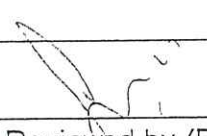
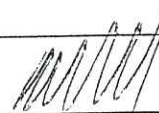


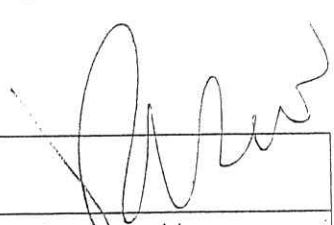
Agreement No. CE 75/2001 (GE)
 10-Year Extended Landslip Preventive
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 Kowloon and Northern New Territories
 Landslip Preventive Works on
 Government Slopes and Related
 Studies – Investigation, Design and
 Construction
 Feature No. 3NE-C/C223

Proposal on Mitigation Measures for Plant
 Species of Conservation Importance and Bat
 Population

[8/2005]


 Reviewed by (PM):


 Checked by:


 Approved by:

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<p>The information contained in this report is, to the best of our knowledge, correct at the time of printing. The interpretation and recommendations in the report are based on our experience, using reasonable professional skill and judgment, and based upon the information that was available to us. These interpretations and recommendations are not necessarily relevant to any aspect outside the restricted requirements of our brief. This report has been prepared for the sole and specific use of our client and MEMCL accepts no responsibility for its use by others.</p> <p>This report is copyright and may not be reproduced in whole or in part without prior written permission.</p>	

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EP-196/2004

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1. INTRODUCTION

Background

- 1.1 The acceleration of the Landslip Preventive Measures (LPM) Programme was originally arranged as a 5-year Project to end in March 2000. As part of Government's long-term strategy for upgrading slopes and retaining walls (i.e. features) in the New Catalogue of Slopes, the Geotechnical Engineering Office (GEO) has extended the Project for another 10 years beyond the year 2000. This 10-year Extended LPM Project (Agreement No. CE 75/2001 (GE) 10-Year Extended Landslip Preventive Measures Project Phase 3, Package C – Kowloon and Northern New Territories. Landslip Preventive Works on Government Slopes and Related Studies – Investigation, Design and Construction) aims to complete the upgrading works for another 2,500 substandard government features and safety-screening studies for another 3,000 private features by the year 2010.
- 1.2 The objective of this Agreement is to upgrade up to 30 government features in Kowloon and Northern New Territories. The scope of works comprises minor earthworks to facilitate landscaping, soil nailing, rock slope stabilization measures, retaining wall, drainage improvements and landscaping works.
- 1.3 In accordance with Category Q.1 (a) of Part 1, Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO), the proposed landslip preventive works at Feature No. 3NE-C/CR181 fall within the boundary of the Plover Cove Country Park and Feature Nos. 3SE-B/C131 and 3SE-B/C67 fall within the boundary of the Pat Sin Leng Country Park. In addition, ecological sensitive receivers have been identified within the proposed works areas for these three features. The proposed landslip preventive works at Feature Nos. 3NE-C/C223 and 3SE-B/C51 fall wholly or partly within Conservation Areas and ecological sensitive receivers have been identified within the proposed works areas. As such, the above five features in the Northern New Territories have been regarded as Designated Projects. A Project Profile was submitted in June 2004 and subsequently an Environmental Permit No. EP-196/2004 (hereafter referred to as "the EP") was issued by Environmental Protection Department in September 2004 for the construction of the landslip preventive works at these five features.
- 1.4 Under the Specific Conditions of the EP, the Permit Holder shall submit to the Director for approval at least 4 weeks before commencement of construction 3 sets of the proposal on mitigation measures for in-situ protection of the mature camphor trees and other plant species of conservation importance within the works area of the project. Any transplantation or other measures shall be justified in the submission. All recommendations as described in the approved submission shall be fully implemented. Additionally, the proposal should provide details of mitigation and monitoring programme for bat populations close to Feature No. 3NE-C/C223.
- 1.5 Maunsell Environmental Management Consultants Limited has been appointed by GEO to undertake the ecological tasks to fulfil the requirements of the EP. Detailed vegetation surveys were conducted to identify plant species of conservation importance as a basis for construction method and design refinement, and any transplanting requirements.
- 1.6 This report presents ecological mitigation proposals for Feature No. 3NE-C/C223 in accordance with the EP conditions.

Designated Projects

- 1.7 The location and site plans of Feature No. 3NE-C/C223 are shown in **Figure 1.1** and **1.2**.

2. PLANT SPECIES OF CONSERVATION IMPORTANCE

Introduction

- 2.1 This section presents the information of species of conservation importance recorded for Feature No. 3NE-C/C223 next to school playground at Sheung Wo Hang Village in Sha Tau Kok.
- 2.2 Further to the initial ecological surveys in October 2003 for the Project Profile, detailed vegetation surveys were undertaken in March, April and May of 2005 to identify and map out the extent of plant species of conservation importance. Each identified significant plant individual that may be affected by the slope works was tagged with a number plate. The location of the plants was recorded by surveyors and overlaid on the Plan of Works as shown in **Figure 2.1a**. The species name, existing condition, form, and other relevant remarks was assessed and recorded in a Plant Schedule (**Appendix 1** refers). Each plant individual was also photographed for record (**Appendix 2** refers).

Plant Species of Conservation Importance Within and Adjacent to Feature No. 3NE-C/C223

- 2.3 Feature No. 3NE-C/C223 is a small cut slope is approximately 45m long, and is largely covered with vegetation, although a few areas of bare soil were recorded on the feature resulting from recent small landslips. Vegetation on the feature was found to be continuous with mature *fung shui* woodland that covers the hillside behind Sheung Wo Hang. Large and mature trees (e.g., *Cinnamomum camphora*, *Euphoria longan*, *Ficus microcarpa*) dominating the habitat, with a typical woodland understorey of shrubs (e.g., *Psychotria rubra*), climbers (e.g., *Ficus pumila*) and herbs (e.g., *Alocasia macrorrhiza*) beneath the tree canopy.
- 2.4 During the recent detailed surveys, 40 individuals of conservation importance were recorded growing on the slope within and in vicinity to works area (**Table 2.1** refers). Most of them are located at the southwest of the feature. The plants were labelled with plates numbered from T043 to T059 and T061 to T082 and T095. Three species of conservation interest, the big *Cinnamomum camphora* trees and *Aquilaria sinensis*, and the shrub *Pavetta hongkongensis*, were recorded within the proposed works area. *Aquilaria sinensis* is a wild plant under State protection (category II) and it is also recorded in China Plant Red Data Book and Illustration of Rare and Endangered Plants in Guangdong Province. *Pavetta hongkongensis* is a protected species in Hong Kong under Forestry Regulations Cap. 96. sub. Leg. Details of plant records are shown in **Appendix 1**. Photographic records of plant individuals are presented in **Appendix 2**.
- 2.5 It was also noted that an epiphytic orchid species, *Cleisostoma* sp. (**Appendix 5** refers), was found growing on the tree trunk of the big *Cinnamomum camphora* trees (labelled as T043, T044, T079 and T080) within works area. *Cleisostoma* sp. is protected by the Forestry Regulations (Cap. 96 sub. leg.) and the Animals and Plants (Protection of Endangered Species Ordinance (Cap. 187).

Table 2.1 Species of Conservation Importance within and adjacent to Works Area

Name of Species of Conservation Importance	Number of Individuals within Works Area	Number of Individuals adjacent to Works Area
<i>Aquilaria sinensis</i>	6 (T046, T047, T059, T061, T081, T082)	6 (T049, T050, T052, T057, T065, T069)
<i>Cinnamomum camphora</i>	5 (T043*, T044*, T072, T079*, T080*)	-

Name of Species of Conservation Importance	Number of Individuals within Works Area	Number of Individuals adjacent to Works Area
<i>Pavetta hongkongensis</i>	11 (T045, T048, T058, T071, T073 to T078, T095)	12 (T051, T053 to T056, T062 to T064, T066 to T068 and T70)
Sub-total:	22	18

* Orchid species, *Cleisostoma* sp., was found on the tree trunk.

Potential Impact and *in-situ* Protection of Plant Species of Conservation Importance

Potential Impacts on Species of Conservation Importance

- 2.6 The Project Profile considered potential direct impacts resulting from the proposed works are considered relatively minor. No tree felling would be required, and affected area of vegetation area very small. Potential impacts on species of conservation importance associated with this project have been identified. Direct impacts to the plants resulting from the project are summarized in **Table 2.2**. **Table 2.3** provides a summary of indirect impacts.

Table 2.2 Direct impacts to species of conservation importance resulting from the project, if unmitigated

Proposed works with direct impact	Number of affected plants	Affected plants	Potential direct impact
Construction of proposed 600mm concrete maintenance stairway	4	<i>Cinnamomum camphora</i> (T043, T044, T080) <i>Aquilaria sinensis</i> (T059)	Potential felling of plants, damage of root systems and branches.
Construction of proposed 300mm stepped channel	8	<i>Pavetta hongkongensis</i> (T058, T071) <i>Cinnamomum camphora</i> (T043, T044, T072) <i>Aquilaria sinensis</i> (T061, T081, T082)	
Proposed soil nail on sprayed concrete slope surface	14	<i>Pavetta hongkongensis</i> (T045, T048, T073, T074, T075, T076, T077, T078, T095) <i>Cinnamomum camphora</i> (T079, T080) <i>Aquilaria sinensis</i> (T046, T047, T059)	

Table 2.3 Indirect Impacts to species of conservation importance associated with the project, if unmitigated

Proposed works with indirect impact	Potential indirect impact
Construction of proposed 600mm concrete maintenance stairway	Potential indirect impact on plants due to increased human activities, construction dust, uncontrolled storage of construction materials, uncontrolled dumping of construction waste, potential hill fire, potential spillage of contaminated materials such as fuel, site run-off in construction stage.
Construction of proposed 300mm stepped channel and U-channel with upstand	
Proposed soil nails on sprayed concrete slope surface	

Proposed Mitigation Measures

- 2.7 Measures to mitigate the potential impacts have been developed, based on discussions and information provided by the engineering team. As a general principle, the locations of the plants of conservation importance should be taken into consideration during the detailed design of the slope works, and if practicable, they should be retained and protected *in-situ*. If the proposed works would unavoidably affect the plants, as a last resort, it is recommended they be transplanted to suitable nearby locations prior to construction phase commencement.
- 2.8 The main potential impacts on the species of conservation importance resulting from the works for Feature No. 3NE-C/C223 would be related to the construction of the proposed 600mm concrete maintenance stairway, 300mm stepped channel, U-channel with upstand and proposed soil nails on sprayed concrete slope surface. Specific measures to mitigate these impacts are discussed and presented below.

Mitigation of Direct Impacts

- 2.9 The proposed maintenance staircase has been replaced by stone staircase. The proposed staircase should be paved by randomly sized broken granite or stone, and constructed on the existing slope profile (see **Figure 2.2**), without the need for any deep excavation that might have otherwise damaged root systems of the nearby *Cinnamomum camphora* and *Aquilaria sinensis* individuals. Stairway adjacent to two big *Cinnamomum camphora* trees (T043 and T044) would be diverted and replaced by steel maintenance staircase as shown in **Figure 2.1a**. No plant felling should be required and it is expected that the 4 plants along the alignment of proposed maintenance staircase would be retained *in-situ*. No transplantation is required.
- 2.10 To avoid direct damage to the 8 individuals including *Pavetta hongkongensis*, *Cinnamomum camphora* and *Aquilaria sinensis*, the design of slope work at the crest of the feature have been modified. The alignment of the channel works would be changed to avoid damage of root systems of the plants nearby. Moreover, the stepped channel at the south of the feature would be replaced by 300 mm PVC pipe constructed on slope surface without the need of soil excavation and the associated catchpits would be situated to avoid damaged to the extensive root systems of the *Cinnamomum camphora*, allowing the two big *Cinnamomum camphora* trees (T043 and T044) to be retained *in-situ*. No transplantation is therefore required.
- 2.11 Soil nailing on sprayed concrete surface is required to stabilise currently dangerous slope. The area of sprayed concrete would be kept to minimum and restricted to the north end and the middle part of the feature with the rest of the slope surface hydroseeded. Tree rings would be provided to all trees within the sprayed concrete surface area including the species of conservation importance (i.e. T059, T078, T079 and T080). All the existing trees and species of conservation importance would be fenced off and the trunk would be protected with hessian sacking as far as possible.
- 2.12 Position of soil nails should be adjusted to avoid damage of root system to the existing plants on slope surface wherever feasible, eleven small sized plants of conservation importance are nevertheless be unavoidably affected by the proposed soil nail drilling and installation, and transplantation is therefore required prior to commencement of the slope works. These plants included 9 individuals of *Pavetta hongkongensis* and 2 individuals of *Aquilaria sinensis* with main trunk diameter ranged from 1cm to 6cm and height from 0.2m to 2m. The receptor sites have been identified close to the affected area (**Figure 2.1a** refers) and should be prepared in advance of the transplantation to ensure the affected plants can be transplanted on the same day. The rootball of the plants should be retained as much of the soil as possible with the roots. Care should be taken not to damage the roots. Upon lifting, the root ball should be wrapped with damp hessian and kept moist from the time of lifting until it is transplanted. During transportation, the plants should be protected against strong sunlight, wind and drought. The plants should be thoroughly watered after transplanting. Follow up watering at least twice per week for the first

few months until the plants are established. To prevent tipping, storage of construction materials and encroachment of personnel into the receptor areas, it is recommended that the areas to be fenced off with plastic protection fence with minimum height of 1.5m along the proposed upper channel throughout the construction period.

Table 2.4 Summary of Proposed Mitigation Measures

Proposed works with direct impact	Affected plants	Proposed Mitigation Measures	Tree Felling/ Tree Transplantation Required?
Construction of proposed 600mm concrete maintenance stairway	<i>Cinnamomum camphora</i> (T043, T044, T080) <i>Aquilaria sinensis</i> (T059)	- use of stone maintenance staircase - diversion of maintenance stairway	No
Construction of proposed 300mm stepped channel and U-channel with upstand	<i>Pavetta hongkongensis</i> (T058, T071) <i>Cinnamomum camphora</i> (T043, T044, T072) <i>Aquilaria sinensis</i> (T061, T081, T082)	- alternation of channel alignment and catchpit position - stepped channel to be replaced by PVC pipe	No
Proposed soil nail on sprayed concrete slope surface	<i>Pavetta hongkongensis</i> (T045, T048, T073, T074, T075, T076, T077, T078, T095) <i>Cinnamomum camphora</i> (T079, T080) <i>Aquilaria sinensis</i> (T046, T047)	- alternation of soil nail position - transplantation of small sized plants - tree rings for T059, T078, T079 and T080 - use of plastic protection fence and hessian sacking	- No tree felling is required - T045, T046, T047, T048, T073, T074, T075, T076, T077, T078 and T095 should be transplanted

Mitigation of Indirect Impacts

2.13 The environmental protection measures given in the Project Profile should also be followed to alleviate the indirect impacts on the significant plants. Standard good site practice should be implemented to ensure construction phase disturbance to the features and surrounding habitats is avoided and minimized. Such measures include:

- Placement of equipment or stockpile in the work areas and access routes should be selected on existing disturbed land where possible to minimise disturbance to vegetation.
- Construction activities should be restricted to work areas that should be clearly demarcated.
- Temporary work areas should be reinstated immediately after completion of the construction work.
- To protect nearby ecologically sensitive streams, water quality mitigation measures stipulated in Section 5.10 to 5.12 of the Project Profile should be implemented.
- Open fires should be strictly prohibited on the works site.
- Waste generated from the site should be disposed of in a timely and proper manner.
- The Site Engineer should audit the proper implementation of the above mitigation measures.
- Any soil contamination with fuel leaked from plants should be removed off-site.

- All plants covered with dust and soil should be washed frequently.
- All runoff arising from the work sites should be properly treated.
- To avoid damage the epiphytic orchid species found on the tree trunk of the big *Cinnamomum camphora* trees numbered as T043, T044, T079 and T080, pruning, covering and any other forms of damage of the tree trunk are strictly prohibited.

Monitoring Programme

Monitoring Schedule

- 2.14 Monitoring of the plant species of conservation importance will be conducted by an ecological team once a month during the construction period to check on implementation of and protection of retained plants and trees. Monitoring will be conducted once during transplantation and every two months after transplantation during the construction period.

Reporting

- 2.15 A monthly report detailing the findings of plant monitoring will be submitted after each monthly survey. Reports will contain the following information:
- Monitoring works undertaken during the reporting period
 - Implementation and effectiveness of mitigation measures
 - Plant condition
 - Recommendations

3. BAT POPULATIONS

Introduction

3.1 This section presents information of roosting bats recorded within and adjacent to Feature No. 3NE-C/C223.

Bat Populations Within and Adjacent to Feature No. 3NE-C/C223

3.2 Surveys conducted in 2002 during the Project Profile preparation recorded large numbers (over 20) of Japanese Pipestrelle (*Pipistrellus abramus*) were in the vicinity of Feature No. 3NE-C/C223, both foraging above the playground and abandoned agricultural land to the west of the works area, and roosting in 'bat-boxes' hung beneath the eaves of buildings to the north of the site. Bat-boxes have been installed at a number of locations around the Kang Yung Study Hall. The Study Hall was until quite recently derelict, and was known to house a large population of Great Roundleaf Bats (*Hipposideros armiger*). No *H. armiger* were recorded during surveys conducted in 2002 for the Project Profile. The location of the bat boxes and Study Hall are shown in **Figure 3.1**.

3.3 In accordance with the recommendations of the Project Profile and EP, further detailed surveys of bat boxes and the potential roost within Kang Yung Study Hall were conducted to collect baseline information on bat populations prior to the construction phase. The species and number of bats utilizing these roosts was recorded, as listed in **Table 3.1** below

Table 3.1 Records of Bats From Boxes/Roosts Within and Adjacent to Feature No. 3NE-C/C223, April/May 2005

Bat Box/ Roost No.*	Survey Date			
	15/04/05	25/04/05	6/05/05**	13/05/05**
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0
7#	0	0	0	0
8	0	0	0	0
9	0	0	0	0
10#	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	Japanese Pipestrelle (1)	Japanese Pipestrelle (1)	Japanese Pipestrelle (1)	0
14	Japanese Pipestrelle (1)	Japanese Pipestrelle (1)	0	Japanese Pipestrelle (1)
15	0	0	0	0
16	0	0	Japanese Pipestrelle (2)	0
17	0	0	0	Japanese Pipestrelle (1)
18	0	0	0	0
19#	0	0	0	0

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Bat Box/ Roost No.*	Survey Date			
	15/04/05	25/04/05	6/05/05**	13/05/05**
20	0	0	Great Roundleaf Bat (4) Bicoloured Roundleaf Bat (1)	0

*Refer to Figure 3.1 for box/roost location

**Including night survey

#Poor accessibility meant that bat use of these roosts may be under-recorded.

- 3.4 Two to three Japanese Pipistrelle (*Pipistrellus abramus*) were recorded roosting in bat-boxes hung beneath building eaves on each of the baseline survey dates (**Appendix 3**). During the first two baseline surveys (conducted on 15th and 25th April, 2005), no bats but fresh bat droppings were recorded from inside the Kang Yung Study Hall, suggesting the Study Hall was used as a night roost only. Accordingly, the subsequent two baseline surveys (conducted on 6th and 13th May, 2005) were conducted during both the day and night, and a small number of bats comprising four Great Roundleaf Bats (*Hipposideros armiger*) and one Bicoloured Roundleaf Bat (*Hipposideros pomona*) were recorded during the evening within the Study Hall on 6th May (**Appendix 3**).
- 3.5 During 15th May survey, a local resident informed the monitoring team that a substantial daytime bat roost was located in a derelict house near the Study Hall. Subsequent investigation revealed a large roost of approximately 60 Great Roundleaf Bat (*Hipposideros armiger*) within the derelict house (**Appendix 3**).

Potential Impacts to Bat Populations

- 3.6 The Project Profile considered potential disturbance impacts to roosting bats moderate in scale, as there is a possibility that disturbance to the bats could lead to the abandonment of nearby roosts. This is of particular concern for the Great Roundleaf Bats (*Hipposideros armiger*), which are known to roost in a restricted number of locations in Hong Kong.

Proposed Mitigation Measures

- 3.7 To protect bats recorded close to Feature No. 3NE-C/C223, high-disturbance generating construction activities (soil-nail drilling and installation) should be phased to avoid the bat breeding season (April – August) and the coldest months of January and February (when bats can be in torpor or hibernation). Existing bat boxes will be retained in their original positions. No pruning or trimming of vegetation in the surrounding area is allowed. Additionally, all construction activities should be implemented at daytime only, quiet construction plant should be used and noise barrier should be erected around the works area.
- 3.8 Even with the implementation of measures outlined in Section 3.7, the possibility of construction phase disturbance leading to the abandonment of nearby bat roosts cannot be ruled out as a 'worst-case' scenario. It is therefore recommended that 4 bat roosts are installed within Sheung Wo Hang *Fung Shui* Woodland. The bat roosts will be located at least 100m away from the proposed works area, and be installed before the construction phase. The proposed design and specification of the bat roosts is detailed in **Appendix 4**.

Monitoring Programme

Monitoring and Contingency Planning

- 3.9 During the construction phase (August 2005-April 2006), monitoring of extant bat roosts will be conducted once a month. Monitoring of the roosts will be undertaken by direct observation with torches and binoculars, and will include all previously recorded bat roosts (as shown in **Figure 3.1**), as well as newly erected bat roosts (section 3.8 refers). The number and species of bats within each roosting area will be recorded. Bat monitoring will be undertaken by a suitably qualified ecology team with relevant experience.
- 3.10 The most probable cause of disturbance to bat populations would be noise generating construction activities, which may cause roosting bats to move away from the slope during the construction phase. If (based on the results of monitoring), bat populations are considered to have been disturbed due to construction phase activities, the bat monitoring team will consult with and advise the RE, GEO and Contractor on necessary contingency action such as changes to construction methodology and working practices to minimise identified impacts, or the relocation of newly erected bat roosts.

Reporting

- 3.11 A report detailing the findings of bat monitoring will be submitted after each monthly survey. Reports will contain the following information:
- Monitoring works undertaken during the reporting period
 - Confirmed or suspected disturbance impacts
 - Implementation and effectiveness of mitigation measures
 - Recommendations

4. LANDSCAPE PROPOSAL

General

All landscape softworks shall be implemented in accordance with the latest edition of HKSAR Government's General Specification for Civil Engineering Works.

Design

Tree Retention and Transplanting

Trees on locations not affected by the proposed slope stabilization work shall be retained. All other trees shall be transplanted directly to the top of the slope to minimize impact to them.

Toe Wall Planting

Two 450mm high planter walls/ toe walls are proposed at the bottom of the slope feature. Spray concrete shall refrain from the area to create open-bottom planters of 1000mm wide with soil-mix backfilling.

The toe wall planting will screen and lessen the visual impact of the slope stabilization work when view from the school playground. Due to the relatively narrow planting space and north-facing slope, small flowering trees and light-shade-tolerant under-storey shrubs are proposed. They shall also be of evergreen species to achieve screening effect throughout the year. The species include:

Abbrev.	Species	Size	Spacing	Stock	Quantity
Tree					
CAS SUR	Cassia surrattensis	Heavy S.	Refer Drg.	Ball-and-burlap	8 nos.
CIN BUR	Cinnamomum burmanii	Heavy S.	Refer Drg.	Ball-and-burlap	8 nos.
Shrub					
CAM SAS	Camellia sasanqua	Large	500mm	Potted	30 nos.
LIG SIN	Ligustrum sinense	Large	500mm	Potted	18 nos.
MUR PAN	Murraya paniculata	Large	500mm		30 nos.
SCH ARB	Schefflera arboricola	Large	500mm		22 nos.

Slope Planting in Hydroseeding area

The geotechnical engineer has confirmed the need to cover certain slope areas with spray concrete to ensure stability. For areas where the spray-concrete requirement lessens, hydroseeding and shrub mix shall be planted. The species of the shrub mix are selected based on current onsite existence and market availability. They include:

Abbrev.	Species	Size	Spacing	Stock	Quantity
FIC PUM	Ficus pumila	600m long	1000mm	Potted	20% 15 nos.
MEL CAN	Melastoma candidum	Small	1000mm	Potted	20% 15 nos.
MUS PUB	Mussaenda pubescens	Small	1000mm	Potted	20% 15 nos.
RAP IND	Raphiolepis indica	Small	1000mm	Potted	20% 15 nos.
RHO TOM	Rhodomyrtus tomentosa	Small	1000mm	Potted	20% 15 nos.

Notes: Shrubs of the same species shall be grouped together in 5 – 10 nos.

Planter tube

Planter tube of 150 mm diameter at 4m spacing are proposed in the sprayed concrete surface. The species of vegetation is Ficus Pumila which is suitable for area with limited sunlight.

Implementation Programme

Upon completion of all civil work, the landscape softworks shall be commenced. The works would all be completed within 2 weeks. The steps of commencement are as follows:

- Backfilling of soil-mix to toe wall planters.
- Spraying of hydroseeding to slope area.
- Planting of "shrub mix" on the hydroseeded slope area.
- Planting in planter tube
- Planting of trees to toe wall planters.
- Planting of shrubs to toe wall planters.

Management/ Maintenance

All proposed landscape softworks will be subject to a 12-month Establishment Period. Routine Establishment Works, including watering, weeding, pruning, grass cutting, litter collection etc. shall be carried out in accordance with the latest edition of HKSAR Government's General Specification for Civil Engineering Works.

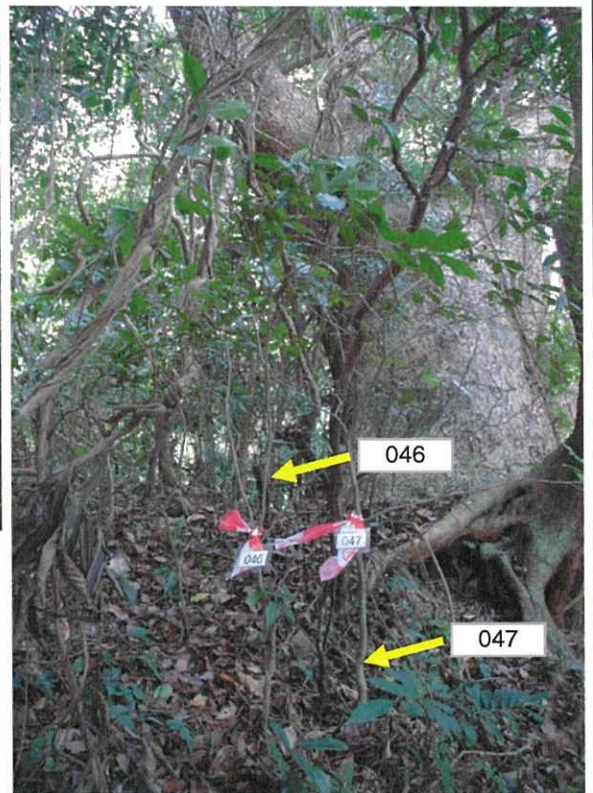
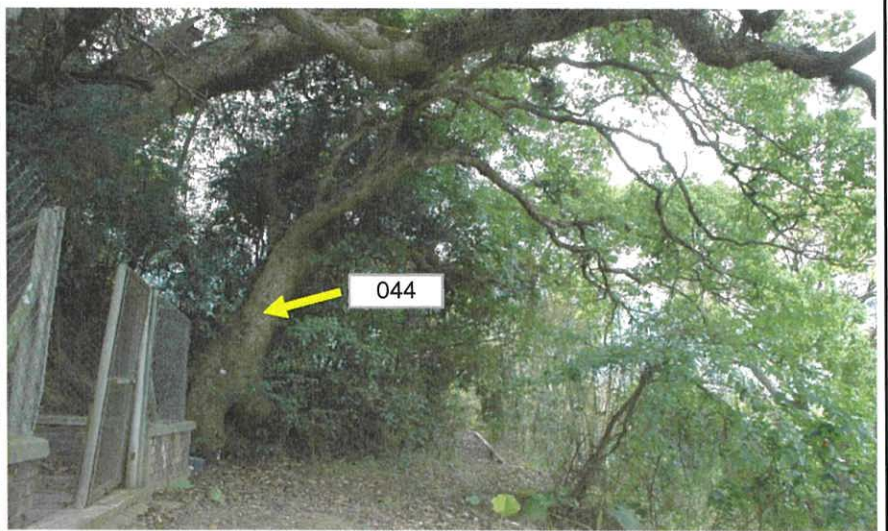
The maintenance responsibility of subject slope is under Lands Department. Lands Department shall continue to be responsible for the slope maintenance, including the planting.

Appendix 1:
Project Name:

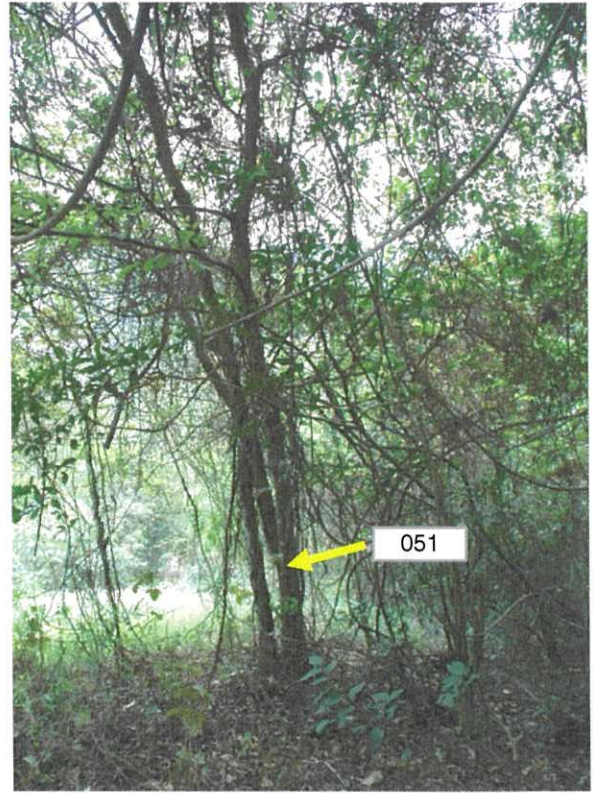
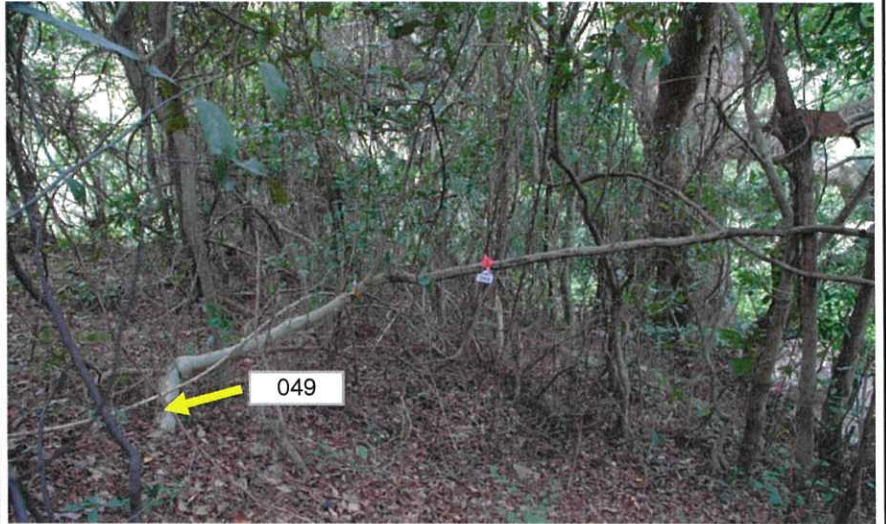
Schedule of Plant Species of Conservation Importance
Agreement No. CE75/2001 10-Year Extended Landslip Preventive Measures Project,
Phase 3, Package C - Kowloon & Northern New Territories
Landslip Preventive Works on Government Slopes and Related Studies - Investigation, D&C
Feature No. 3NE-C/C223
Date: May 2005

Tree No.	Scientific Name	Chinese Name	Height (m)	Girth (mm)	Form	Existing Tree Condition	Recommendations	Within Works Area (Y/N)	Remarks
43	<i>Cinnamomum camphora</i>	樟	13.0	4396	Good	Good	Retain; to be fenced off; adjust stairway alignment; change soil nail position	Y	orchid <i>Cleisostoma</i> sp. found on trunk
44	<i>Cinnamomum camphora</i>	樟	10.0	3140	Good	Good	Retain; to be fenced off; adjust stairway alignment	Y	orchid <i>Cleisostoma</i> sp. found on trunk
45	<i>Pavetta hongkongensis</i>	香港大沙葉	2.0	188	Fair	Fair	Transplant to L45	Y	
46	<i>Aquilaria sinensis</i>	土沉香	1.0	63	Fair	Fair	Transplant to L46	Y	
47	<i>Aquilaria sinensis</i>	土沉香	1.0	94	Fair	Fair	Transplant to L47	Y	
48	<i>Pavetta hongkongensis</i>	香港大沙葉	2.0	126	Fair	Fair	Transplant to L48	Y	
49	<i>Aquilaria sinensis</i>	土沉香	3.0	251	Fair	Fair	Retain; to be fenced off	N	leaning
50	<i>Aquilaria sinensis</i>	土沉香	7.0	1256	Fair	Fair	Retain; to be fenced off	N	
51	<i>Pavetta hongkongensis</i>	香港大沙葉	4.0	188	Fair	Fair	Retain; to be fenced off	N	
52	<i>Aquilaria sinensis</i>	土沉香	0.4	19	Fair	Fair	Retain; to be fenced off	N	
53	<i>Pavetta hongkongensis</i>	香港大沙葉	1.5	63	Fair	Fair	Retain; to be fenced off	N	
54	<i>Pavetta hongkongensis</i>	香港大沙葉	1.5	63	Fair	Fair	Retain; to be fenced off	N	
55	<i>Pavetta hongkongensis</i>	香港大沙葉	1.5	63	Fair	Fair	Retain; to be fenced off	N	
56	<i>Pavetta hongkongensis</i>	香港大沙葉	1.5	63	Fair	Fair	Retain; to be fenced off	N	
57	<i>Aquilaria sinensis</i>	土沉香	0.4	13	Fair	Fair	Retain; to be fenced off	N	
58	<i>Pavetta hongkongensis</i>	香港大沙葉	8.0	471	Fair	Fair	Retain; to be fenced off	Y	
59	<i>Aquilaria sinensis</i>	土沉香	5.0	314	Fair	Fair	Retain; to be fenced off	Y	
61	<i>Aquilaria sinensis</i>	土沉香	0.2	13	Fair	Fair	Retain; to be fenced off	Y	
62	<i>Pavetta hongkongensis</i>	香港大沙葉	0.5	19	Poor	Poor	Retain; to be fenced off	N	
63	<i>Pavetta hongkongensis</i>	香港大沙葉	0.5	19	Fair	Fair	Retain; to be fenced off	N	
64	<i>Pavetta hongkongensis</i>	香港大沙葉	0.5	19	Fair	Fair	Retain; to be fenced off	N	
65	<i>Aquilaria sinensis</i>	土沉香	6.0	628	Fair	Fair	Retain; to be fenced off	N	covered with climbers
66	<i>Pavetta hongkongensis</i>	香港大沙葉	0.3	13	Fair	Fair	Retain; to be fenced off	N	
67	<i>Pavetta hongkongensis</i>	香港大沙葉	0.3	13	Fair	Fair	Retain; to be fenced off	N	
68	<i>Pavetta hongkongensis</i>	香港大沙葉	3.0	126	Good	Good	Retain; to be fenced off	N	
69	<i>Aquilaria sinensis</i>	土沉香	5.0	502	Poor	Poor	Retain; to be fenced off	N	leaning
70	<i>Pavetta hongkongensis</i>	香港大沙葉	0.4	13	Poor	Poor	Retain; to be fenced off	N	
71	<i>Pavetta hongkongensis</i>	香港大沙葉	0.5	13	Fair	Fair	Retain; to be fenced off	Y	damaged main trunk
72	<i>Cinnamomum camphora</i>	樟	10.0	1570	Poor	Fair	Retain; to be fenced off	Y	crooked trunk
73	<i>Pavetta hongkongensis</i>	香港大沙葉	0.6	31	Good	Good	Transplant to L73	Y	damaged main trunk
74	<i>Pavetta hongkongensis</i>	香港大沙葉	0.2	31	Fair	Fair	Transplant to L74	Y	damaged main trunk
75	<i>Pavetta hongkongensis</i>	香港大沙葉	0.5	94	Good	Good	Transplant to L75	Y	damaged main trunk
76	<i>Pavetta hongkongensis</i>	香港大沙葉	0.5	94	Good	Good	Transplant to L76	Y	damaged main trunk
77	<i>Pavetta hongkongensis</i>	香港大沙葉	0.5	31	Good	Good	Transplant to L77	Y	
78	<i>Pavetta hongkongensis</i>	香港大沙葉	0.5	63	Fair	Fair	Transplant to L78	Y	damaged main trunk
79	<i>Cinnamomum camphora</i>	樟	8.0	1256	Fair	Fair	Retain; to be fenced off; adjust soil nail position	Y	orchid <i>Cleisostoma</i> sp. found on trunk
80	<i>Cinnamomum camphora</i>	樟	12.0	3768	Fair	Good	Retain; to be fenced off; adjust stairway alignment	Y	orchid <i>Cleisostoma</i> sp. found on trunk
81	<i>Aquilaria sinensis</i>	土沉香	3.0	251	Fair	Fair	Retain; to be fenced off	Y	
82	<i>Aquilaria sinensis</i>	土沉香	7.0	628	Fair	Fair	Retain; to be fenced off; adjust stairway alignment; adjust U-channel alignment	Y	root exposed
95	<i>Pavetta hongkongensis</i>	香港大沙葉	1.0	63	Fair	Fair	Transplant to L95	Y	damaged main trunk

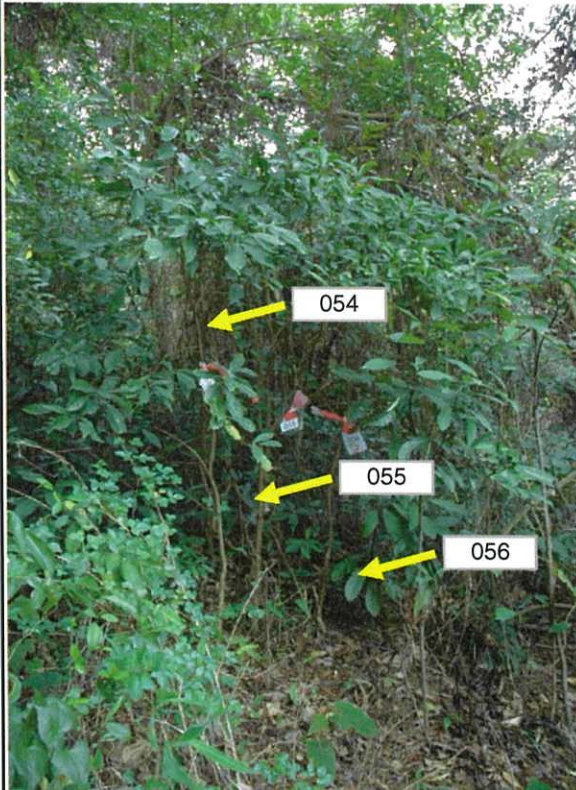
Note:
 Plant outside works area



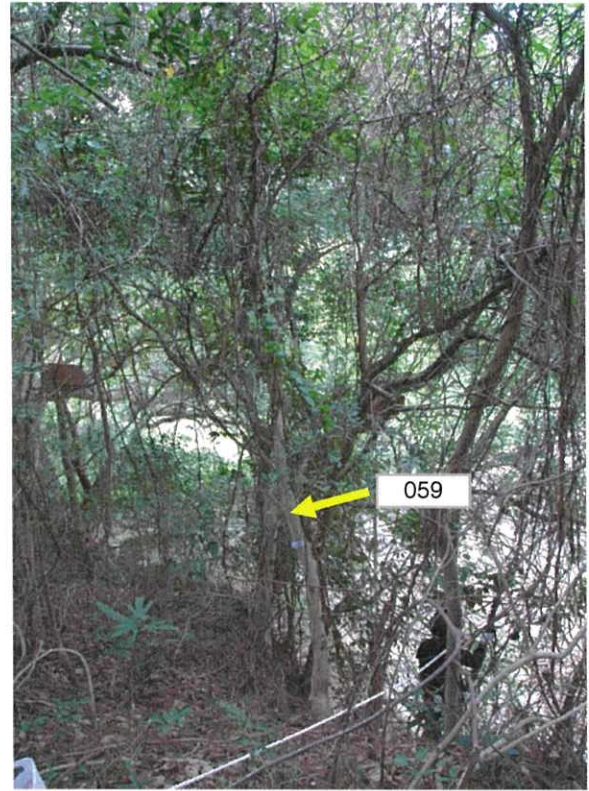
SCALE	N.T.S.	DATE	May-05
CHECK	JLAM	DRAWN	GCCL
JOB NO.	E01803(004)	DRAWING No.	Appendix 2
		Rev	-



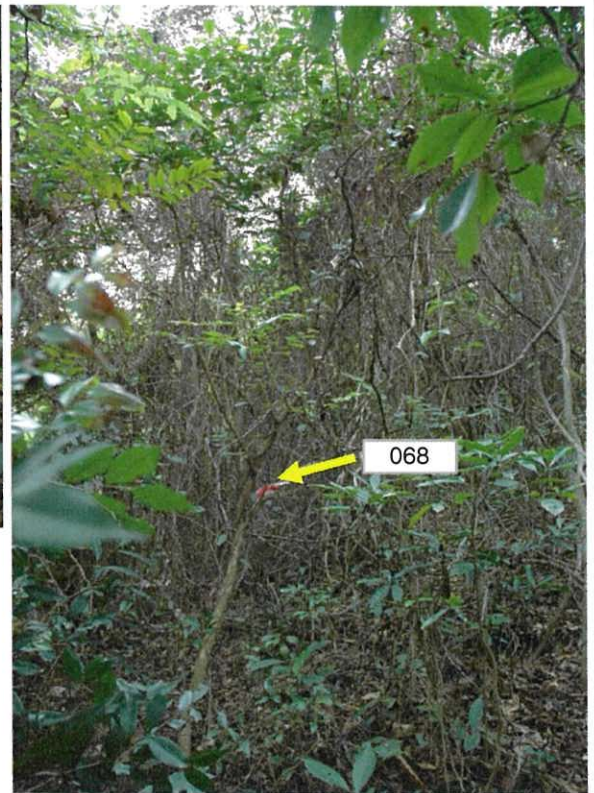
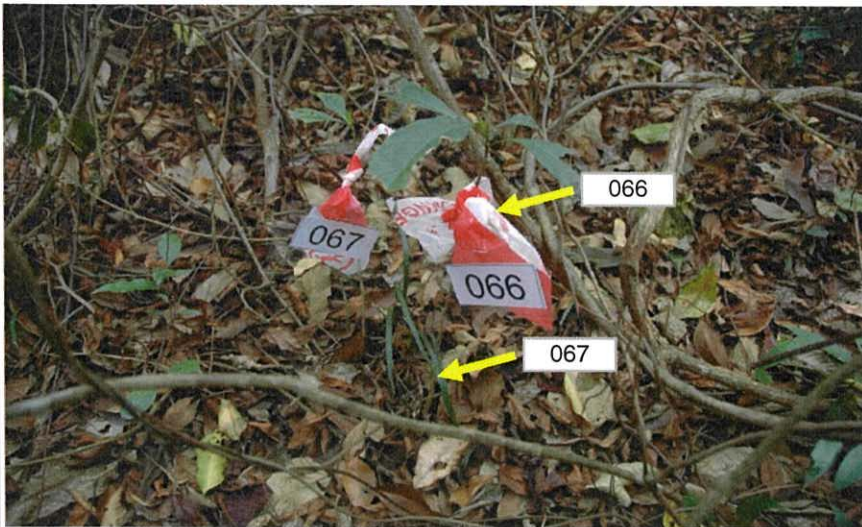
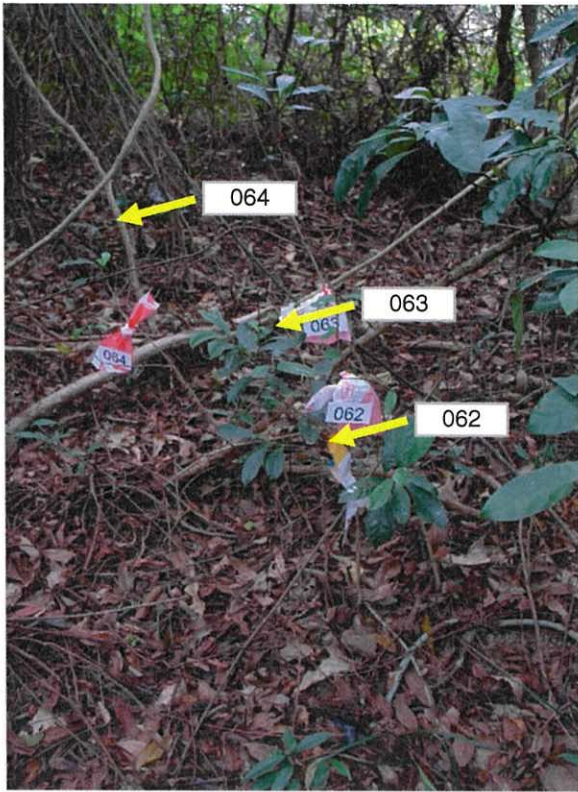
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JOB NO.	E01803(004)	DRAWING No.	Appendix 2
		Rev	-

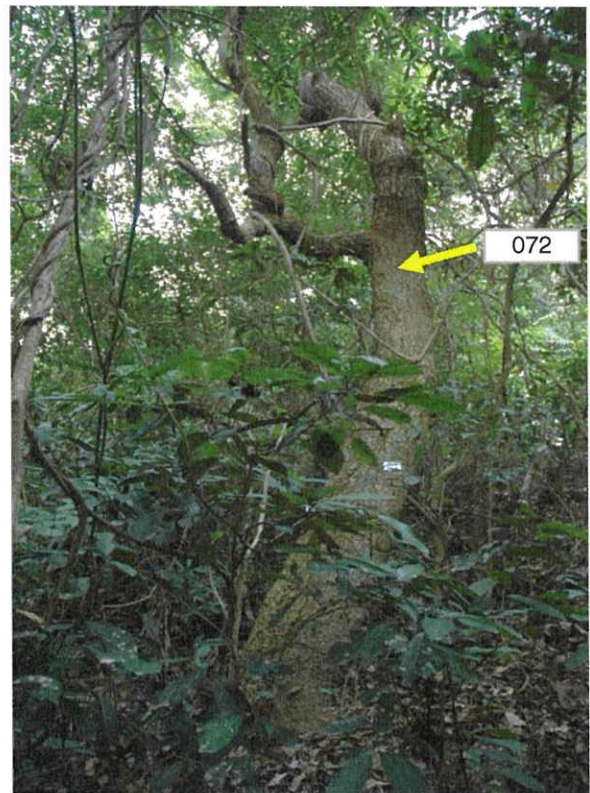
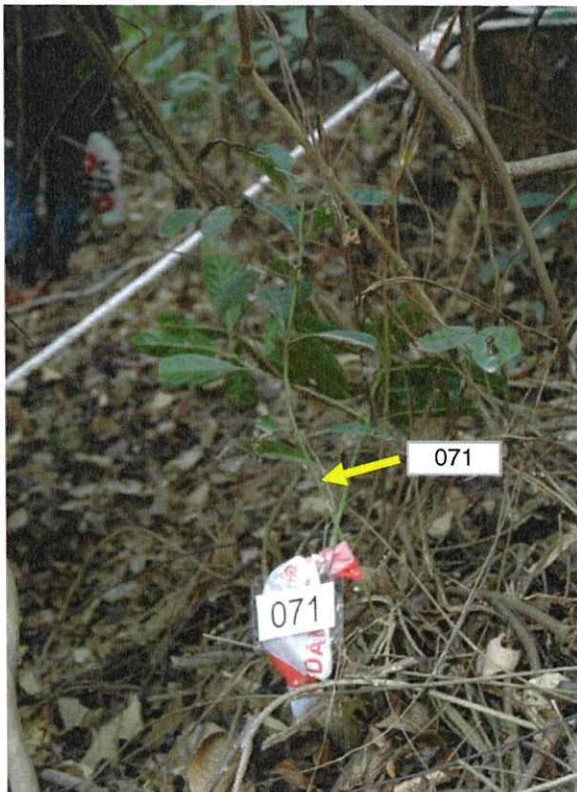
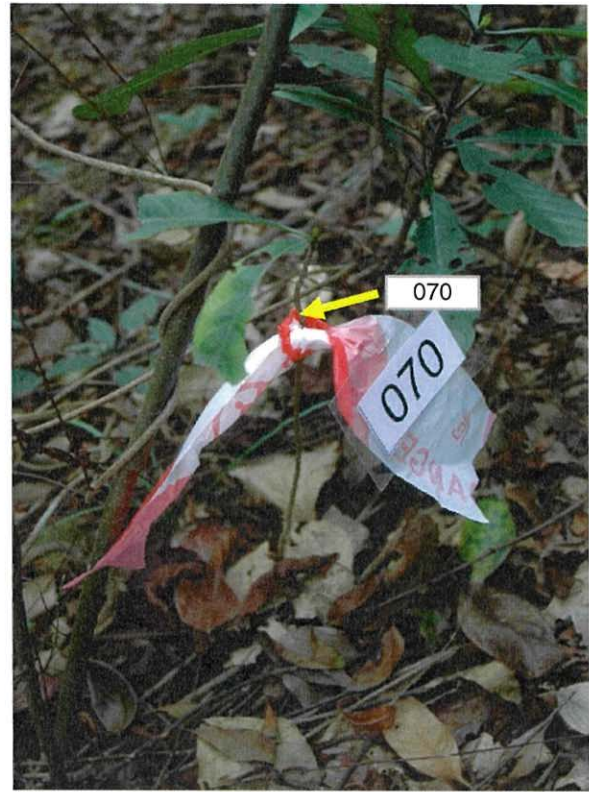
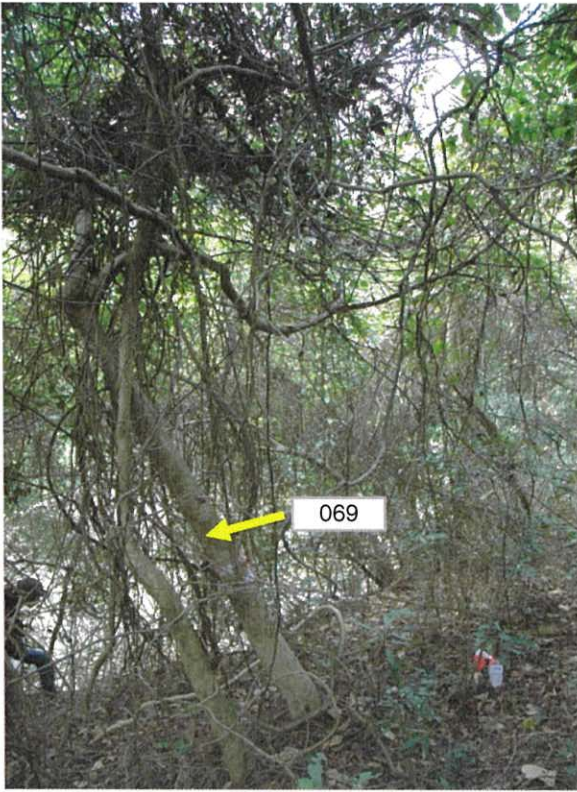


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		Rev	-

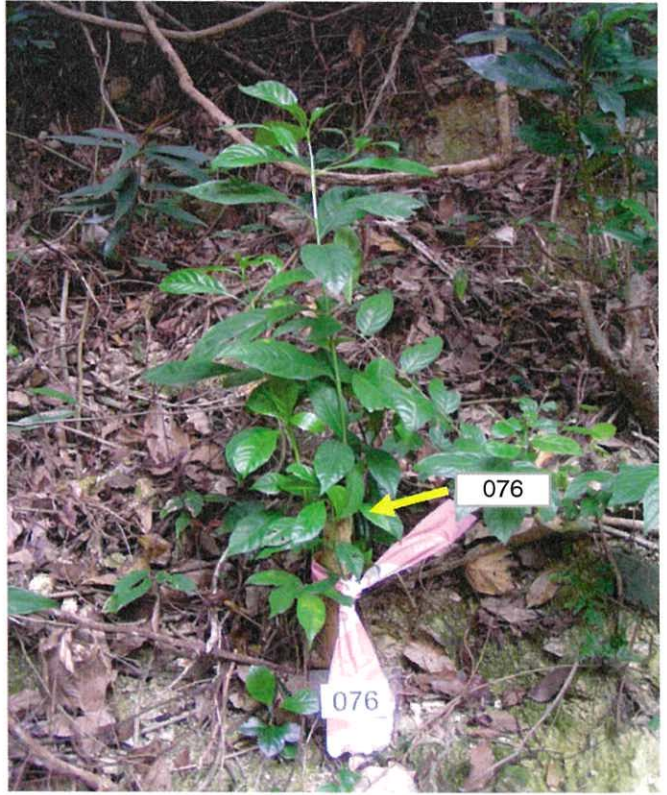
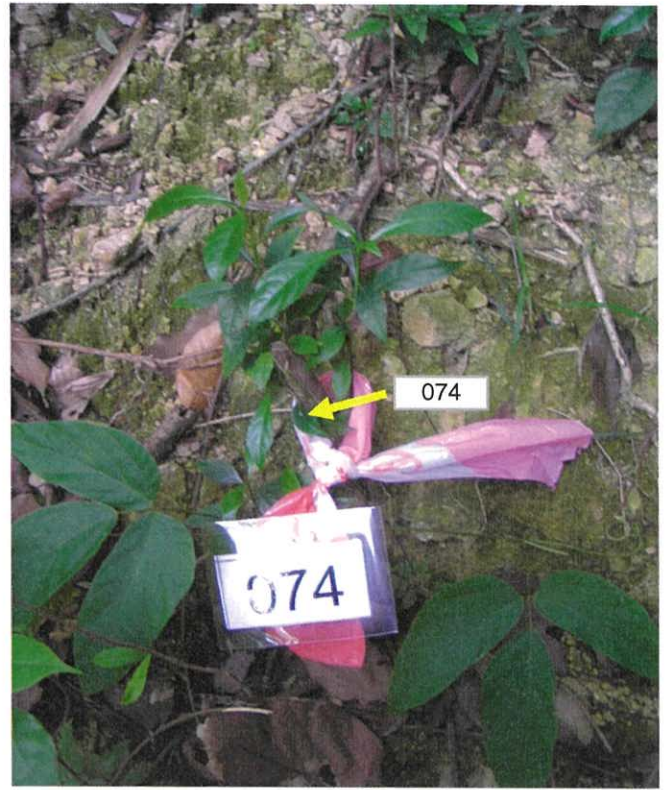


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		Rev	-

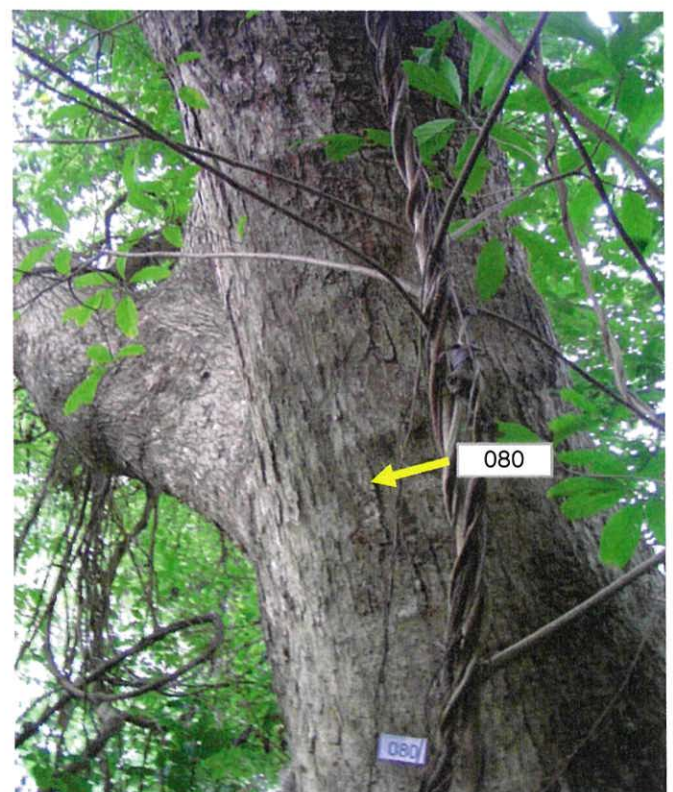
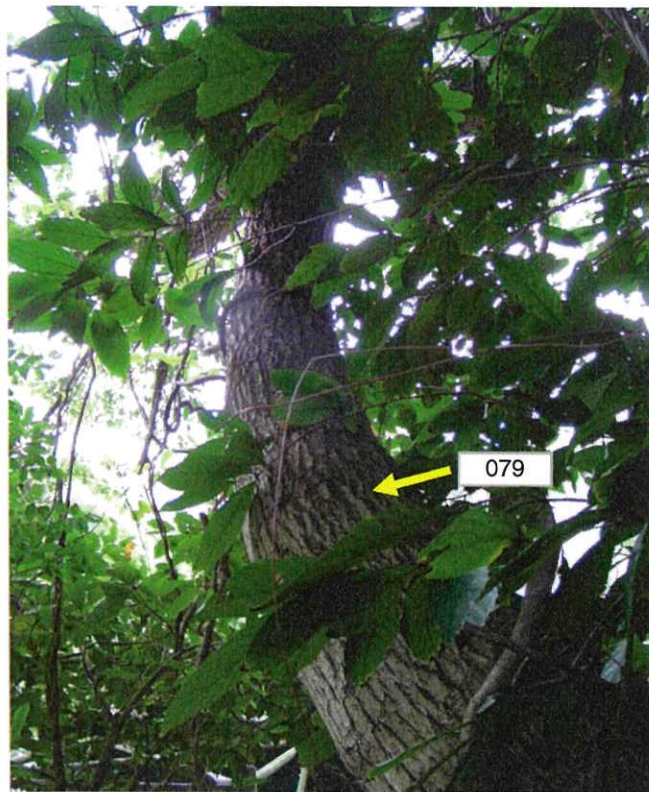




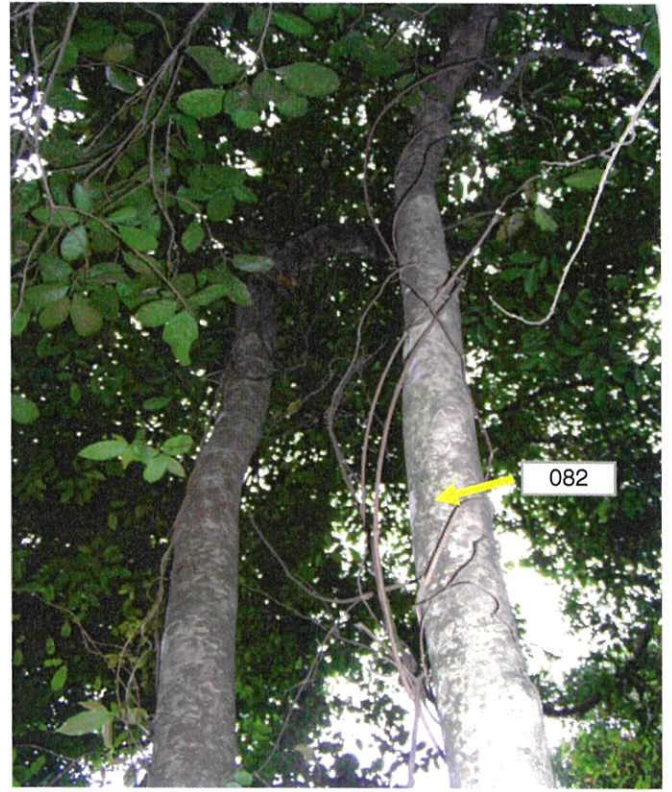
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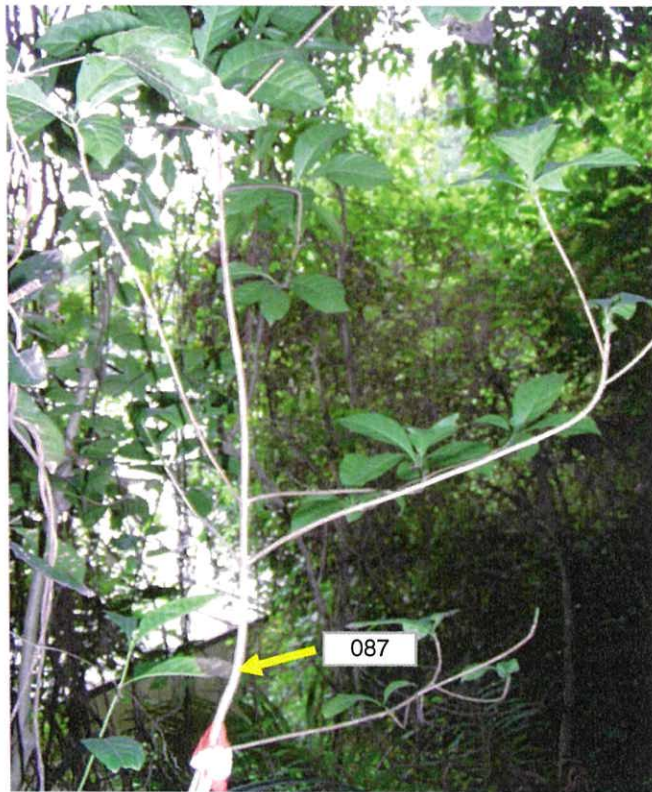
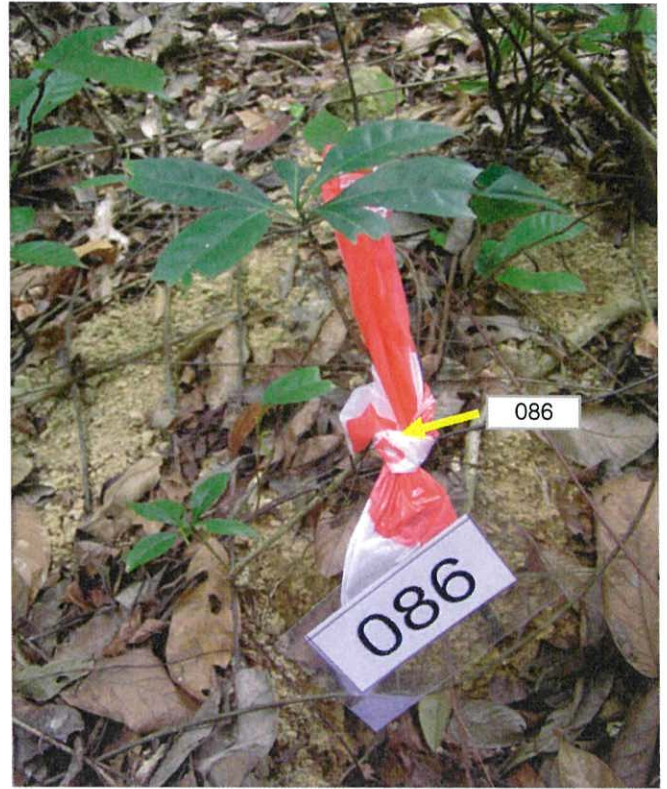
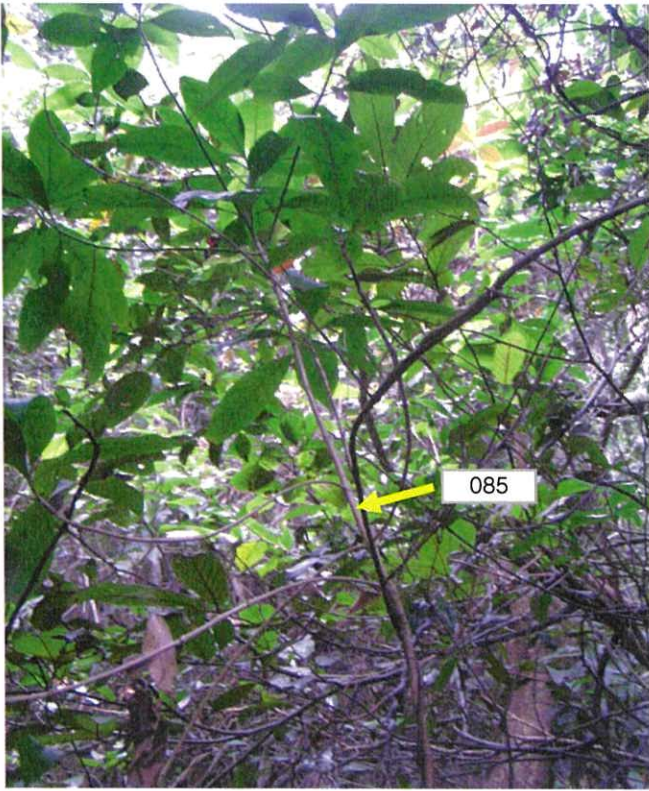
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JOB NO.	E01803(004)	DRAWING No.	Appendix 2
		Rev	-



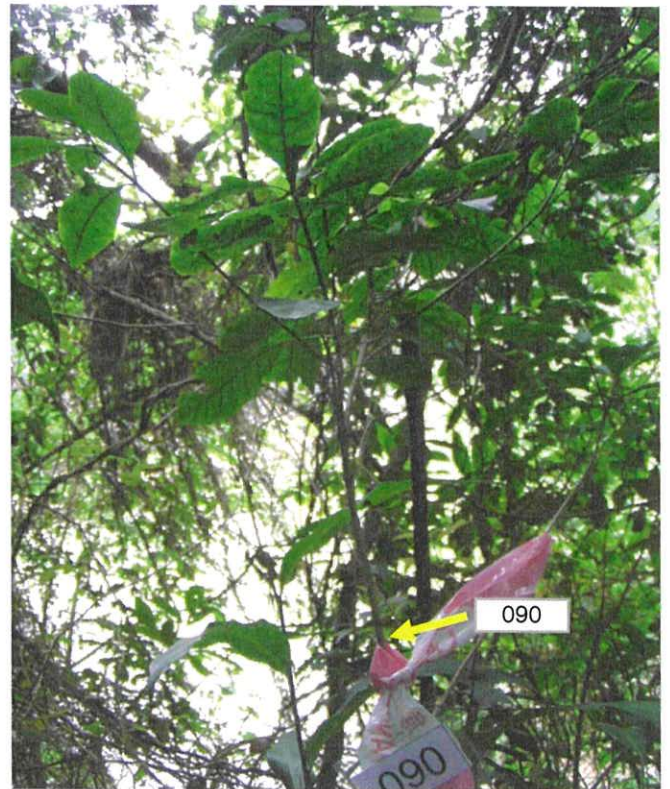
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JOB NO.	E01803(004)	DRAWING No.	Appendix 2
		Rev	-

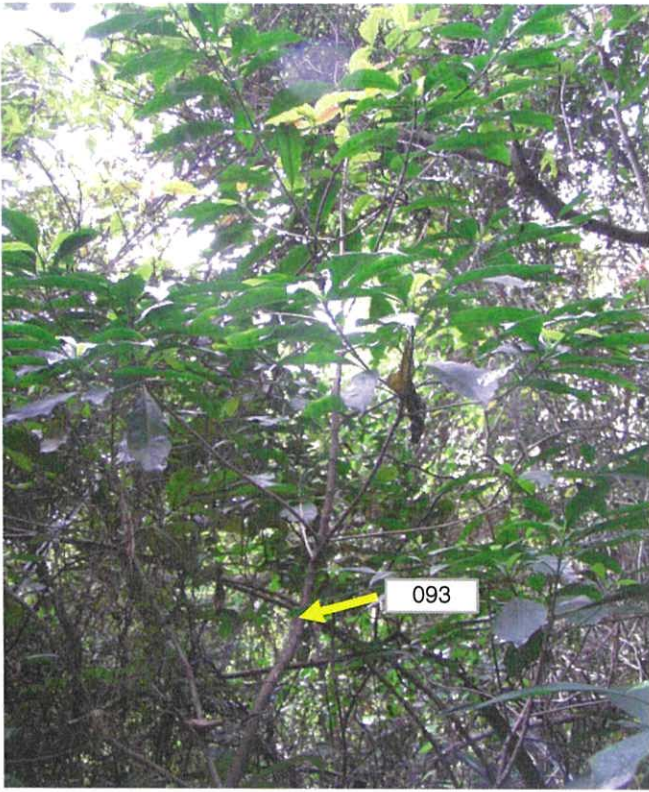


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JOB NO.	E01803(004)	DRAWING No.	Appendix 2
		Rev	-



SCALE	N.T.S.	DATE	May-05
CHECK	JLAM	DRAWN	GCCL
JOB NO.	E01803(004)	DRAWING No.	Appendix 2
		Rev	-





SCALE	N.T.S.	DATE	May-05
CHECK	JLAM	DRAWN	GCCL
JOB NO.	E01803(004)	DRAWING No.	Appendix 2
		Rev	-



Japanese Pipistrelle (*Pipistrellus abramus*) in bat roost



Great Roundleaf Bat (*Hipposideros armiger*) in Kang Yung Study Hall



Bicoloured Roundleaf Bat (*Hipposideros pomona*) in Kang Yung Study Hall

SCALE	N.T.S.	DATE	MAY 2005	
CHECK	JLAM	DRAWN	Davidg	
JOB NO.	E01803(004)	DRAWING No.	Appendix 3	Rev -



Great Roundleaf Bat (*Hipposideros armiger*) day roost in derelict house

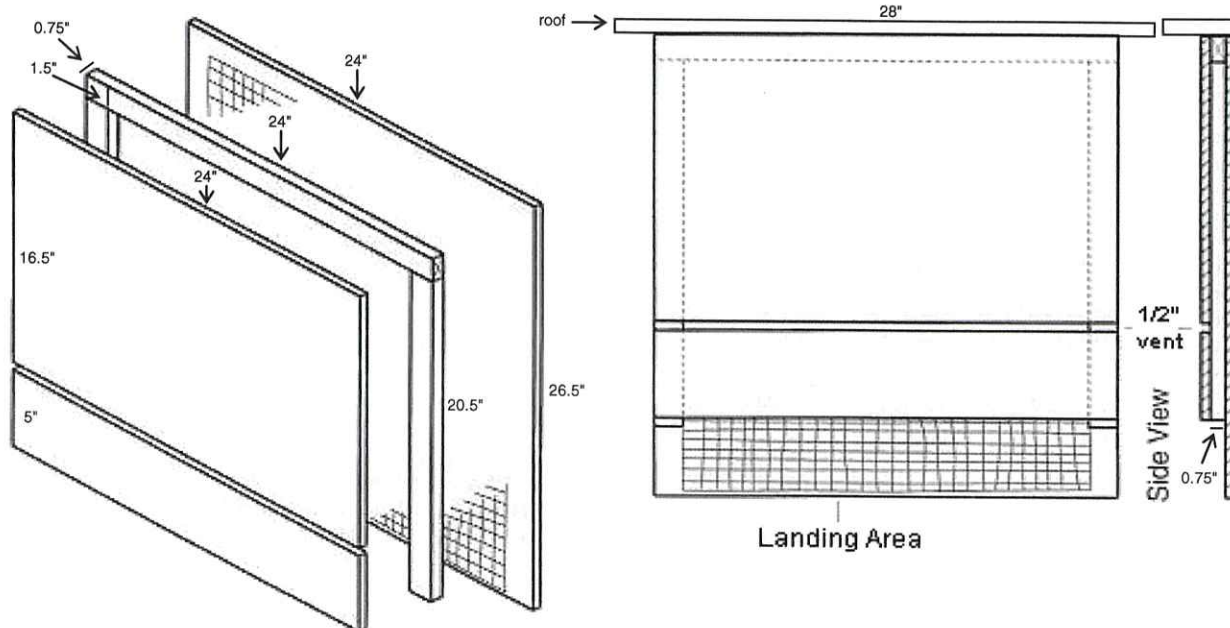
MAUNSELL | AECOM

Maunsell Environmental
Management Consultants Ltd

Agreement No. CE75/2001 10-Year Extended LPM Project, Phase 3,
Package C - Kowloon & Northern New Territories Landslip Preventive
Works on Government Slopes and Related Studies - I, D & C

Photographic Records of Roosting Bats

SCALE	N.T.S.	DATE	MAY 2005
CHECK	JLAM	DRAWN	Davidg
JOB NO.	E01803(004)	DRAWING No.	Appendix 3
		Rev	-



Materials Needed (For one roost)

- 1/4 sheet (2' x 4') 1/2" ACX, BCX, or T1-11 (outdoor grade) plywood.
(DO NOT use pressure treated wood.)
- One piece 1" x 2" (3/4" x 1 1/2" finished) x 8' pine (furring strip)
- 20-30 exterior grade screws, 1"
- dark brown, water-based stain, exterior grade
- water-based primer, exterior grade
- flat water-based paint or stain, exterior-grade
- paintable latex caulk
- 1" x4" x 28" board for roof
- Black asphalt shingles or galvanized metal
- 6-10 roofing nails, 7/8"

Construction Procedure

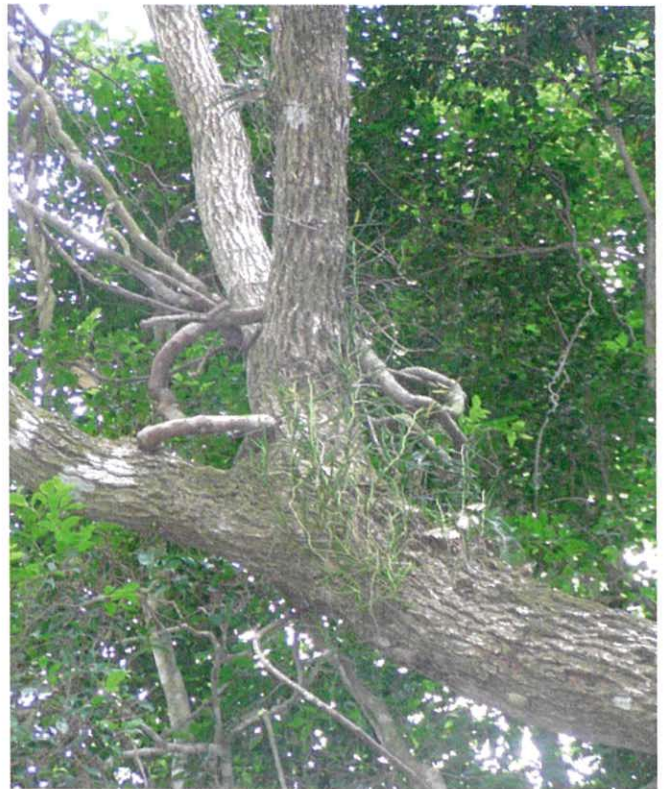
1. Measure and cut plywood into three pieces: 26 1/2" x 24", 16 1/2" x 24" and 5" x 24"
2. Roughen inside of backboard and landing area by cutting horizontal grooves with sharp object or saw. Space grooves about 1/2" apart, cutting 1/16" to 1/32" deep.
3. Apply two coats of dark, water-based stain to interior surfaces. Do not use paint, as it will fill grooves, making them unusable.
4. Measure and cut furring into one 24" and two 20 1/2" pieces.
5. Attach furring strips to back, caulking first. Start with 24" piece at top. Roosting chamber will be 3/4" wide (front to back).
6. Attach front to furring strips, top piece first (don't forget to caulk). Leave 1/2" vent space between top and bottom front pieces.
7. Caulk around all outside joints to further seal roosting chamber.
8. Attach a 1" x 3" x 28" board to the top as a roof.
9. Paint or stain exterior three times (use primer for first coat).
10. Cover roof with shingles or galvanized metal.

Installation

Bat Houses can be attached to trees, or two bat houses can be placed back to back, mounted on a pole 7-8' high.

Source of information: Bat Conservation International

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	Specification of Bat Roosts		CHECK	JLAM	DRAWN	Davidg
			JOB NO.	E01803(004)	DRAWING No.	Appendix 4



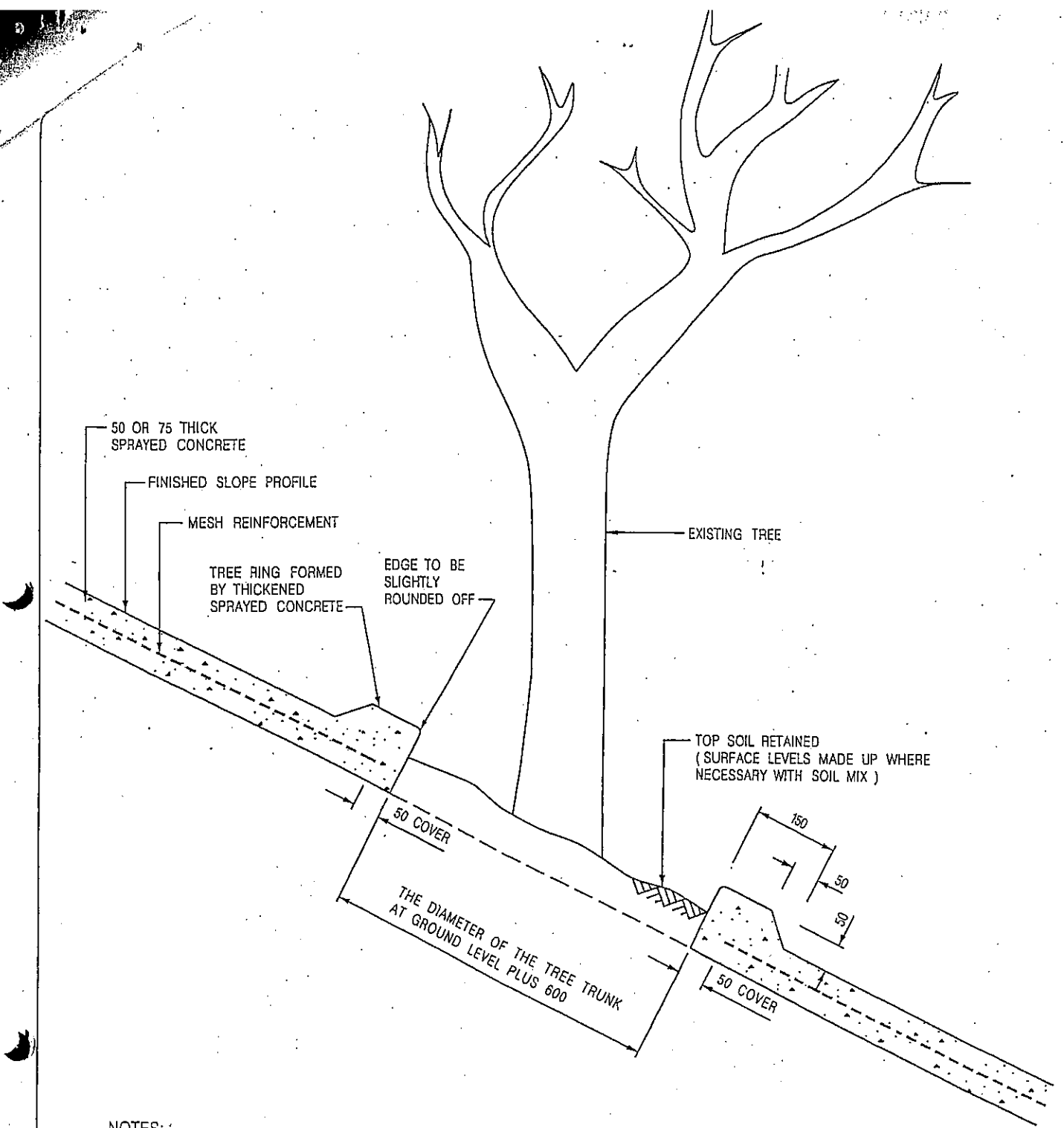
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Agreement No. CE75/2001 10-Year Extended LPM Project, Phase 3, Package C - Kowloon & Northern New Territories Landslip Preventive Works on Government Slopes and Related Studies - I, D & C

Photographic Records of *Cleisostoma* sp.

SCALE	N.T.S.	DATE	MAY 2005
CHECK	JLAM	DRAWN	GCCL
JOB NO.	E01803(004)	DRAWING No.	Appendix 5
		Rev	-



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. SURFACE FINISHES OF TREE RING SHALL BE U1, F2.
3. TREE RINGS ARE NOT REQUIRED ON SLOPES TO BE HYDROSEEDED.
4. WHERE DIRECTED BY THE ENGINEER, TREE RINGS MAY BE CONSTRUCTED FOR GROUPS OF TREES LOCATED CLOSE TOGETHER, THE DIAMETER OF SUCH TREE RING SHALL BE DETERMINED BY THE ENGINEER ON SITE.
5. SPRAYED CONCRETE TO BE COLOURED AS SPECIFIED.

C	GENERAL REVISION.	Original Signed	12.2002
B	MINOR AMENDMENT.	Original Signed	08.2001
A	GENERAL REVISION.	Original Signed	3.94
REF.	REVISION	SIGNATURE	DATE

TREE RING

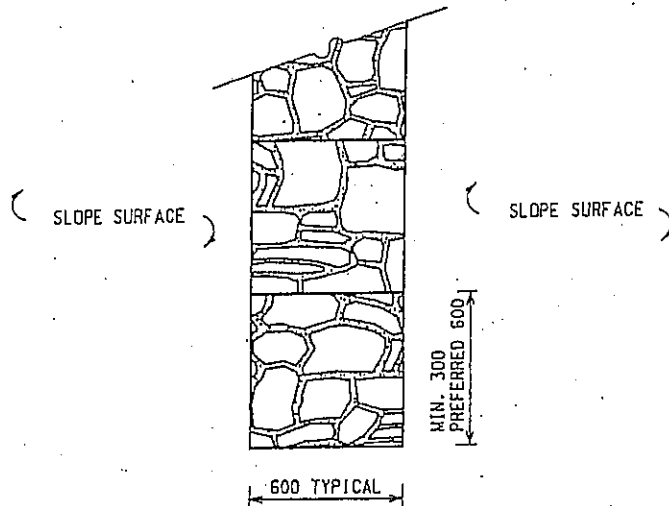
CIVIL ENGINEERING DEPARTMENT

SCALE 1 : 10

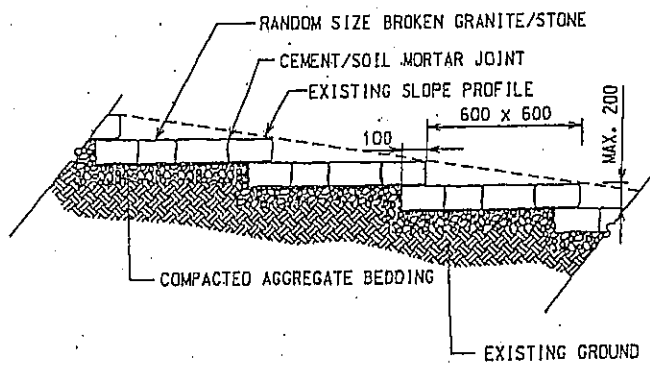
DRAWING NO.

DATE JAB 1991

C2104C



PLAN
SCALE 1:5

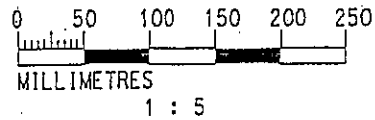


STONE STAIRCASE SECTION DETAIL

SCALE 1:5

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. DRAWING NO. SKT04 SHOULD BE REFERRED FOR DETAILS OF HANDRAILINGS FOR STONE MAINTENANCE STAIRCASE.



Civil Engineering Department
Hong Kong
Geotechnical Engineering Office

PROJECT:

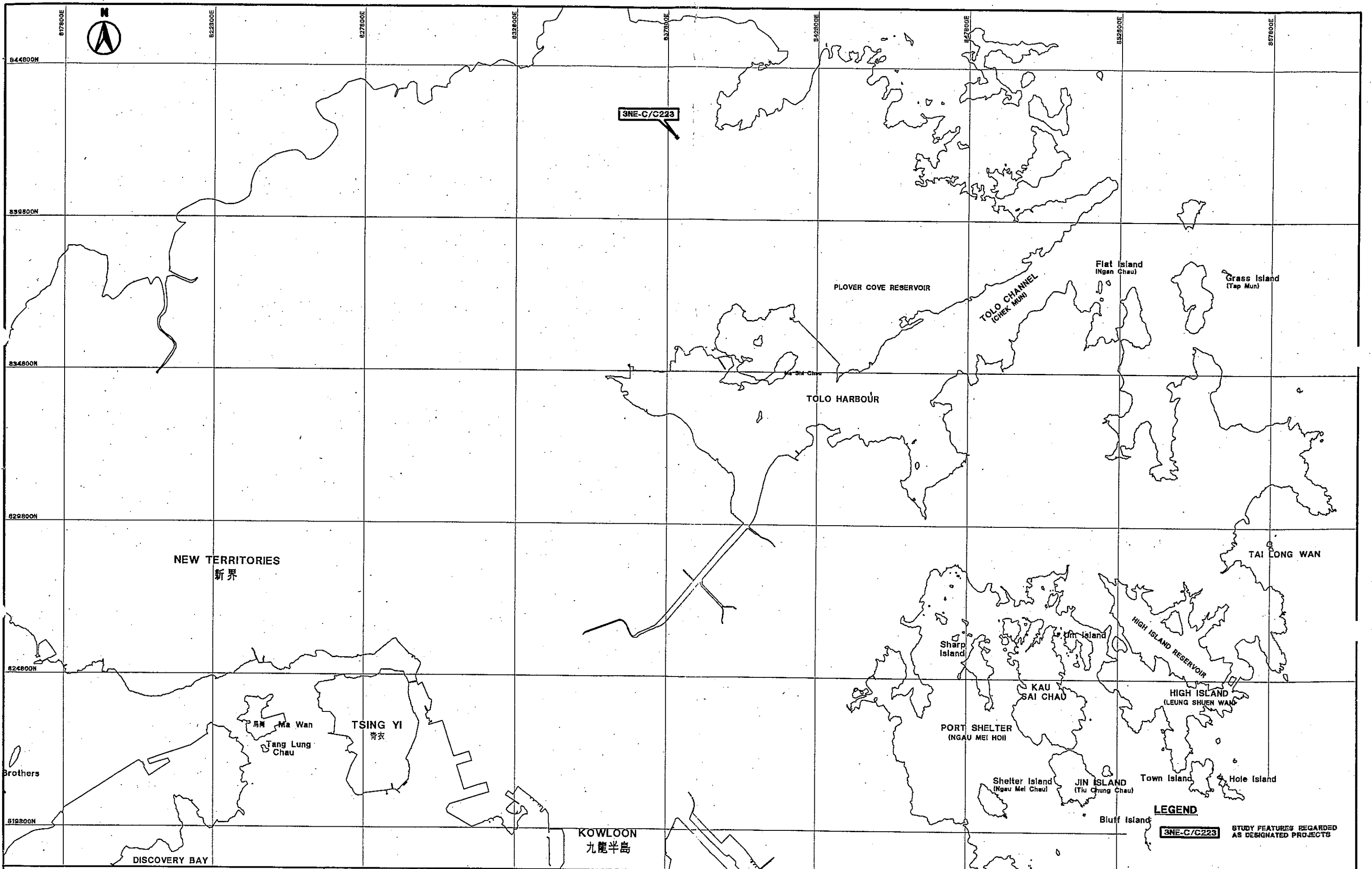
Agreement No. CE 75/2001(GE)
10-Year Extended LPM Project, Phase 3, Package C
- Kowloon and Northern New Territories
Landslip Preventive Works on Government Slopes and Related Studies
- Investigation, Design and Construction



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茂盛士力工程顧問有限公司

Date : APR 2004	Drawn : YKC	Scale : AS SHOWN
Fig. No.	2.2	Rev. :

TITLE : DETAILS OF MAINTENANCE STONE STAIRCASE



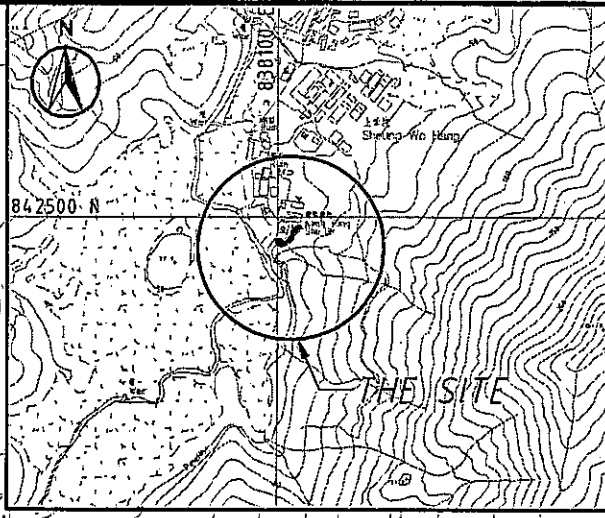
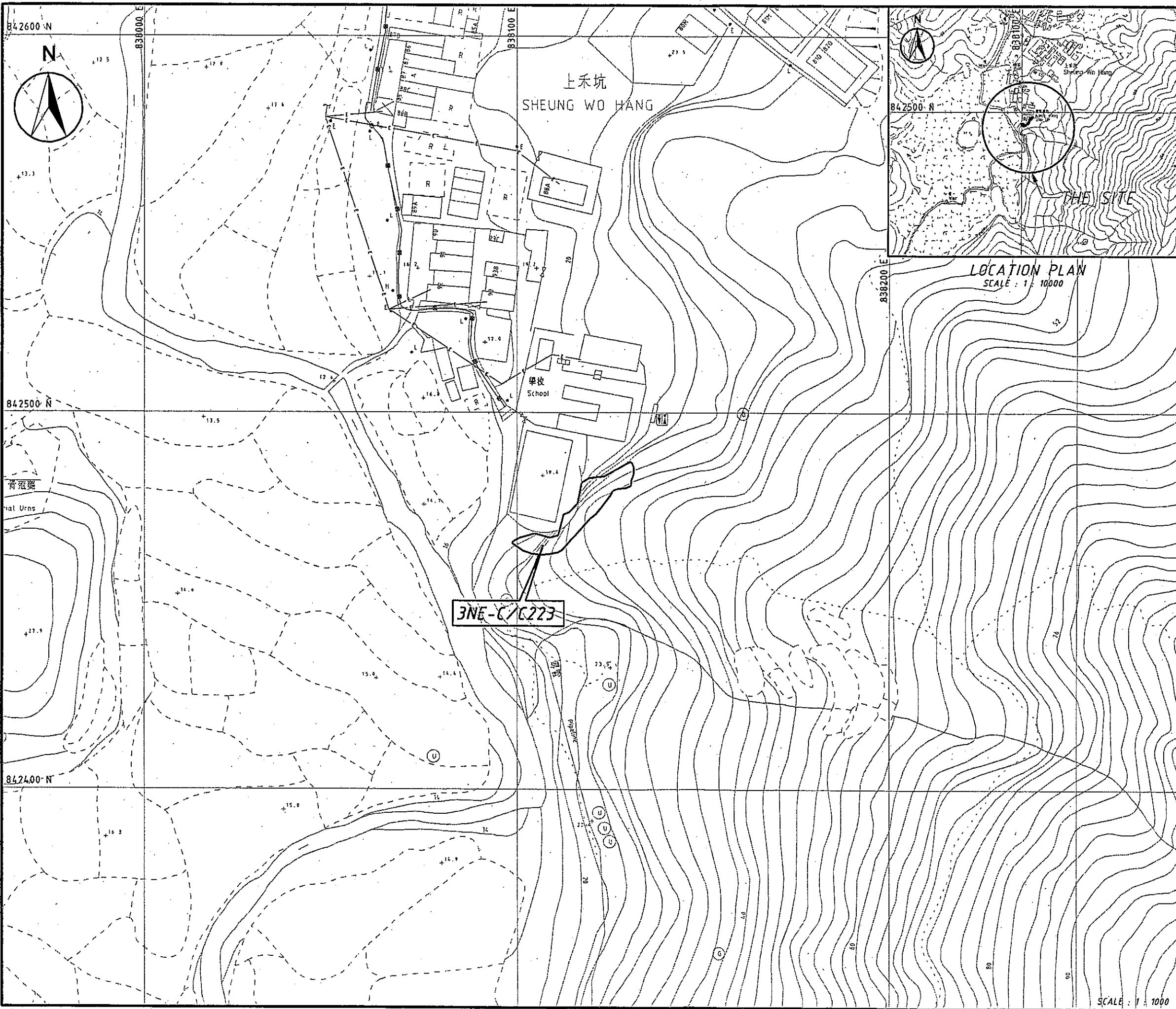
LEGEND
 3NE-C/C223 STUDY FEATURES REGARDED AS DESIGNATED PROJECTS



Agreement No. CE 75/2001 (GE1)
 10-Year Extended LPM Project, PHASE 3,
 Package C - Landslip Preventive Works for Slopes
 in Kowloon and Northern New Territories

Drawn :	YKC
Date :	05/05
Ref. :	52002

TITLE : **Figure 1.1
 FEATURE LOCATION PLAN**
 SCALE : N.T.S.



NOTES:
 1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH NOTES (DRAWING NO. 52002/321-06), ALL OTHER RELEVANT DRAWINGS, STANDARD DRAWINGS, SPECIFICATIONS AND INSTRUCTION ISSUED BY THE ENGINEER.

LEGEND

	FEATURE BOUNDARY
	EXISTING CONTOUR LINE
	EXISTING SLOPE
	EXISTING ELECTRICITY CABLES
	EXISTING FRESH WATER DRAIN

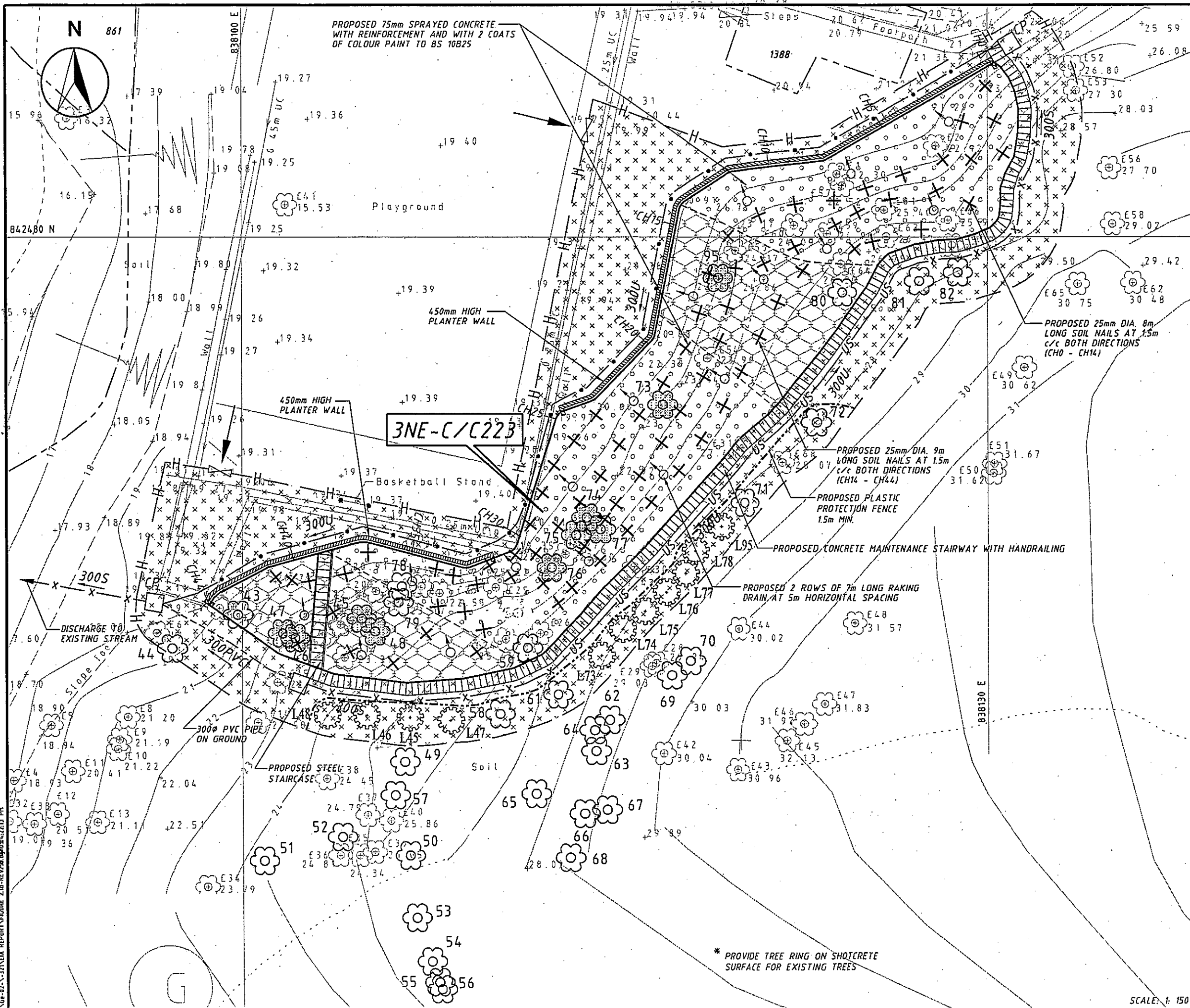
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A	08/03	MINOR REVISION	AKSL
No.	Date	Description	Initial
REVISION			
	Name	Date	
Designed	-	09/02	
Drawn	CJL	09/02	
Checked	KSL	09/04	
Approved	HYN	09/04	
Contract No.	GE/2004/11		
Figure No.	1.2	09/04	

Drawing Title
 Feature No. 3NE-C/C223
 NEXT TO SCHOOL PLAYGROUND,
 SHEUNG WO HANG VILLAGE,
 SHA TAU KOK
 SITE LOCATION

GEOTECHNICAL ENGINEERING OFFICE

CEDD Civil Engineering and Development Department

MAUNSELL
 GEOTECHNICAL SERVICES LTD.
 京盛士力工程顧問有限公司



NOTES:
 1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH NOTES (DRAWING NO. 52002/321-06), ALL OTHER RELEVANT DRAWINGS, STANDARD DRAWINGS, SPECIFICATIONS AND INSTRUCTION ISSUED BY THE ENGINEER.

- LEGEND**
- FEATURE BOUNDARY
 - - - PRIVATE LOT BOUNDARY
 - - - EXISTING CONTOUR LINE
 - + - - EXISTING GROUND LEVEL
 - - - BOUNDARY OF WORKS SITE WITHOUT HOARDING
 - 300U PROPOSED U-CHANNEL
 - US 300U US PROPOSED U-CHANNEL WITH UPSTAND
 - X X X X PROPOSED STEPPED CHANNEL
 - MAINTENANCE STAIRWAY
 - + + + PROPOSED SOIL NAIL ON SPRAYED CONCRETE SLOPE SURFACE
 - PROPOSED TYPE 3 RAKING DRAIN (ORIENTATION OF ARROW SHOWS ORIENTATION OF DRAIN)
 - SLOPE SURFACE TO BE COVERED WITH SPRAYED CONCRETE
 - SLOPE SURFACE TO BE HYDROSEEDED WITH (18mm THICK POLYETHYLENE TYPE) AND WIRE MESH
 - CP PROPOSED CATCHPIT WITHOUT TRAP
 - PROPOSED LOCKABLE GATE
 - PROPOSED SITE ENTRANCE
 - H PROPOSED HOARDING TYPE 1
 - PROPOSED PLANTER WALL
 - PROPOSED WORKS SITE

- 4.8 L48 NEW LOCATION FOR THE TRANSPLANT TREES
- 79 EXISTING TREE TO BE RETAINED WITH NO.
- 300PVC PROPOSED 300mm PVC PIPE
- C-Tiles - ~~To be cancelled~~ p.c

No.	Date	Description	Initial
B	09/05	RELOCATED SOIL NAIL	KSL
A	08/05	REVISION OF SHOTCRETE AND CP	KSL

REVISION		
	Name	Date
Designed	AKSL	05/05
Drawn	CJL	05/05
Checked	KSL	05/05
Approved	HYN	05/05
Contract No.	GE/2004/11	
Figure No.	2.1a (REV. B)	05/05

Drawing Title
 Feature No. 3NE-C/C223
 Next to School Playground,
 Sha Tau Kok
**LOCATION AND TRANSPLANTATION
 SITE OF SPECIES OF
 CONSERVATION IMPORTANCE**
 SHEET 1 OF 2

**GEOTECHNICAL ENGINEERING
 OFFICE**

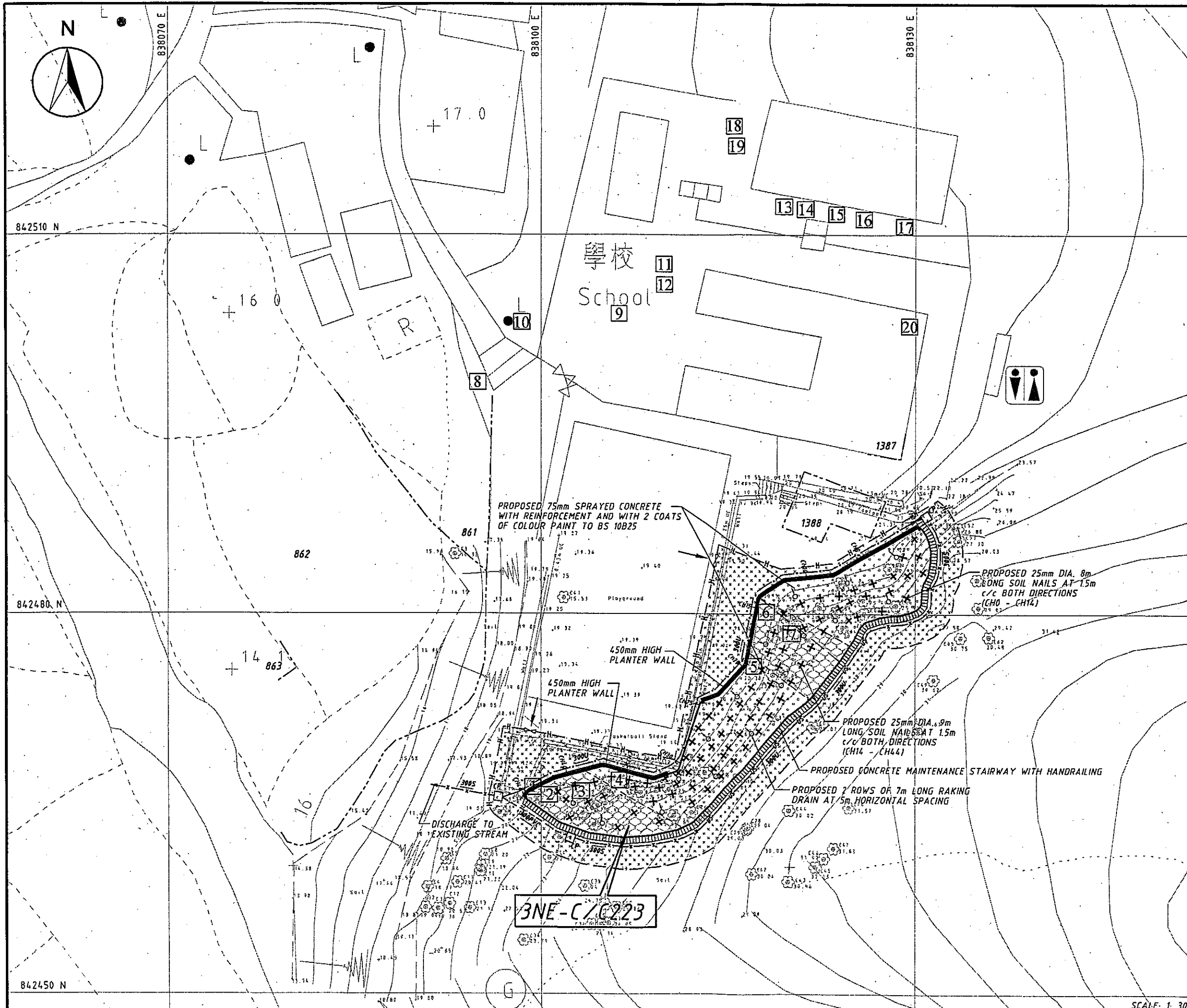
**GEDD Civil Engineering and
 Development Department**

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 GEOTECHNICAL SERVICES LTD.
 茂源土力工程顧問有限公司

SCALE: 1:150

PART PRINT OF SURVEY SHEET NO. :

P:\AK17\52002\06-01-11-31\VEGA REPORT\FIGURE 2.1a-REVISED.dwg-22:13 PM



NOTES:
 1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH NOTES 1 DRAWING NO. 52002/321-06 1, ALL OTHER RELEVANT DRAWINGS, STANDARD DRAWINGS, SPECIFICATIONS AND INSTRUCTION ISSUED BY THE ENGINEER.

LEGEND

	FEATURE BOUNDARY
	PRIVATE LOT BOUNDARY
	EXISTING CONTOUR LINE
	EXISTING GROUND LEVEL
	BOUNDARY OF WORKS SITE WITHOUT HOARDING
	PROPOSED U-CHANNEL
	PROPOSED U-CHANNEL WITH UPSTAND
	PROPOSED STEPPED CHANNEL
	PROPOSED 600mm CONCRETE MAINTENANCE STAIRWAY
	PROPOSED SOIL NAIL ON SPRAYED CONCRETE SLOPE SURFACE
	PROPOSED TYPE 3 RAKING DRAIN (ORIENTATION OF ARROW SHOWS ORIENTATION OF DRAIN)
	SLOPE SURFACE TO BE COVERED WITH SPRAYED CONCRETE
	SLOPE SURFACE TO BE HYDROSEEDED WITH (18mm THICK POLYETHYLENE TYPE) AND WIRE MESH
	PROPOSED CATCHPIT WITHOUT TRAP
	PROPOSED LOCKABLE GATE
	PROPOSED SITE ENTRANCE
	PROPOSED HOARDING TYPE 1
	PROPOSED PLANTER WALL
	PROPOSED WORKS SITE
	EXISTING BAT BOX

A	10/05	MINOR REVISED	KSL
No.	Date	Description	Initial

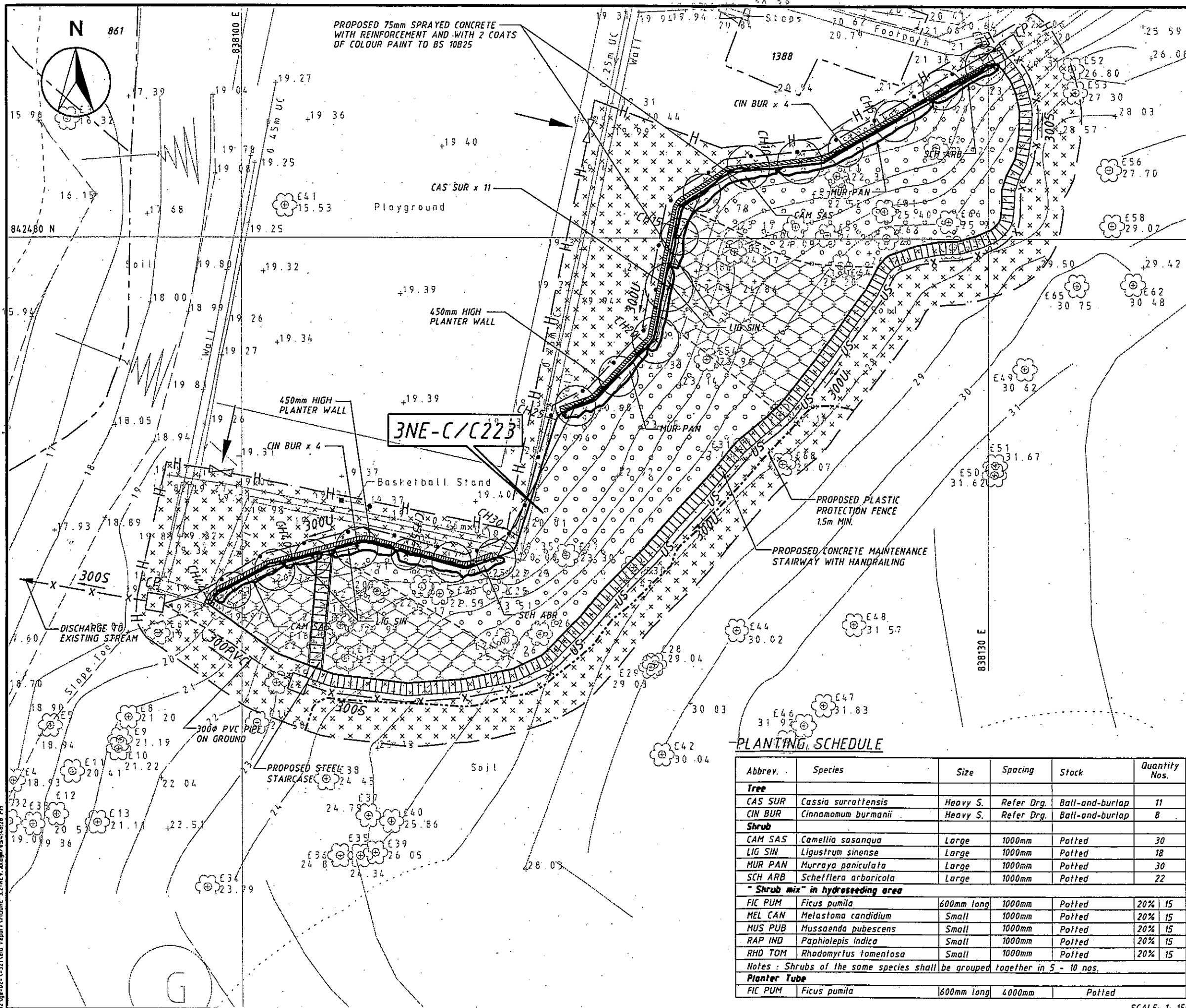
REVISION		
	Name	Date
Designed	AKSL	05/03
Drawn	CJL	05/03
Checked	KSL	09/04
Approved	HYN	09/04
Contract No.	GE/2004/11	
Figure No.	3.1 (REV. A)	09/04

Drawing Title
 Feature No. 3NE-C/C223
 Next to School Playground,
 Sha Tau Kok
**LOCATION OF EXISTING
 BAT-BOXES / ROOSTS**

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NOTES:
 1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH NOTES (DRAWING NO. 52002/321-06). ALL OTHER RELEVANT DRAWINGS, STANDARD DRAWINGS, SPECIFICATIONS AND INSTRUCTION ISSUED BY THE ENGINEER.

LEGEND

	FEATURE BOUNDARY
	PRIVATE LOT BOUNDARY
	EXISTING CONTOUR LINE
	EXISTING GROUND LEVEL
	BOUNDARY OF WORKS SITE WITHOUT HOARDING
	PROPOSED U-CHANNEL
	PROPOSED U-CHANNEL WITH UPSTAND
	PROPOSED STEPPED CHANNEL
	PROPOSED 600mm STONE MAINTENANCE STAIRWAY
	SPRAYED CONCRETE WITH 150φ PLANTER TUBE SPACED @ 4000mm (CEDD DRAWING (2507A))
	SLOPE SURFACE TO BE HYDROSEEDED WITH "SHRUB MIX" AND 18mm THICK (POLYETHYLENE TYPE) AND WIRE MESH
	PROPOSED CATCHPIT WITHOUT TRAP
	PROPOSED LOCKABLE GATE
	PROPOSED SITE ENTRANCE
	PROPOSED HOARDING TYPE I
	PROPOSED PLANTER WALL
	PROPOSED WORKS SITE
	PROPOSED TREE
	PROPOSED SHRUBS MIX IN TOE WALL PLANTER

B	08/05	REVISION PLANTING SCHEDULE	KSL
A	08/05	REVISION OF SHOTCRETE AND CP	KSL
No.	Date	Description	Initial
REVISION			
		Name	Date
Designed		AKSL	05/05
Drawn		CJL	05/05
Checked		KSL	05/05
Approved		HYN	05/05
Contract No.	GE/2004/11		
Figure No.	3.2	(REV. B)	05/05

PLANTING SCHEDULE

Abbrev.	Species	Size	Spacing	Stock	Quantity Nos.
Tree					
CAS SUR	<i>Cassia surrattensis</i>	Heavy S.	Refer Drg.	Ball-and-burlap	11
CIN BUR	<i>Cinnamomum burmanii</i>	Heavy S.	Refer Drg.	Ball-and-burlap	8
Shrub					
CAM SAS	<i>Camellia sasanqua</i>	Large	1000mm	Potted	30
LIG SIN	<i>Ligustrum sinense</i>	Large	1000mm	Potted	18
MUR PAN	<i>Murraya paniculata</i>	Large	1000mm	Potted	30
SCH ARB	<i>Schefflera arboricola</i>	Large	1000mm	Potted	22
"Shrub mix" in hydroseeding area					
FIC PUM	<i>Ficus pumila</i>	600mm long	1000mm	Potted	20% 15
MEL CAN	<i>Melastoma candidum</i>	Small	1000mm	Potted	20% 15
MUS PUB	<i>Mussaenda pubescens</i>	Small	1000mm	Potted	20% 15
RAP IND	<i>Paphirolepis indica</i>	Small	1000mm	Potted	20% 15
RHD TOM	<i>Rhodomyrtus tomentosa</i>	Small	1000mm	Potted	20% 15
Notes: Shrubs of the same species shall be grouped together in 5 - 10 nos.					
Planter Tube					
FIC PUM	<i>Ficus pumila</i>	600mm long	4000mm	Potted	

SCALE: 1:150

Drawing Title
 Feature No. 3NE-C/C223
 Next to School Playground,
 Sha Tau Kok
LANDSCAPE PROPOSAL
GEOTECHNICAL ENGINEERING OFFICE

 CEDD Civil Engineering and Development Department

 MAUNSELL ENVIRONMENTAL MANAGEMENT CONSULTANTS LTD

P:\ACT\2002\ge-02-1-12\veg report\FIGURE 3.2-REV. B.DWG/05-16-28 PH

NOTES:

I. GENERAL:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS, STANDARD DRAWINGS, SPECIFICATIONS AND INSTRUCTIONS ISSUED BY THE ENGINEER.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
3. ALL LEVELS ARE IN METRES ABOVE P.D.
4. THE EXACT BOUNDARY OF THE WORKS SITE AND THE WORKS AREA AND THE EXACT ALIGNMENT OF HOARDING AND SAFETY FENCE SHALL BE CONFIRMED BY THE ENGINEER ON SITE.
5. THE NOTES ON THIS DRAWING ARE THE GENERAL REQUIREMENTS UNLESS OTHERWISE SPECIFIED OR INSTRUCTED BY THE ENGINEER.

II. UTILITIES:

1. THE PLAN OF UTILITIES HAS BEEN PREPARED FROM INFORMATION PROVIDED BY UTILITY UNDERTAKINGS. NEITHER THE EMPLOYER NOR HIS AGENTS OR REPRESENTATIVES ACCEPT ANY RESPONSIBILITY WHATSOEVER FOR THE ACCURACY OR SUFFICIENCY OF THE INFORMATION AND THE CONTRACTOR SHALL MAKE SUCH INQUIRIES AND INVESTIGATION AS ARE REQUIRED FOR HIS OWN INFORMATION.
2. PRIOR TO COMMENCEMENT OF THE WORKS, THE CONTRACTOR SHALL CONFIRM THE EXACT LOCATIONS OF THE EXISTING UTILITIES AFFECTING OR BEING AFFECTED BY THE WORKS USING INSPECTION PITS OR OTHER MEANS AS RECOMMENDED BY THE RELEVANT UTILITY / SERVICE COMPANY OR PARTY CONCERNED.
3. THE CONTRACTOR SHALL EXERCISE EXTREME CARE NOT TO DAMAGE ANY EXISTING UTILITIES OR SERVICES WITHIN OR IN THE VICINITY OF THE WORKS SITE AND WORKS AREA AND SHALL PROVIDE NECESSARY PROTECTION AND SUPPORT TO THE EXISTING UTILITIES OR SERVICES IN ACCORDANCE WITH THE REQUIREMENTS OF THE RELEVANT UTILITY / SERVICE COMPANY OR PARTY CONCERNED DURING THE EXECUTION OF THE WORKS. SHOULD ANY DAMAGE OCCUR TO THE UTILITIES / SERVICES DUE TO THE CONTRACTOR'S WORKS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY COST INCURRED FROM THE DAMAGE.

III. SOIL NAILING WORKS:

1. ORIENTATION OF SOIL NAILS SHALL BE NORMAL TO THE SLOPE TOE ON PLAN.
2. SOIL NAIL SETTING OUT DATA IS TENTATIVE ONLY. BEFORE SOIL NAIL DRILLING, THE POSITION OF EACH SOIL NAIL SHALL BE MARKED ON THE SLOPE SURFACE FOR THE ENGINEER'S VERIFICATION.
3. DETAILS OF SOIL NAIL AND SOIL NAIL HEAD SHALL BE IN ACCORDANCE WITH STANDARD DRAWINGS C2106 / 10, C2106 / 20 & C2106 / 30 AND SKETCHES R1043 / 1 & R1048C.
4. POSITION OF SOIL NAILS SHALL BE ADJUSTED WHERE NECESSARY ON SITE TO AVOID DAMAGE TO EXISTING TREES INCLUDING BRANCHES AND ROOTS.
5. THE DIAMETER OF ALL DRILLHOLES FOR SOIL NAIL INSTALLATION SHALL NOT BE LESS THAN 100mm.
6. MINIMUM 2 NUMBERS OF PULL-OUT TESTS OR 2% OF THE TOTAL NUMBER OF SOIL NAILS, WHICHEVER GREATER, TO BE TESTED PRIOR TO THE INSTALLATION OF THE PERMANENT SOIL NAILS.
7. THE TEST LOAD FOR PULL-OUT TEST SHALL BE 90% OF THE YIELD STRENGTH OF THE STEEL BAR FORMING THE SOIL NAIL.
8. PULL-OUT TEST LOCATIONS ARE TENTATIVE ONLY. THE EXACT LOCATIONS OF PULL-OUT TESTS SHALL BE CONFIRMED BY THE ENGINEER ON SITE.
9. THE BOND LENGTH OF THE PULL-OUT TEST SOIL NAIL SHALL BE 2m.

IV. DRILLING RECORDS:

1. THE CONTRACTOR IS REQUIRED TO PROVIDE RECORDS OF DRILLING FOR ALL PULL-OUT TEST SOIL NAILS AND FOR AT LEAST ONE NUMBER OF SOIL NAIL FOR EVERY 10 NUMBERS OF WORKING SOIL NAILS IN ACCORDANCE WITH THE FOLLOWING NOTE:

DRILLING RECORDS SHALL INCLUDE THE LOCATION PLAN, LEVELS AND NUMBER OF DRILLHOLES, TIME AND DATE OF DRILLING, DRILLING RATE IN METRE PER MINUTE AND DESCRIPTION OF THE DRILLED MATERIALS BASED ON THE FLUSHED OUT MATERIALS COLLECTED DURING DRILLING FOR EVERY METRE OF DRILLING THE HOLE. WHEN INSTRUCTED, THE FLUSHED OUT MATERIALS SHALL BE COLLECTED IN PLASTIC BAGS WITH LABELS SHOWING THE DATE, DEPTH AND NUMBER OF HOLE OF DRILLING AND KEPT ON SITE IN A PROPER MANNER FOR THE ENGINEER'S EXAMINATION. DRILLING RECORDS SHALL BE PREPARED AND SUBMITTED TO THE ENGINEER WITHIN 24 HOURS AFTER COMPLETION OF DRILLING OF THE HOLES. THE CONTENTS OF THE DRILLING RECORDS SHALL BE PRESENTED IN POINT FORM, GRAPHICAL AND TABLE FORM AS AGREED BY THE ENGINEER.

V. DRAINAGE WORKS:

1. ORIENTATION OF RAKING DRAINS SHALL BE NORMAL TO THE SLOPE TOE ON PLAN.
2. DETAILS OF RAKING DRAIN SHALL BE IN ACCORDANCE WITH STANDARD DRAWINGS C2403C AND C2414B.
3. INSTALLATION OF RAKING DRAINS SHALL NOT COMMENCE BEFORE ADJACENT SOIL NAILS ARE INSTALLED AND THE CEMENT GROUT OF SOIL NAIL HOLES BECOMES HARDENED.
4. DETAILS OF DRAINAGE CHANNELS AND CATCHPITS SHALL BE IN ACCORDANCE WITH STANDARD DRAWINGS C2405D, C2406E, C2409G, C2411E, C2413C AND C2509.
5. THE MINIMUM GRADIENT SHALL BE 1 IN 10 FOR STEPPED CHANNELS AND 1 IN 100 FOR OTHER SURFACE CHANNELS.
6. EXISTING CHANNELS AND CATCHPITS TO BE RETAINED SHALL BE MAINTAINED BY THE CONTRACTOR AND SHALL BE REPAIRED WHERE NECESSARY AS DIRECTED BY THE ENGINEER ON SITE.

VI. SURFACE PROTECTION:

1. SPRAYED CONCRETE SHALL BE OF MINIMUM 75mm THICK AND REINFORCED WITH 50 x 50 x 2.7 (WIRE DIAMETER) WELDED MESH REINFORCEMENT UNLESS OTHERWISE SPECIFIED.
2. SURFACE OF SPRAYED CONCRETE COVER SHALL BE PAINTED OVER WITH 2 COATS OF WATER BASE COLOUR PAINTS. THE COLOUR SHALL BE 'ANTIQUE' BS 5252F COLOUR CODE 10B25 OR SIMILAR SUBDUE COLOUR AS SPECIFIED.

VII. PROTECTION AND PRESERVATION OF EXISTING VEGETATION / LANDSCAPE WORKS:

1. NO TREES SHALL BE FELLED WITHOUT THE APPROVAL OF THE ENGINEER IN WRITING.
2. ADEQUATE TEMPORARY WORKS SHALL BE PROVIDED TO SUPPORT AND PROTECT TREES SPECIFIED TO BE PRESERVED FROM DAMAGE IN ACCORDANCE WITH THE SPECIFICATIONS.
3. AS AGREED OR DIRECTED BY THE ENGINEER, ALIGNMENT OF HOARDING, NEW CHANNELS AND MAINTENANCE STAIRWAY SHALL BE ADJUSTED ON SITE TO AVOID DAMAGE TO EXISTING TREES.
4. TOE WALL PLANTER WALL WITH SPECIFIED PLANTS SHALL BE IN ACCORDANCE WITH STANDARD DRAWING C2001D.
5. THE SURFACE OF THE TOE WALL PLANTER SHALL BE COVERED WITH SQUARE PATTERN GRANITE BLOCK FACING IN ACCORDANCE WITH STANDARD DRAWING C2002/1A.
6. THE CONTRACTOR SHALL CONFIRM THE LOCATIONS OF, INSPECT, RECORD AND TAKE PHOTOS OF THE CONDITIONS OF THE EXISTING TREES WITHIN THE WORKS SITE AND WORKS AREA. REPORT OF THE CONDITIONS OF THE EXISTING TREES, INCLUDING COLOR PHOTOS, PLAN OF LOCATIONS AND BRIEF DESCRIPTIONS OF ANY DEFECTS OR DAMAGE OF TREES OBSERVED, SHALL BE SUBMITTED TO THE ENGINEER FOR RECORD WITHIN 14 DAYS OF THE DATE FOR COMMENCEMENT OF THE WORKS.
7. TREE RING FOR T80 SHOULD IN DIAMETER OF 2m PLUS DIAMETER OF TRUNK.

VIII. CONCRETE WORKS AND REINFORCEMENT DETAILS:

1. CONCRETE FOR SOIL NAILS HEADS SHALL BE OF GRADE 30 / 20 OR SPRAYED CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF CONCRETE CORES, CONVERTED TO ESTIMATED EQUIVALENT CUBE STRENGTH OF 30MPa AT 28 DAYS IN ACCORDANCE WITH BS 6089.
2. CONCRETE FOR BACKFILLING VOIDS OR OTHER STRUCTURES THAN THAT IN PREVIOUS ITEM SHALL BE OF GRADE 20 / 20 OR SPRAYED CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF CONCRETE CORES, CONVERTED TO ESTIMATED EQUIVALENT CUBE STRENGTH OF 20MPa AT 28 DAYS IN ACCORDANCE WITH BS 6089.
3. ALL CONCRETE COVER TO THE OUTMOST REINFORCEMENT SHALL BE 40mm.
4. ALL EXPOSED CONCRETE CORNERS SHALL BE 25 x 25 mm CHAMFERED.
5. SURFACE FINISHES TO CONCRETE SHALL BE F2 FOR BURIED SURFACE, F3 FOR EXPOSED SURFACE.
6. DETAILS OF MOVEMENT / EXPANSION JOINT REQUIRED FOR CONCRETE STRUCTURES OR SPRAYED CONCRETE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING C2004 (WITHOUT WATER STOP).

XI. MISCELLANEOUS:

1. SOFT SPOTS IDENTIFIED BY THE ENGINEER ON SITE SHALL BE REMOVED THE VOID SHALL BE BACKFILLED WITH CONCRETE OF GRADE 20 / 20 OR WITH COMPACTED SOIL-CEMENT FILL AS PER GS CL 7.48 OR WITH COMPACTED SPECIAL FILL AS DIRECTED BY THE ENGINEER.
2. MAINTENANCE WALKWAY WITH HANDRAILING AND LOCKABLE GATE SHALL BE IN ACCORDANCE WITH STANDARD DRAWINGS C2103B & C2103D AND SKETCH R1058.
3. DETAILS OF HOARDING TYPE I SHALL BE IN ACCORDANCE WITH STANDARD DRAWING R1047B.
4. THE METALLIC PARTS (SUCH AS HANDRAILING, STEPS AND LOCKABLE GATE) OF THE MAINTENANCE WALKWAY, STEEL AND CONCRETE STAIRCASE SHALL BE PAINTED IN ACCORDANCE WITH SYSTEM D OF GS CLAUSE 18.62. THE FINISHING COAT OF THE PAINT SHALL BE 'ANTIQUE' BS 5252F COLOUR CODE 10B25.
5. NO STOCK PILING ON THE SLOPE CREST IS PERMITTED WITHOUT THE PRIOR APPROVAL FROM THE ENGINEER.
6. DETAILS OF TREE RINGS SHALL BE IN ACCORDANCE WITH STANDARD DRAWING C2104C.
7. ANY WORKS CARRIED OUT SHALL COMPLY WITH CONDITIONS STATED IN THE ENVIRONMENTAL PERMIT, WHICH WILL BE ISSUED SEPARATELY.
8. SPECIAL CARE SHOULD BE TAKEN TO ENSURE THE NATURAL HABITAT OF NATIVE BATS.
9. SURFACE OF SPRAYED CONCRETE COVER, SKIN WALL, REINFORCED CONCRETE SLABS OR GRILLAGE BEAMS SHALL BE PAINTED OVER WITH 2 COATS OF WATER BASE COLOUR PAINTS. THE COLOUR SHALL BE 'ANTIQUE' BS 5252F COLOUR CODE 10B25 OR SIMILAR SUBDUE COLOUR AS SPECIFIED. THE CONTRACTOR SHALL SUBMIT DETAILS OF THE PROPOSED PAINT FOR THE ENGINEER'S APPROVAL AT LEAST 4 WEEKS BEFORE THE PAINTING WORK.

XII. SPECIAL CONDITIONS FOR SOIL NAILING OR SPRAYED CONCRETE:

1. NO HIGH DISTURBANCE GENERATED BY CONSTRUCTION ACTIVITIES SUCH AS SOIL NAILING DRILLING AND SPRAYED CONCRETE, SHOULD BE CARRIED OUT BETWEEN APRIL TO AUGUST AND JANUARY TO FEBRUARY EACH YEAR.

D	10/05	XII, VII AMENDED	KSL
C	12/04	GENERAL REVISION	ACCK
B	09/04	GENERAL REVISION	ACCK
A	10/03	GENERAL REVISION	ACCK
No.	Date	Description	Initial

REVISION		
	Name	Date
Designed	AKSL	05/03
Drawn	TAN	05/03
Checked	KSL	09/04
Approved	HYN	09/04
Contract No.	GE/2004/11	
Drawing No.	52002/321-06 (REV. D)	09/04

Drawing Title
 Feature No. 3NE-C/C223
 Next to School Playground,
 Sheung Wo Hang Village,
 Sha Tau Kok
NOTES

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CEDD Civil Engineering and Development Department

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