Introduction

An ecological baseline survey was conducted in July 2009, within the Study Area (ie the area within 500 m from the Project Site boundary). The ecological baseline conditions of the Study Area are presented in this section.

### 4.5.2 Environmental Legislation and Guidelines

The following legislation and guidelines provide the framework for the protection of species and habitats of ecological importance for ecological impact assessment in Hong Kong:

- *Country Parks Ordinance* (Cap 208);
- *Forests and Countryside Ordinance* (Cap 96);
- *Town Planning Ordinance* (Cap 131);
- *Wild Animals Protection Ordinance* (Cap 170);
- *Protection of Endangered Species of Animals and Plants Ordinance* (Cap 586); and
- *Hong Kong Planning Standards and Guidelines Chapter 10* (HKPSG).

Reference was also made to the *Technical Memorandum on Environmental Impact Assessment Process* (EIAO-TM) issued under the EIAO in the evaluation of potential ecological impacts.

### 4.5.3 Literature Review of Ecological Characteristics of the Study Area

A literature review was conducted but there is very limited ecological information available specifically for the Project Site <sup>(1)</sup> <sup>(2)</sup> <sup>(3)</sup> <sup>(4)</sup> <sup>(5)</sup> <sup>(6)</sup> <sup>(7)</sup> <sup>(8)</sup> <sup>(9)</sup> <sup>(10)</sup> <sup>(11)</sup>. Field surveys were conducted in July 2009 to determine the existing ecological conditions within the Study Area.

- (1) *Porcupine!* Newsletter of Department of Ecology & Biodiversity, University of Hong Kong Issues 1 to 33.
- (2) AFCD Biodiversity Newsletters.
- (3) Hong Kong Bird Watching Society (1990 -2000). Annual Reports.
- (4) Karsen, S. J., Lau, M. W. N. and Bogadek, A. (1998). *Hong Kong Amphibians and Reptiles*. Urban Council, Hong Kong
- (5) AFCD (2005). *A Field Guide to the Amphibians of Hong Kong*. Friends of Country Park.
- (6) Wilson, K.D.P. (2004). *Field Guide to the Dragonflies of Hong Kong*. Friends of Country Park.
- (7) Yiu V (2004). *Field Guide to the butterflies of Hong Kong*. Friends of Country Park.
- (8) Carey, G.J., Chalmers, M.L., Diskin, D.A., Kennerley, P.R., Leader, P.J., Leven, M.R., Lewthwaite, R.W., Melville, D.S., Turnbull, M., and Young, L. (2001). *The Avifauna of Hong Kong*. Hong Kong Bird Watching Society, Hong Kong.
- (9) Xing, F.W., Ng, S.C., Chau, L.K.C. (2000). Gymnosperms and angiosperms of Hong Kong. *Memoirs of the Hong Kong Natural History Society*. 23: 21-136.
- (10) Siu L P (2000). Orchidaceae of Hong Kong. *Memoirs of the Hong Kong Natural History Society*. 23: 137-147.
- (11) AFCD (2003). *New View Points-Country Park in Focus*. Friends of the Country Park..

*Habitat and Vegetation*

Terrestrial habitats found within the Study Area consisted of plantation, shrubland, shrubby grassland, grassland and developed areas (Figure 4.1). Shrubland with approximately 1.5 to 4 m tall plants is the dominant habitat within the Study Area and is considered to be of moderate ecological value. Two protected plant species *Pavetta hongkongensis* and *Aquilaria sinensis* were recorded in the shrubland within the Study Area. The locations where the above-mentioned protected plant species are found are shown in Figure 4.1. The remaining habitats are of low ecological value. The Project Site is located within an area shown as shrubby grassland on the habitat map in Figure 4.1 but the habitat within the Project Site area and on the immediately adjacent land has been highly modified by the WSD Tai Long Au Fresh Water Tank and the construction of the Integrated Mobile Phone Base Station. A photographic record of habitats identified within the Study Area is presented in Figure 4.2. The area of each habitat found within the Study Area and their ecological value are presented in Table 4.4.

**Table 4.4** *Area and Ecological Value of Each Habitat Identified within the Study Area*

Habitat	Area	Ecological Value	Note
Plantation	0.8 ha	Low	Plantation was dominated by the exotic trees <i>Acacia confusa</i> and <i>Acacia auriculiformis</i> ranging in height from 1.5m to 3.5m. Other plants found in this habitat were the native shrubs <i>Melastoma candidum</i> , <i>Rhodomyrtus tomentosa</i> and <i>Wikstroemia nutans</i> and the native trees <i>Cinnamomum parthenoxylon</i> , <i>Machilus chekiangensis</i> and <i>Sapium discolor</i> . Neither rare nor protected plant species were recorded in the developed area.
Shrubland	59.3 ha	Moderate	Shrubland was the dominant habitat type within the Study Area. Shrubland was dominated by common native shrubs plant species in between 1.5m to 4 meters high including <i>Schefflera hepterphylla</i> , <i>Melastoma candidum</i> , <i>Ilex asprella</i> and <i>Bridelia tomentosa</i> . All plants found were native species except for the exotic trees <i>Adinandra millettii</i> and <i>Dimocarpus longan</i> . Two protected plant species <i>Pavetta hongkongensis</i> and <i>Aquilaria sinensis</i> were recorded in the shrubland.
Shrubby grassland	14.2 ha	Low	Shrubby grassland was dominated by a few native shrub and grass species including <i>Melastoma candidum</i> , <i>Baeckea frutescens</i> , <i>Dicranopteris linearis</i> , <i>Microstegium ciliatum</i> and <i>Neyraudia reynaudiana</i> . Neither rare nor protected plant species were recorded in shrubby grassland.
Grassland	4.9 ha	Low	Grassland was dominated by a few native grass and fern species including <i>Dicranopteris linearis</i> , <i>Microstegium ciliatum</i> and <i>Neyraudia reynaudiana</i> . Neither rare nor protected plant species were recorded in grassland.

Habitat	Area	Ecological Value	Note
Developed Area	0.2 ha	Low	Developed area consisted of buildings and concrete roads. Neither rare nor protected plant species were recorded in the developed area.
Project Site (shrubby grassland)	22.8 m <sup>2</sup>	Low	The Project Site was dominated native grasses <i>Microstegium ciliatum</i> and <i>Neyraudia reynaudiana</i> with some small shrubs also recorded including <i>Melastoma candidum</i> , <i>Rhodomyrtus tomentosa</i> and <i>Wikstroemia nutans</i> . Neither rare nor protected plant species were recorded in the site.

### *General Wildlife*

The abundance and species richness of general wildlife were low to moderate in shrubland and shrubby grassland. The abundance and species richness in the remaining habitats were low. Most of the recorded wildlife species are common or very common in Hong Kong.

One Black Kite (*Milvus lineatus*) was observed soaring within the Study Area at the time of the survey. Despite being a common and widespread resident in Hong Kong, the Black Kite is considered a bird species of conservation interest in Hong Kong for the purpose of ecological evaluation. In the People's Republic of China (PRC), it is a *Class 2 Protected Animal* due to over-hunting. Since Black Kites were commonly found soaring in the sky within the Study Area, the exact locations of the bird are not shown.

#### 4.5.5

### *Construction and Operational Phase Impacts*

The potential ecological impacts that may arise during the construction and operational phases are evaluated based on the results of the field survey and the information gathered from the literature review.

#### *Construction Phase*

As a result of the construction activities (minor excavation works), the following are likely sequential outcomes to the habitat in the immediate proximity of the Project Site.

- Direct habitat loss from land take for the construction activities for the surface structures of the Project;
- Direct loss of inactive/less mobile/habitat-specific wildlife nesting/inhabiting the affected habitat;
- Associated impacts to wildlife, including restriction of wildlife utilisation (ie transit, feeding and roosting), temporary and permanent loss, isolation and fragmentation of ecological habitat; and
- Impacts to the surrounding habitat and associated wildlife due to physical disturbance of this habitat including disturbance, inappropriate storage or dumping of construction material, or hill fire.

The potential impacts on the habitat affected by the Project are presented in *Table 4.5*.

**Table 4.5** *Potential Impacts to Habitat Identified within the Project Site*

<b>Impacted Habitat</b>	<b>Project Component</b>	<b>Area of Habitat Impacted</b>	<b>Ecological Value</b>	<b>Overall Ecological Impact</b>	<b>Note</b>
Shrubby grassland	TETRA radio base station	22.8 m <sup>2</sup>	Low	Low	The impacted area was small in the context of the large extent of similar habitats in the vicinity.

Given the anticipated small scale of construction activities and limited area of shrubby grassland to be disturbed on the Project Site as presented in *Table 4.5*, the ecological impact during the construction phase is expected to be low.

*Operational Phase*

Ecological impact is not anticipated during the operational phase.

**4.6** *LANDSCAPE AND VISUAL IMPACT*

**4.6.1** *Construction Phase*

The vegetation surrounding the Project Site is dominated by shrubby grassland and plantation, and site visit in July 2009 confirmed that the Project Site was covered in short grasses and some shrubs, which will need to be removed for the construction of the Project. Extensive vegetation clearance or tree felling will however not be required. With the limited scale of vegetation removal, the small size of Project Site and the small number of construction equipment required, impact on the existing landscape is expected to be low.

**4.6.2** *Operational Phase*

The tallest structure within the Project will be the 10m antenna mast of the radio base station. The structures of the Project may be visible to hikers passing through the area but the effect will only be transient and the visual impact to the occasional hikers will be minimal. In addition, the Project will be screened from the full view of hikers on the MacLehose Trail by existing trees and the existing WSD Tai Long Au Fresh Water Tank. The colour scheme and finishing to be used for the TETRA radio base station will also match the country park environment and complement that of the existing structures of the immediate surrounding area. The landscape and visual impact of the Project is therefore considered to be low.

Also, telecommunication facilities, including antenna masts of sizes and appearance similar to that of the Project, have already been installed at the existing CSL Integrated Mobile Phone Base Station to the north of the existing WSD fresh water tank. The introduction of the new antenna mast and the associated radio base station equipment will not give rise to significant

additional landscape and visual impacts. Taking the above into consideration, including the visual screening afforded by the existing WSD fresh water tank and surrounding trees, the overall cumulative landscape and visual impacts of the Project are considered to be low. A graphical illustration of the Project from the hillside north of the Project Site is presented in *Figure 4.3*.

## 5 ENVIRONMENTAL PROTECTION MEASURES

### 5.1 AIR QUALITY

#### 5.1.1 Construction Phase

The potential dust impacts associated with the construction of the Project will be mitigated through the implementation of construction site management practices for dust control. This includes watering of exposed soil surfaces and covering of dusty stockpiles with impervious sheeting.

#### 5.1.2 Operational Phase

No operational air emission is anticipated and no mitigation measure is required.

### 5.2 NOISE

#### 5.2.1 Construction Phase

Implementation of standard construction site management measures for noise control, such as the use of well-maintained construction plant and planning of the construction plant team, will be sufficient to ensure compliance with the construction noise limits.

#### 5.2.2 Operational Phase

No operational noise impact is anticipated and no mitigation measure is required.

### 5.3 WATER QUALITY

#### 5.3.1 Construction Phase

Appropriate measures will be implemented in accordance with the guidelines stipulated in EPD's *Practice Note for Professional Persons on Construction Site Drainage (ProPECC PN1/94)* during the construction works to properly control site run-off and drainage and to minimise potential water quality impacts.

#### 5.3.2 Operational Phase

No operational water quality impact is anticipated and no mitigation measure is required.



## 5.4 WASTE MANAGEMENT

### 5.4.1 Construction Phase

Owing to the small scale of the Project and the reuse of excavated soils for backfilling, a minimal amount of construction waste is expected to arise from the construction of the Project. To minimise the amount of construction waste, careful design, comprehensive planning and good site management practice will be adopted by the contractors of the Project and waste on-site will be properly segregated to increase the potential for reuse and recycling. Chemical waste generated during the construction of the Project, if any, will be properly stored in accordance with *Code of Practice on the Packaging, Labelling and Storage of Chemical Waste* by EPD before collection for disposal by a licensed Chemical Waste Collector. The quantity of general refuse generated on-site will be minimal owing to the small number of workers involved and will be taken away from the Project Site by the workers for proper disposal on a daily basis.

Non-reusable excavated material and construction waste produced over the project period will be transported off the site by a helicopter.

### 5.4.2 Operational Phase

No waste management issue is anticipated during the operation of the radio base station and no waste mitigation measure is required.

## 5.5 ECOLOGY

### 5.5.1 Construction Phase

Potential ecological impacts associated with the Project during the construction phase will likely be disturbance of shrubby grassland and associated wildlife. With the low ecological value of the habitat and high degree of modification to the developed area immediately surrounding the Project, potential ecological disturbance caused by the Project is anticipated to be minimal. Further ecological disturbance could be minimised by implementation of good construction practices which are listed as follow:

- Avoid any damage and disturbance, particularly those caused by filling and illegal dumping, to the remaining and surrounding natural shrubby grassland and shrubland habitats;
- Regularly check the Project Site boundaries to ensure that they are not breached and that no damage occurs to surrounding areas;
- Prohibit and prevent open fires within the site boundary during construction and provide temporary fire fighting equipment in the work areas; and
- Reinstate temporary work sites/disturbed areas, immediately after completion of the construction works.

### 5.5.2 *Operational Phase*

Ecological impact is not anticipated during the operational phase.

## 5.6 *LANDSCAPE AND VISUAL IMPACT*

### 5.6.1 *Construction Phase*

No adverse landscape and visual impact is expected during the construction phase and no mitigation measure is required.

### 5.6.2 *Operational Phase*

The colour scheme and finishing to be used for the TETRA radio base station will match the country park environment and complement that of the existing structures of the immediate surrounding area. No further mitigation measure is considered necessary in this respect.

*COMMENT ON POSSIBLE SEVERITY, DISTRIBUTION AND DURATION  
OF ENVIRONMENTAL EFFECTS*

The proposed TETRA radio base station will improve the radio communication coverage and safety for CLP field staff. The Project would enhance the safety level of CLP maintenance operators in the Tai Long Au area and therefore the reliability of power supply. The selection of the Project Site has taken into consideration the relatively isolated location but modified nature of the area to further minimise potential environmental disturbance to sensitive receivers arising from the implementation of the Project.

The scale of the construction works is extremely small, requiring the use of only a limited number of small construction equipment and hand tools for a short duration of approximately thirteen weeks. The Project will be unmanned in the operational phase and will not impose any adverse environmental impacts. The overall environmental impacts potentially arising from the Project are considered to be extremely minor. With the implementation of appropriate environmental control measures discussed in the preceding sections, no adverse residual environmental impacts are anticipated.

**USE OF PREVIOUSLY APPROVED EIA REPORTS/DIRECT ENVIRONMENTAL PERMIT APPLICATIONS**

Reference has been made to the following Project Profiles for direct application of Environmental Permit due to the similarity in location, purpose and characteristics of the projects.

- (1) *Proposed Installation of Integrated Mobile Phone Base Station at Tai Long Au, Sai Kung East Country Park, Tai Po, NT; Application No DIR-151/2007*
- (2) *TETRA Radio Base Station at Yuen Ng Fan, Sai Kung; Application No DIR-154/2007*
- (3) *Proposed Installation of Radio Repeater Station at Tai Long Au, Sai Kung East Country Park, Tai Po, N.T.; Application No DIR-167/2008*

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# 1 基本資料

## 1.1 工程項目名稱

新界大埔西貢東郊野公園大浪坳陸地集群無線通訊基站（以下簡稱爲「本工程項目」）

## 1.2 工程項目倡議人名稱

中華電力有限公司（以下簡稱爲「中電」）

## 1.3 聯絡人姓名及電話號碼

姓名：朱永源先生

職位：香港中華電力有限公司技術服務部電訊經理

電話：2678 6018

## 1.4 工程項目目的和性質

中電倡議於大埔西貢東郊野公園大浪坳興建及營運一個陸地集群無線通訊基站(本工程項目)，以改善無線通訊覆蓋範圍和保障中電戶外工作人員的安全。現時，該地區的電力供應主要經架空電纜傳輸。戶外工作人員需要定期巡邏電纜沿線、保養及緊急維修輸電設施。在西貢東郊野公園內的有爲數不少11千伏特電網的輸電桿，但西貢東郊野公園內現有的訊號覆蓋暫時只能依靠設置在西貢西郊野公園的石屋山和西貢市中心的陸地集群無線通訊基站提供。由於最接近的石屋山無線通訊基站位處本項目工程以西多於5公里，因此目前並不足夠覆蓋西貢東郊野公園北部的通訊。在流動電話網絡因高用量導致擠塞時，中電戶外工作人員往往未能以流動電話作後援通訊，引致通訊支援不足，在節日或天氣惡劣時尤甚。上述情況使區內的工作人員在緊急及一般情況下未能及時得到所需的電訊服務。基於以上原因，中電認爲一個內部專用的電訊系統對確保可靠電力供應及保障戶外工作人員的安全至爲重要。

擬建的無線通訊基站將會改善中電在西貢東郊野公園內的陸地集群無線通訊覆蓋。上述改善對持續保障中電戶外工作人員的安全至爲重要，使遙距監察和控制輸電系統的工作更有效，從而加強電力供應的可靠性。

## 1.5 工程項目的地點及規模和工程項目的地點的歷史

本工程項目的動工地點(工程項目的地點)位於西貢東郊野公園範圍內的大浪坳(圖1.1)。工程項目的地點位於大蚊山以北、赤徑以東及蚺蛇尖西南一個基準水平以上約214米的位置。

本工程項目將佔地約22.8平方米(6.0米(長) x 3.8米(闊))，而工程項目中的結構部份則會座落在一個高度約0.35米的混泥土地上。是次工程的規模甚小，主要包括興建混凝土基座、安裝電訊器材保護外罩和安裝天線及相關的天線桿(圖1.2及1.3)。本工程只需使用小型機動設備和手工具並無需建築行車路。圖1.4展示了本工程項目的佈局。

擬建的無線通訊基站將會是無人操作的。基站運作期間，間中或需進行電訊設備的維修，這些工作一般只是使用手工具的輕型維修作業，只需最多兩名維修工人，由最近的道路以步行方式到達基站。

## 1.6 工程項目簡介內之指定工程項目數目及種類

根據《環境影響評估條例》(以下簡稱為《環評條例》)附表2第1部Q.1 類別 - 位於郊野公園內的工程項目，擬建的西貢大浪坳陸地集群無線通訊基站屬於「指定工程項目」。

中電已聘請歐洲宇航防務集團（EADS）負責無線通訊基站的設計和建造工程。本工程項目的設計和批核申請工作已經展開。動工及投入運作日期分別暫定於二零零九年十一月及二零一零年二月。根據現時的工程計劃，工程項目將會依表2.1所述進行。

表 2.1 工程計劃（只供參考）

工程項目的主要階段	為期
興建混凝土基座	三星期
製作和安裝電訊設備保護外罩	兩星期
安裝機電裝置	一星期
安裝天線塔	三星期
安裝電訊器材	兩星期
系統測試和投入運作	兩星期

現時並無行車道路直達本工程項目地點。在施工階段，一切所需器械及物料將會由直升機直接運送到工程項目地點，地面的建築工人也會配合運送過程。進行挖掘工程及興建混凝土基座時將會使用小型機動設備與手動工具，而玻璃纖維電訊器材保護外罩的製作、電力裝置、電訊器材和機械設備的安裝則會用手工具進行。

據悉建築署計劃於工程項目地點東北設置一座無線電轉發站而環境保護署已簽發有關的環境許可證(許可證編號 EP-315/2008)。然而，據二零零九年七月的實地勘察所見，無線電轉發站的工程尚未開展。截至撰寫本工程項目簡介時，建築署仍未有任何有關無線電轉發站工程計劃的更新資料。根據建築署無線電轉發站的工程項目簡介(DIR-167/2008) 中的資料，該站建築的主要程序包括小規模的挖掘 (5.2米 x 2.6米 x 1.0m)、以即用混凝土建造混凝土台和儀器室及天線的安裝。整個工程需時約四個月。由於兩項工程項目的規模及時間都十分細小及短暫，預計兩項工程的潛在累積影響也將十分輕微。



圖3.1顯示本工程項目地點及附近區域的環境。現有的水務署大浪坳食水缸位於工程項目地點以東，而綜合流動電話收發站及由建築署倡議的無線電轉發站則設於本工程項目的東北方。本工程項目地點邊界的500米範圍內並沒有住宅用途，而最接近的林屋圍、張屋圍以及大浪都是位於工程項目東南方500米以外的區域。赤徑村及白普理堂(赤徑)青年旅舍則位於本工程項目以西，與工程項目地點相距多於1公里。在本工程項目地點西南方約350米處有一條小溪。

現有工程項目地點以及附近範圍（除水務署大浪坳食水缸及綜合流動電話收發站所佔用的土地外）均被草地、灌木及幼樹覆蓋。工程項目地點現時並沒有行車道路直達，而最接近的行車路是工程項目地點以西約 4 公里的北潭路。

## 對環境可能造成的影響

本項目的建造工程預料需要清理項目範圍內約22.8平方米的植被、興建混凝土基座、及組裝器材。

在施工期間，在工程項目地點最多只會有十名工作人員在同一時間內工作。在運作期間，無線通訊基站將會是無人操作的。表4.1展示擬建無線通訊基站在施工及運作期間可能造成的環境影響。主要的潛在影響包括了施工期間可能造成的空氣質素影響、噪音及工地徑流。運作期間的潛在影響則局限於由天線桿和有關的基站結構所產生的景觀及視覺影響。有關潛在環境影響的詳細考慮將列載於隨後章節。

表4.1 工程項目可能造成的環境影響

潛在影響	施工階段	運作階段
• 氣體排放	-	-
• 塵埃	✓	-
• 氣味	-	-
• 噪音	✓	-
• 晚間操作	-	-
• 交通（陸上）	-	-
• 污水、排放物或受污染的徑流	✓	-
• 產生廢物或副產品	✓	-
• 製造、儲存、使用、處理、運送或處置危險品	-	-
• 對生命的危害	-	-
• 處置廢料	✓	-
• 礙眼的可見物	-	-
• 文化及遺產	-	-
• 陸地生態	✓	-
• 累積影響	-	-

說明：  
 '✓' = 可能      '-' = 預計沒有

## 4.1 空氣質素

### 4.1.1 施工階段

本工程項目地點附近500米的範圍並無空氣敏感受體。距離本項目工程最接近的住宅地區是在項目東南約675米的林屋圍。

建築工程中的少量挖掘工程和混凝土基座的建造有可能會產生塵埃。但由於建造工程規模細小(例如以人手安裝預製組件)，所以對附近的空氣質素預期影響甚微。由於有人居住的村落位於工地邊界以外多於500米的地點，因此預期不會有塵埃影響。只要在施工期間實施《空

氣污染管制（建造工程塵埃）規例》所定的塵埃抑制措施和遵守良好的工地守則，預計施工時所產生的塵埃不會對環境造成不良影響。

#### **4.1.2 運作階段**

由於維修陸地集群無線通訊基站的頻率甚低，而且只需使用手工具，故此預計本工程項目於運作期間並不會產生大氣排放。

### **4.2 噪音**

#### **4.2.1 施工階段**

工程項目地點邊界以外500米範圍並沒有噪音敏感受體。是次工程只會於日間進行。因本工程項目的規模甚小，預計只需使用少量的小型設備。此外，由於工程項目地點的附近並沒有行車道路，所有工程所需的器材及物料將會由直昇機運送至目的地。由於直昇機運送物資的次數並不頻密(主要在工程啟動及完結的時期)，因此有關的噪音影響只屬短暫及輕微。預計本工程項目不會在施工期間造成不良的噪音影響。

#### **4.2.2 運作階段**

預計本工程項目的運作將不會造成噪音影響，由於維修無線通訊基站的頻率甚低而且只需使用少量手工具或器材，預料維修期間可能產生的噪音影響只會微乎其微。

### **4.3 水質**

#### **4.3.1 施工階段**

本工程項目比鄰的水務署大浪坳食水缸由於是密封式結構，因此建築工程並不會影響缸內食水水質。此外，工程項目地點內並無任何淡水溪流流經，而唯一流經本工程項目地點邊界500米的範圍內的溪流則在西南方350米外。在施工過程中，小型挖掘工程及興建混凝土基座的工程（尤其在雨季）有可能會產生工地徑流。基於是次工程的規模小及施工期短，只要實施適當的徑流管理，預計本工程項目在施工期間並不會造成水質影響。此外，由於上述溪流的地點離本工程項目地點的距離頗大，因此是次工程將不會產生水質影響。

#### **4.3.2 運作階段**

無線通訊基站的運作並不會產生任何污水排放，因此亦不會造成水質影響。

## **4.4 廢物管理**

### **4.4.1 施工階段**

本工程項目的建築工程可能會產生下列各類別的廢物：

- 建造及拆卸物料，主要是來自少量挖掘工程的惰性建築物料；
- 極少量的化學廢物，例如維修施工設備所產生的廢電池和廢潤滑油；及
- 少量一般垃圾，包括現場工人所產生的棄置食物，以及建築材料的包裝物料。

是次工程的規模甚小，工程所產生的建造及拆卸物亦因此有限。所有惰性建築物料將被分類和在工地範圍內作填土重用，其餘的棄置物將會以直昇機運送到合適的處理場地處理。因此有可能造成的有關環境影響只會屬於極度輕微。

建造工程所需使用的施工設備極少，而施工設備的維修也只會產生極少量的化學廢物，因此工程期間所產生的化學廢物並不會造成環境影響。只要實施適當的工地管理及妥善收集垃圾，施工期內所產生的垃圾亦預計不會對環境造成不良影響。

### **4.4.2 運作階段**

由於無線通訊基站運作期間所需維修並不頻繁，而且涉及的工作人員數量甚少，因此預料本工程項目於運作期間不會引起廢物管理方面的問題。

## **4.5 生態**

### **4.5.1 引言**

研究範圍內（即本工程項目地點邊界500米範圍內）的生態基線考察已於二零零九年七月進行。本節闡述了研究範圍內的生態基線環境。

### **4.5.2 環境法例及指引**

以下的法例及指引提供生態影響評估中作為評估品種的保護及棲息生境的生態重要性的架構：

- 《郊野公園條例》(香港法例第208章)；
- 《林區及郊區條例》(香港法例第96章)；

- 《城市規劃條例》(香港法例第131章);
- 《野生動物保護條例》(香港法例第170章);
- 《保護瀕危動植物物種條例》(香港法例第586章); 及
- 《香港規劃標準與準則》第十章

本工程項目簡介亦參照《環境影響評估程序-技術備忘錄》評估了潛在的生態影響。

#### 4.5.3 研究範圍內生態特性的文獻探討

撰寫本工程項目簡介過程中，探討了有關工程項目地點現時生態情況的文獻但有關區內生態特性的資料相對不足<sup>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)</sup>。因此於二零零九年七月進行了野外考察以確定研究範圍內生境的狀況(見圖4.1)。

#### 4.5.4 生態基線環境

##### 生境及植被

研究範圍內的陸地生境包括造林、灌木林、灌木草地、草地和已發展的地區(圖4.1)。研究範圍內的主要生境為灌木林，其中的植物高約1.5至4米，生態價值屬於中等。灌木林中發現了香港大莎葉和土沉香兩種受保護的植物物種，而發現該兩種受保護植物的位置則可參閱圖4.1。範圍內的其餘生境的生態價值則屬於低。圖4.1顯示工程項目地點雖然位處灌木草地中，但工程項目地點及其周邊的生境實際上均已因水務署大浪坳食水缸和綜合流動電話收發站的工程而被大幅改動。圖4.2展示了工程地點及研究範圍內的生態圖片記錄。是次考察所得的各種生境的面積及價值詳列於表4.4。

- (1) Porcupine! - 香港大學生態及生物多樣性學系系報 第1至33期
- (2) 漁農自然護理署出版的《香港物種探索
- (3) 香港觀鳥會年報
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表4.4

研究範圍內的生境和其生態價值

生境	面積	生態價值	備註
造林	0.8公頃	低	造林內的植物主要是台灣相思和耳果相思等外來品種，約1.5至3.5米高。其他的生境則為本地灌木(野牡丹、崗檢和細軸蕘花)及本地樹木(黃樟、浙江潤楠及山烏柏)。在造林內沒有發現罕有或受保護植物品種。
灌木林	59.3公頃	中等	灌木林是研究範圍內的主要生境。灌木林內的植物主要是本地品種，約1.5至4米高，其中包括鴨腳木、野牡丹、梅葉冬青和土密樹。除了黃瑞木及龍眼(桂圓)兩個外內品種，其餘的灌木林都是本地品種。在灌木林中發現的兩種受保護的植物物種則有香港大莎葉和土沉香。
灌木草地	14.2公頃	低	灌木草地內的植物主要為本地灌木及草種包括包括野牡丹、崗松、鐵芒萁、剛莠竹和類蘆。在區內並沒有發現罕有或受保護植物品種。
草地	4.9公頃	低	草地的主要本地草類及蕨類物種包括鐵芒萁、剛莠竹和類蘆。在草地內沒有發現罕有或受保護植物品種。
已發展地區	0.2公頃	低	已發展地區包括建築物及混凝土道路。已發展地區內並沒有發現罕有或受保護植物品種。
工程項目地點 (散佈灌木草地的台灣相思植苗)	22.8平方米	低	工程項目地點的物種主要為草類(剛莠竹和類蘆)及灌木(鴨腳木、崗檢和細軸蕘花)。區內並沒有發現罕有或受保護植物品種。

### 野生動物

在研究範圍內的灌木林及灌木草地中的野生動物豐盛程度和品種多樣性屬於中等至低，而其餘生境中的豐盛程度和品種多樣性則屬於低。大部份錄得的野生動物在香港都屬於常見或非常常見。

實地考察期間觀察到一頭麻鷹(黑鳶)在研究範圍上空飛翔。雖然麻鷹在香港是常見而且普遍的鳥類品種，但在生態評估中通常被界定為具保育價值的鳥類品種。此品種在國內由於受到過份捕獵，因此被列為國家二級受保護動物。由於麻鷹經常會在研究範圍上空活動，其活動範圍及確定的位置也因此沒有記錄在本報告中。

#### 4.5.5 施工及運作階段的影響

本工程項目在施工及運作期間可能造成的生態影響已根據野外考察結果和文獻資料作出以下的評估。

##### 施工階段

因本工程(主要是挖掘工程)而對工程項目地點及其附近範圍內的生境的後果預料如下：

- 地面結構建造工程直接導致生境損失；
- 直接損失於受影響生境內築巢或棲息而活動性較低或該類生境特有的生物；
- 對野生動物的相關影響包括限制野生動物使用該生境 (即過路、覓食及棲息)，生境的永久或暫時性的喪失及孤立；和
- 干擾、不當儲存及棄置建築物料或山火，都可能會引致對附近生境和相關野生動物的影響。

本工程項目對生境可能造成的影響羅列於表4.5。

表4.5 工程項目對工作範圍內已確認生境的潛在影響

受影響生境	項目	受影響生境 面積	生態價值	總生態影響	備註
灌木草地	陸地集群無線 通訊基站	22.8 平方 米	低	低	受影響的面積屬 小 (相對附近大 量同類的生境而 言)

由於工程規模小，在工程項目地點受干擾的灌木草地面積亦有限 (見表4.5)，預料施工期間內的生態影響將會甚低。

##### 運作階段

本工程項目於運作階段預計不會造成生態影響。

#### 4.6 景觀及視覺影響

##### 4.6.1 施工階段

工程項目地點附近的植被主要為灌木林及植林。二零零九年七月的野外考察確認工程項目地點現正被短草及少量灌木覆蓋。因此，在工程範圍內並不預期有樹木砍伐及大規模的植被清理。由於需要清理植物

的範圍有限，而且只會動用少量建築器材，本工程項目的景觀影響將會很低。

#### 4.6.2 運作階段

本工程項目最高的結構將為無線通訊基站的10米高天線。雖然本工程項目的結構或可見於路經的遠足人士，但影響只是短暫，因此項目對偶而路過的遠足人士只會產生輕微影響。工程項目地點的四邊除了西方以外都被植林圍繞，因此路經工程項目北方、東方及南方的遠足人士對本工程項目的景觀將會被樹木局部遮蓋。另外，無線通訊基站的色調與外表塗裝將會盡量配合郊野公園環境及融入周圍已有的建築物。整體來說，本工程項目只會對附近的景觀及視覺造成很低的影響。

同時，坐落於現有的水務署大浪坳食水缸北面綜合流動電話收發站及其內的天線桿組群的外型跟本項目擬建的相似，因此，本項目新安裝的天線桿及設備並不會為該區帶來重大的視覺侵擾。基於以上的考慮，包括現有的水務署大浪坳食水缸及週圍的樹木提供的視覺遮擋，來說，本工程項目對附近的整體景觀及視覺只造成很低的影響。圖4.3以圖像化的形式顯示了從本工程項目以北的山坡向工程項目地點眺望的景觀。



## **5 緩解措施說明**

### **5.1 空氣質素**

#### **5.1.1 施工階段**

為減低工程可能造成的塵埃影響，本工程項目將會實行控制塵埃的工地管理方法，包括對外露的泥地灑水和用不透水的物料覆蓋工地堆存的易生塵埃物料。

#### **5.1.2 運作階段**

預計本工程項目於運作期間不會有氣體排放，因此不需要任何緩解措施。

### **5.2 噪音**

#### **5.2.1 施工階段**

實行一般控制噪音的工地管理方法，例如使用保養良好的施工機械和周詳策劃施工需用的機動設備組合，便足以確保符合建築噪音標準。

#### **5.2.2 運作階段**

預計本工程項目於運作期間不會產生噪音，因此不需要任何緩解措施。

### **5.3 水質**

#### **5.3.1 施工階段**

在施工期間，本工程項目將會實行環保署《給專業人士的建築工地排水的執行備忘》(專業守則1/94)的指引內的適當措施，從而預防工地徑流和排水及減低可能造成的水質影響。

#### **5.3.2 運作階段**

預計本工程項目於運作期間不會引致水質影響，因此不需要任何緩解措施。

## 5.4 廢物管理

### 5.4.1 施工階段

由於本工程項目的規模很小，同時也會利用挖掘工程中所產生的物料作原址填土之用，因此本工程項目於施工期間只會產生少量建築廢料。本工程項目的承建商會審慎設計、全面計劃及實行良好的工地管理方法來盡量減少建築廢物，而且廢物將會在工地作妥善分類，藉此提高再用及再造的可能。本工程項目施工時所產生的化學廢物將會遵守環保署所出版的《包裝、標識及存放化學廢物的工作守則》內說明的方法妥當存放，然後由持牌的化學廢物收集商收集及運走作妥善處理。工地只會產生少量的一般垃圾，並且每天由工人攜離工程項目地點後適當地棄置。

所有在回收重用後所剩餘的物料及工程廢料將會在工程期間由直昇機運離工地。

### 5.4.2 運作階段

預計在無線通訊基站運作期間不會產生任何廢物管理問題，因此並不需要任何緩解措施。

## 5.5 生態

### 5.5.1 施工階段

本工程項目在施工期間可能造成的生態影響包括對灌木草地及相關野生動物的干擾。由於在工程項目地點的生境價值屬於低，加上附近已發展土地已被大幅改動，因此本工程項目可能造成的生態影響預計將會是極少。以下的良好施工措施可以更進一步把生態影響減至最低：

- 避免因為填土或非法棄置廢物而破壞及干擾剩餘在工程項目地點以外的灌木草地及灌木林；
- 定期檢查工地邊界以確保工程對附近環境沒有破壞；
- 在工程項目地點範圍以內，嚴禁生火，並提供滅火設備作暫時之用；  
和
- 完工時，應盡快還原臨時工地或受干擾的地方。

### 5.5.2 運作期間

本工程項目於運作期間預計不會造成生態影響。

## **5.6 景觀及視覺影響**

### **5.6.1 施工階段**

預期本工程項目於施工期間並不會有重大的景觀及視覺影響，因此不需要任何緩解措施。

### **5.6.2 運作階段**

無線通訊基站的色調與外表塗裝會盡量配合郊野公園環境及融入周圍現有的建築物，因此毋須實行進一步的緩解措施。

擬建的陸地集群無線通訊基站將會改善中電在大浪坳的通訊覆蓋，並提升中電戶外操作人員的工作安全，更從而提高了電力供應的可靠性。在選擇工程項目地點時已考慮到選址相對偏僻及其環境已被改動，以進一步盡量減低在實施項目期間對環境敏感受體可能帶來的影響。

本項目的建築工程規模極小，兼且為期只有約十三個星期，期間只需使用少量的小型建築器材和手工具。本工程項目將會是無人操作亦不會對環境產生不良影響。整體來說，本工程項目可能引起的環境影響極少。只要實施上文闡述的緩解措施，預計本工程項目並不會引致剩餘環境影響。

基於項目的地點、類別及特性相似，本工程項目簡介參考了以下「已批核的申請環境許可證的項目簡介」：

- (1) 計劃於大埔大浪坳西貢東郊野公園安裝綜合流動電話收發站；DIR-151/2007
- (2) 西貢元五墳陸地集群無線通訊基站；DIR-154/2007
- (3) 計劃於大埔大浪坳西貢東郊野公園安裝無線電轉發站；DIR-167/2008

Figures

附圖

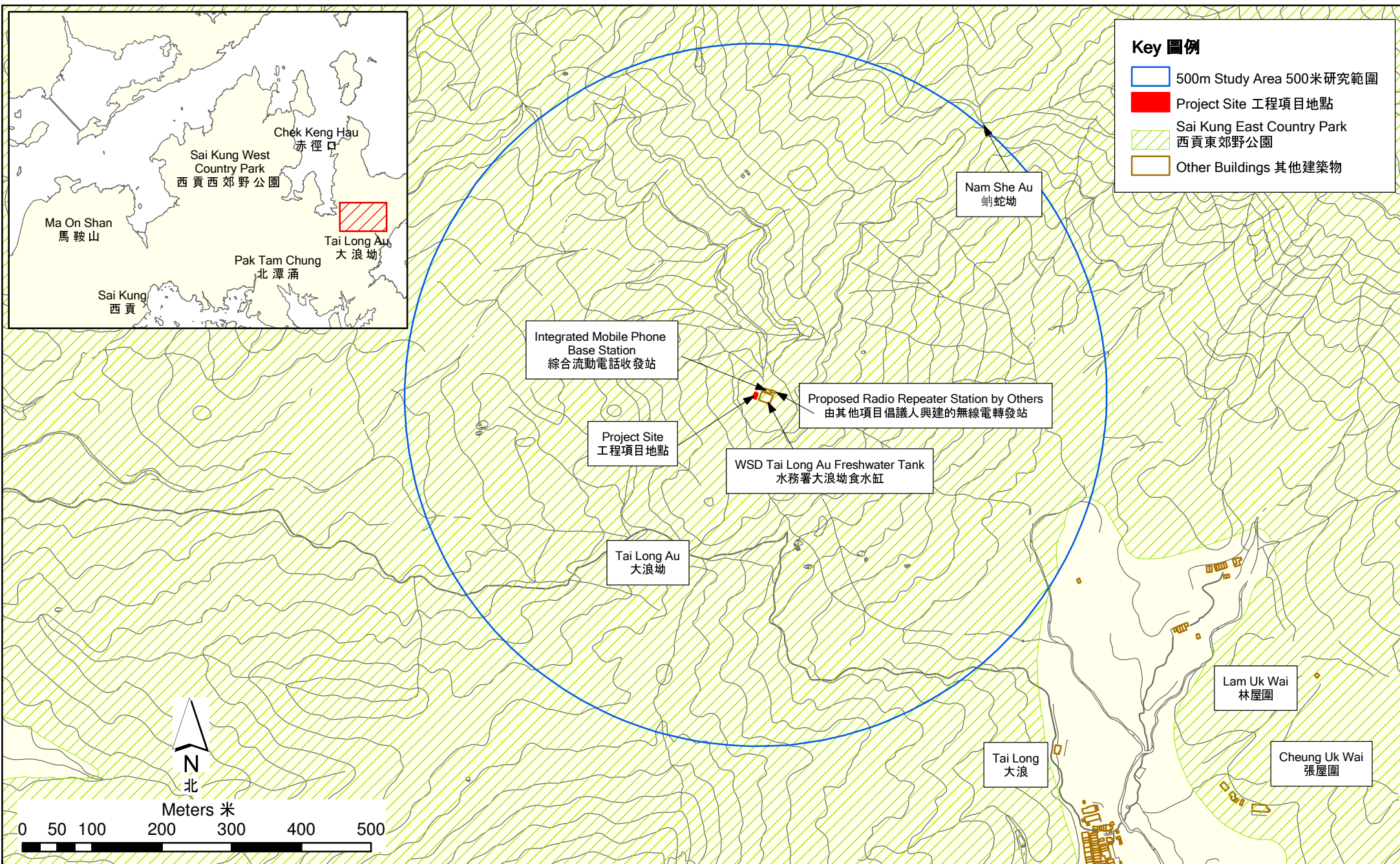


Figure 1.1  
圖1.1

File: 0103151\_Location\_of\_TETRA.mxd  
Date: 25/08/2009

**Location of Proposed TETRA Radio Base Station**  
擬建陸地集群無線通訊基站地點

Environmental  
Resources  
Management



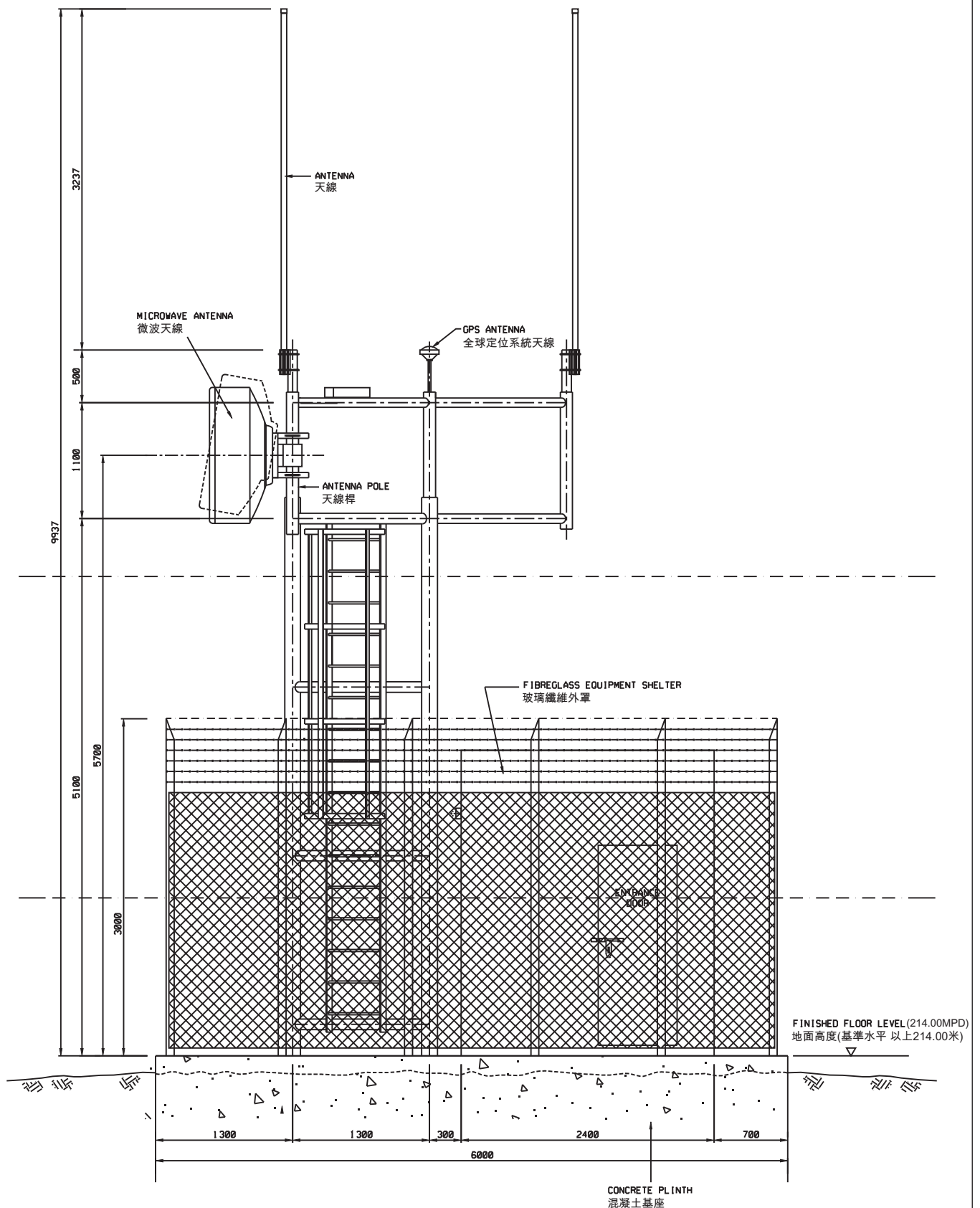


Figure 1.2  
圖1.2

TETRA Radio Station Front View  
陸地集群無線通訊基站正面圖

FILE: 0103151c  
DATE: 05/08/2009

Environmental  
Resources  
Management





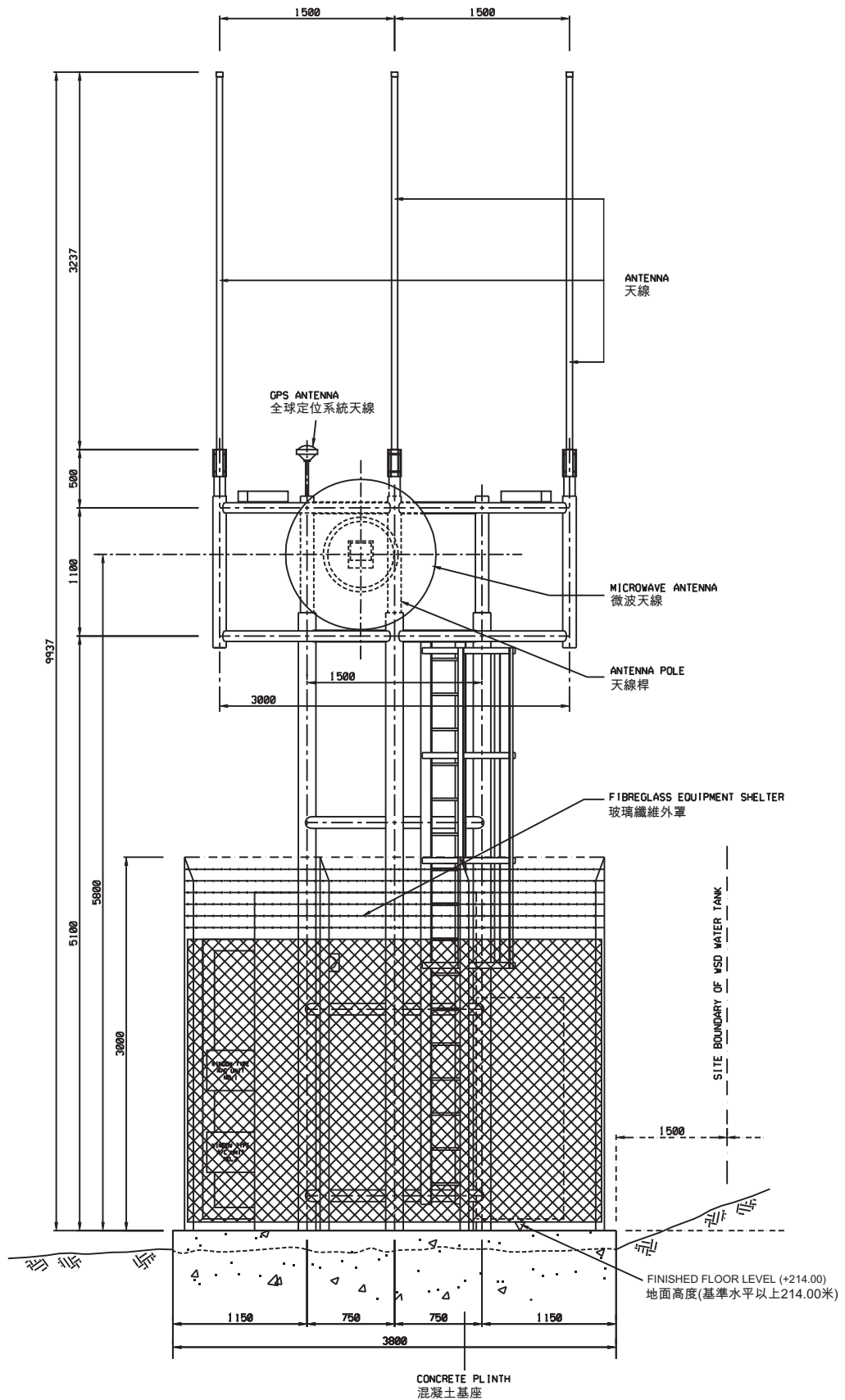


Figure 1.3  
圖1.3

TETRA Radio Station Side View  
陸地集群無線通電訊基站側面圖

FILE: 0103151d  
DATE: 05/08/2009

Environmental  
Resources  
Management



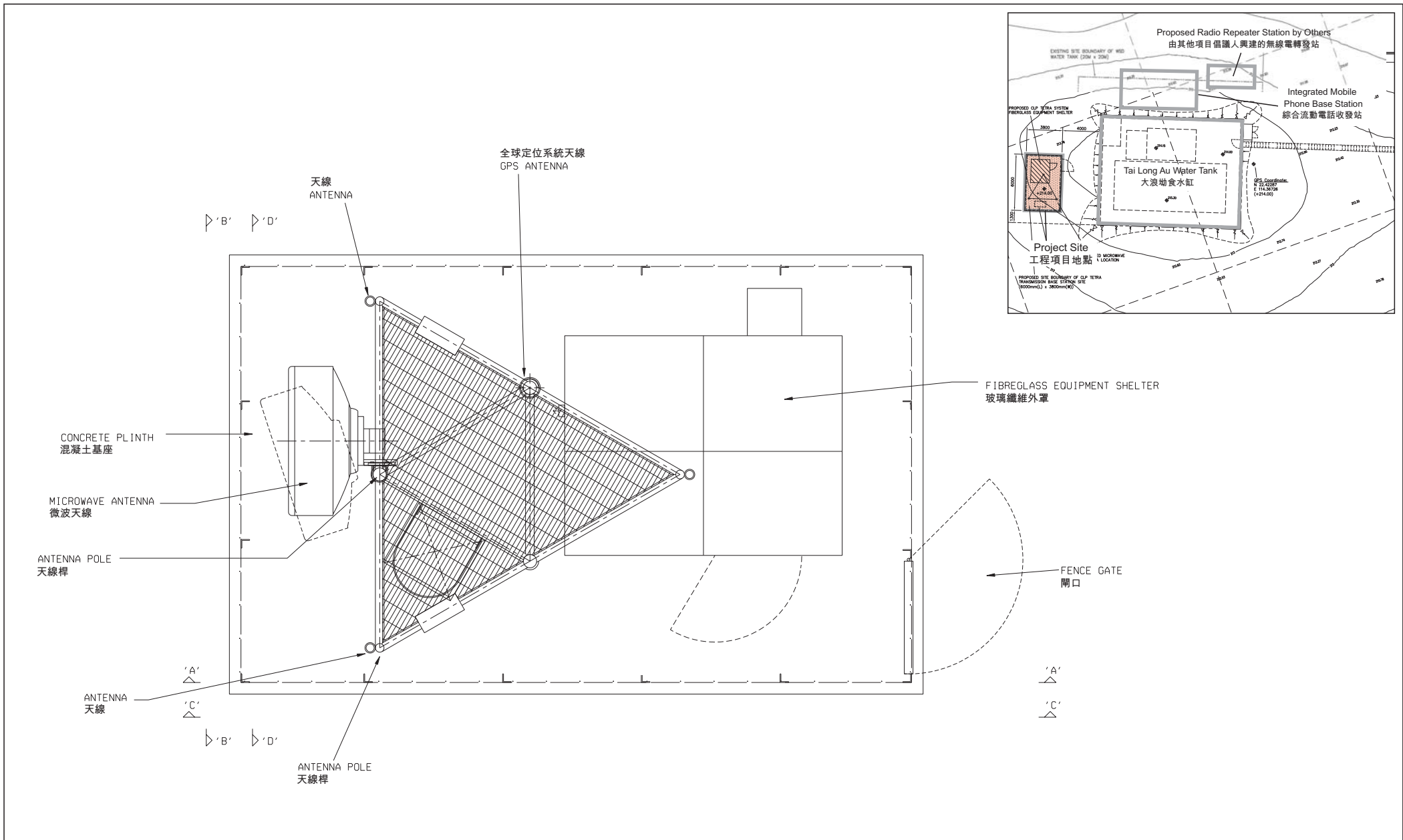


Figure 1.4  
圖 1.4

TETRA Radio Base Station Site Layout Plan  
陸地集群無線通訊基站設備佈局圖

FILE: 0103151b  
DATE: 24/08/2009

Environmental  
Resources  
Management



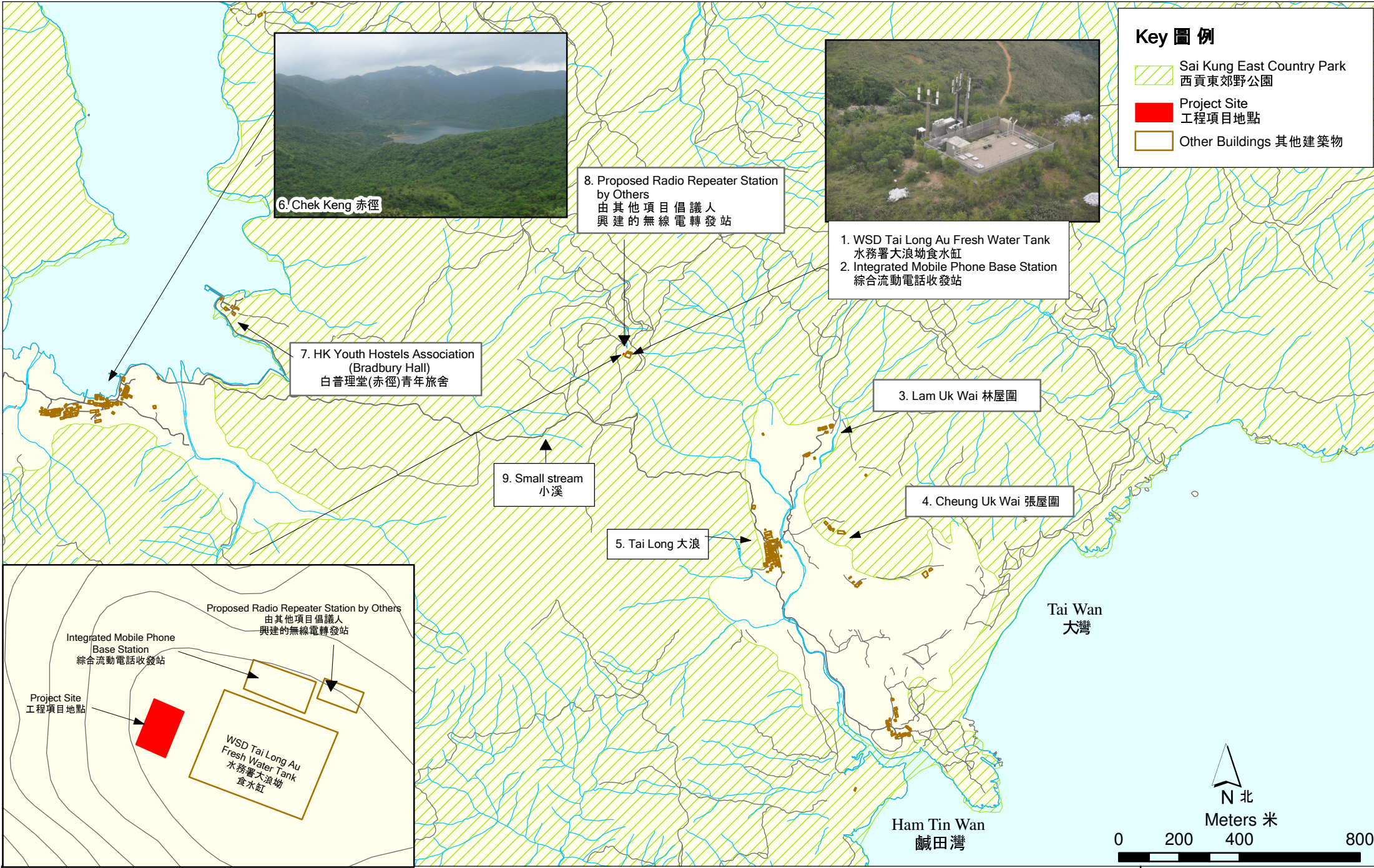


Figure 3.1  
圖 3.1

Surrounding Environment of the Project Site  
工程項目地點附近的環境

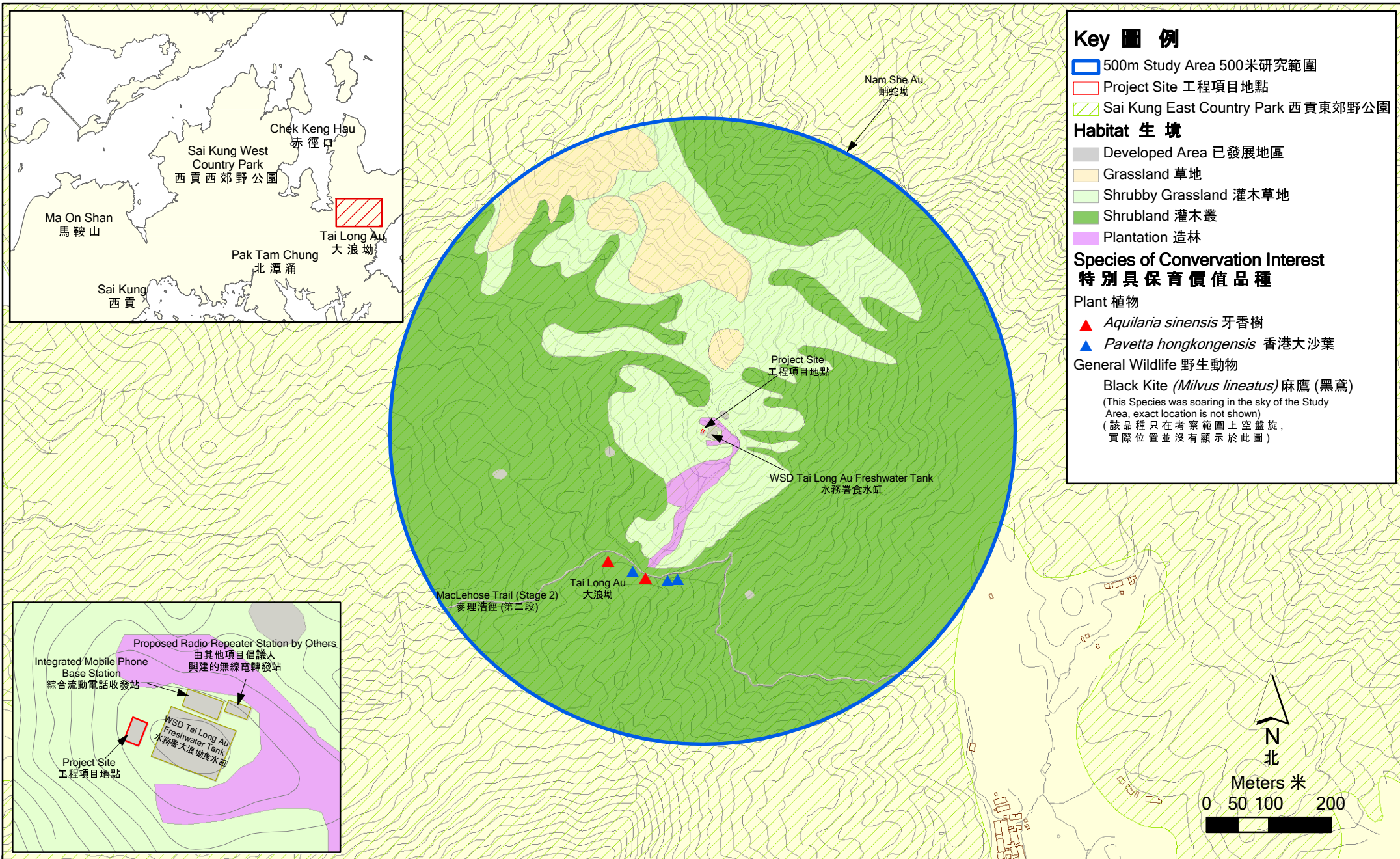


Figure 4.1  
圖 4.1

Habitat Map and Location of Species of Conservation Interest  
生境圖及具特別保育價值品種之位置圖



Plantation 植林



Shrubland 灌木林



Shrubby grassland 灌木草地



Grassland 草地



Project Site (shrubby grassland) – actual site where the TETRA radio base station is proposed to be built (Site boundary presented with blue line)  
 工程項目地點 - 陸地集群無線通訊基站的建站選址 (工程地點範圍以藍線顯示)



Project Site overview 工程項目地點概覽

Figure 4.2  
 圖 4.2

Photographic Records of Habitats Identified Within the Study Area and the Site  
 工程項目地點及研究範圍內的生態圖片記錄

FILE: 0103151e  
 DATE: 07/09/2009

Environmental  
 Resources  
 Management



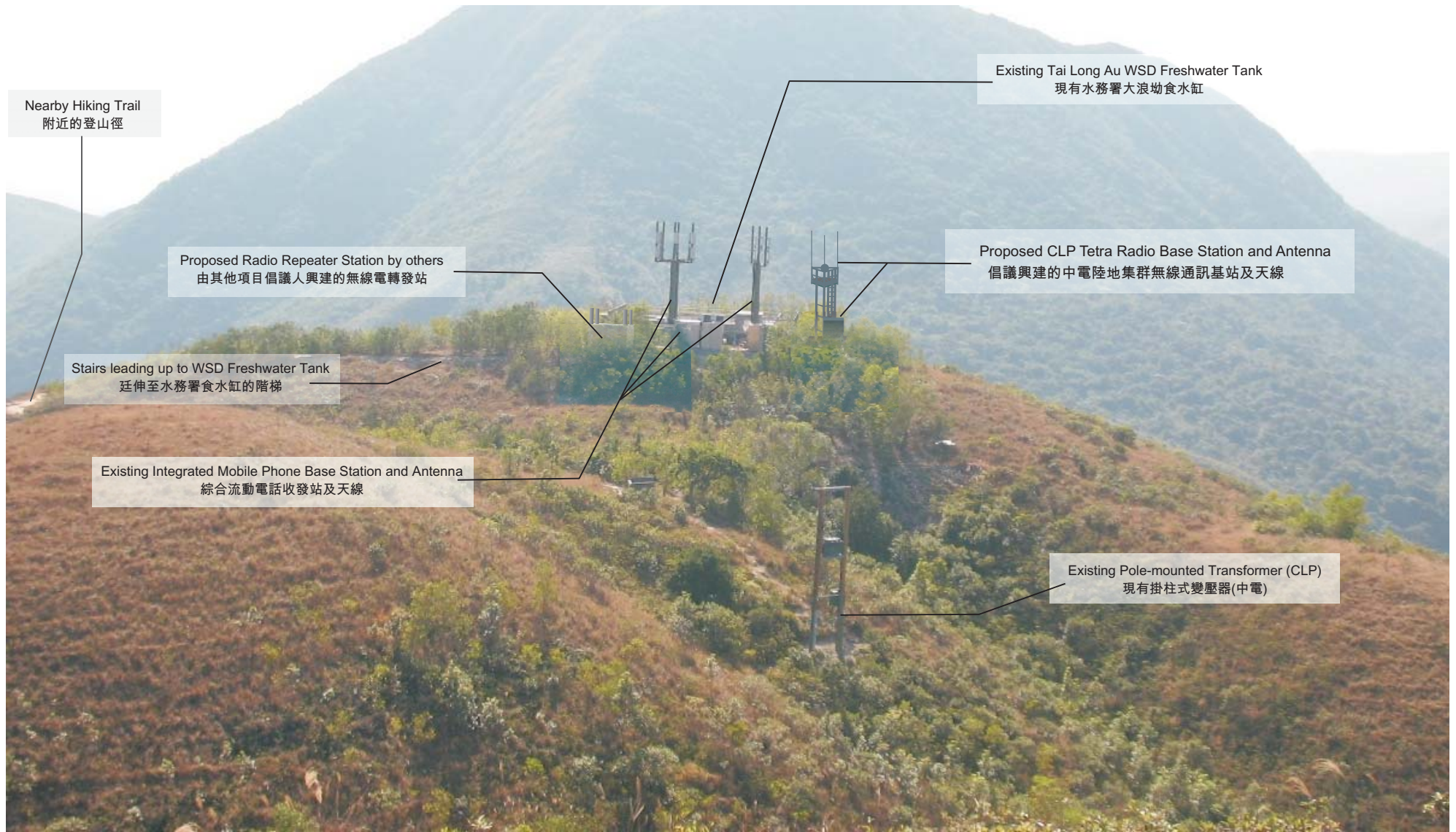


Figure 4.3  
圖4.3

Graphical Illustration of the view of the Project from a hillside to the north of Site  
從工程項目地點以北山坡眺望本工程項目的示意圖

FILE: 0103151a3  
DATE: 23/09/2009

Environmental  
Resources  
Management

