




Contract No. CV/2016/10
 Site Formation and Associated Infrastructural Works for
 Development of Columbarium, Crematorium and Related
 Facilities at Sandy Ridge Cemetery

Woodland Compensation Plan

Revision	0	1	2	3
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Prepared by	Mike Leung Qualified Ecologist			
Certified by	T.W. Tam Environmental Team Leader			
Verified by	Jacky Leung Independent Environmental Checker (IEC)			

Our Ref: TCS00881/18/300/L0434

Hsin Chong Tsun Yip Joint Venture
Hsin Chong Center,
107-109 Wai Yip Street,
Kwun Tong,
Kowloon, Hong Kong

Attn: Mr. HO Man To

18 June 2020
By e-mail

Dear Sirs,

Re: CEDD Contract CV/2016/10
Site Formation and Associated Infrastructural Works for Development of
Columbarium at Sandy Ridge Cemetery
Woodland Compensation Plan (Revision 5)

With referenced to the Woodland Compensation Plan (Revision 5) prepared by the qualified ecologist, we herewith certify the Woodland Compensation Plan (Revision 5) pursuant to Specific Condition 2.17 of the Environmental Permit no. FEP-01/534/2017/A.

Should you have any queries, please feel free to contact the undersigned at Tel: 2959-6059 or Fax: 2959-6079 or Email: twtam@fordbusiness.com.

Yours sincerely,
For and on Behalf of
Action-United Environmental Services & Consulting (AUES)



T. W. Tam
Environmental Team Leader
TW/nh

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Acuity (IEC)

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Hsin Chong Tsun Yip Joint Venture (CV/2016/10)
Hsin Chong Centre
107-109 Wai Yip Street
Kwun Tong, Kowloon
Hong Kong

Attention: Mr. HO Man-to

18 June 2020

Dear Sir,

Contract No. CV/2016/10

**Site Formation and Associated Infrastructural Works for Development of Columbarium,
Crematorium and Related Facilities at Sandy Ridge Cemetery
Woodland Compensation Plan**

Referred to the email of your ET regarding to the Woodland Compensation Plan (Revision 5), we have no adverse comment on it. According to section 2.17 of the FEP, we herewith verify the captioned and confirm this submission conforms to the information and recommendations contained in the approved EIA report (Register No. AEIAR-198/2016).

Yours faithfully,

CH Leung

Ir Leung CH Jacky
Independent Environmental Checker

cc. CEDD-DPTL/Land Works – Mr. SHUM Steven
ARUP – Mr. LEE Davis
ET Leader – Mr. TAM

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1. INTRODUCTION

1.1 BACKGROUND

1.1.1 The main objective of the proposed site formation and associated infrastructural works for development of columbarium, crematorium (C&C) and related facilities at Sandy Ridge Cemetery is to increase the public cremation services and supply of public niches to meet the future demand.

1.1.2 The Project is to carry out site formation and associated infrastructural works for the columbarium and crematorium (C&C) facilities at Sandy Ridge Cemetery. The scopes for the Project include:

<u>Area</u>	<u>Proposed Works</u>
Works Within Study Area	<ul style="list-style-type: none"> ● Site formation of about 5.5 hectares of land and associated drainage, sewerage and landscape works for development of Columbarium and Crematorium facilities at the Sandy Ridge Cemetery; ● Construction of a new road (about 800m) connecting the Crematorium and Man Kam To Road and the pick-up/drop-off point at Man Kam To Road; ● Widening of two sections of the existing Sha Ling Road (about 900m and 500m respectively); ● Widening of about 1.4km of the existing Lin Ma Hang Road; and ● Improvement works to the existing barging point at Siu Lam

1.1.3 The Project consists of the following designated projects under Part I, Schedule 2 of the EIAO:

- Item I.1 (b)(vii) – A drainage channel or river training and diversion works which discharges or discharge into an area which is less than 300 m from the nearest boundary of an existing or planned conservation area

1.1.4 The EIA report was approved with conditions on 8 August 2016 (Register No.: AEIAR-198/2016). Environmental Protection Department (EPD) issued an Environmental Permit (EP) for the Project (EP-534/2017) on 7 April 2017. A

Further Environment Permit (FEP) for the Project (FEP-01/534/2017) was issued on 23 February 2018. Amended EP (EP-534/2017/A) and amended FEP (FEP-01/534/2017/A) were issued on 24 December 2018.

1.1.5 The proposed works of that project will be divided into three main works packages and constructed by three main contractors. This Plan will cover the proposed works and landscape and visual mitigations related to Contract Package 1 only. The extent of the project boundary for Contract Package 1 is shown in **Appendix A** of this Plan. Works details of the proposed contract packages are summarized as follow:

Contract Package 1:

- Site formation works for a platform of about 1.8 hectares and associated drainage, sewerage and landscape works for development of Columbarium facilities at the Sandy Ridge Cemetery;
- Construction of a pick-up/drop-off point at Man Kam To Road;
- Widening of two sections of the existing Sha Ling Road
- Estimated time of works commencement: 15 Dec 2017

Contract Package 2:

- Construction of the new access road connecting Man Kam To Road and Crematorium site including the viaduct;
- Site formation works and associated drainage, sewerage and landscape works for development of Columbarium at Sandy Ridge Cemetery;
- Widening of about 1.4km of the existing Lin Ma Hang Road;
- Estimated time of works commencement: 31 May 2018

Contract Package 3:

- Site Formation and associated slope works for a platform for development of Crematorium facilities at Sandy Ridge Cemetery;
- Associated roadworks, landscaping, drainage, sewerage and waterworks.
- Estimated time of works commencement: Late 2021 (Anticipated)

1.2 OBJECTIVE

1.2.1 As stipulated in Clause No. 2.18 of the EP and Clause no. 2.17 of the FEP: “ *The Permit Holder shall, no later than one month before the commencement of construction of the Project, submit four hard copies and on electronic copy of a Woodland compensation Plan (the Plan) to the Director for approval. The Plan*

shall identify and quantify the area of loss of woodland with moderate or high ecological value, and provide at least 1:1 compensatory woodland planting. The Plan shall include details on plant species selection, planting scheme and schedule, fire control, post-planting monitoring and maintenance, as well as setting of action targets. The Plan shall be prepared by a qualified ecologist/botanist and shall be certified by the ET Leader and verified by the IEC. All recommended measures set out in the approved Woodland Compensation Plan shall be fully and properly implemented". The above requirements are fulfilled by this Woodland Compensation Plan.

1.2.2 The objective of the establishment of the Woodland Compensation Area is to mitigate for the loss of woodland with moderate or high ecological value due to the implementation of the Project. By providing compensatory shrub and whips planting, woodland habitats would be created in vicinity of the project area. Hydrological linkages with the wet woodland and other wetland habitats in the immediate environs are anticipated in part of the Woodland Compensation Area. Details would be included in Section 2 of this report.

1.2.3 All recommended measures as set out in the Woodland Compensation Plan shall be fully and properly implemented.

1.3 SITE DESCRIPTION

1.3.1 The proposed site for development of columbarium, crematorium and related facilities is located at the hillsides at Sandy Ridge to the northwest of Man Kam To Road and is partially occupied by Sandy Ridge Cemetery. MTR Lo Wu Station is located to the west of Project Site. The adjacent area of Lin Ma Hang Road is characterized by rural land uses with scattered village houses, agricultural land and natural terrain. In addition, utilities construction will be constructed along Man Kam To Road.

1.3.2 Scattered patches of woodland are present throughout the assessment area, with the largest contiguous block located immediately to the east of the Project boundary. Such areas comprise secondary woodland which is largely derived from natural regeneration and colonization of trees as a result of seed dispersal by birds and/or bats.

1.3.3 The loss of woodland by the project was quantified in EIA report and summarize in

Table 2.1. In total 1.65ha woodland was identified with the project boundary and would be lost as part of the proposed development. 1.2ha of woodland was identified in the approved EIA report, including 1.0ha within Sandy Ridge and Man Kam To Road development and works areas, 0.2ha within Lin Ma Hang Road works area. In the revised project boundary of the amended EP (EP-534/2017/A), an additional 0.45ha woodland area would be lost in eastern part of the project area along Sha Ling Road. Tree species recorded are predominantly native species and are common in Hong Kong. The ecological value of the all identified woodland area was categorized as Moderate. Location of affected woodland is given in **Appendix B**.

- 1.3.4 Woodland fragments within project boundary are naturally regenerated secondary woodlands. These woodlands are relatively young with single-layered of canopy dominants (~10 – 15m tall) including *Aporosa dioica*, *Bridelia tomentosa*, *Cinnamomum burmannii*, *Cratoxylum cochinchinense*, *Daphniphyllum calycinum*, *Litsea glutinosa*, *Microcos nervosa*, *Rhus succedanea*, and *Zanthoxylum avicennae*. The understory of these woodlands was dominated by shrub species such as *Ficus hirta*, *Psychotria asiatica*, *Litsea rotundifolia* var. *oblongifolia*, and the climbing shrubs *Desmos chinensis* and *Mussadena pubescens*. Common shrubland plant species such as *Rhaphiolepis indica*, *Smilax china*, *Melastoma malabathricum* and *Embelia laeta* were found in the forest margins or in canopy gaps. The woodland structure and the dominance of light demanding plant species suggest that these woodlands are relatively young and at the early stage of woodland succession.

2. WOODLAND COMPENSATION PLAN

2.1 EXTENT OF WOODLAND COMPENSATION AREA

2.1.1 The location of WCAs was chosen and agreed with relevant maintenance party:

- On the slope north of MacIntosh Fort and Sha Ling Road (Site 1)
- In the valley below MacIntosh Fort (Site 2)
- On the filled slope west of the platform (Site 3)
- Within Sandy Ridge Cemetery, north of SIMAR slope 3NW-C/C433 (Site 4)
- On the top of proposed cut slope south of Sha Ling Road (Site 7)
- On the south of proposed cut slope east of Sha Ling Road (Site 8)
- On the top of proposed cut slope east of Sha Ling Road (Site 9)

Affected woodland		Woodland Compensation	
	Approx. area (ha)		Approx. area (ha)
Identified in approved EIA		Site 1	1.01
Sandy Ridge and Man Kam To Road development and works areas	1.00	Site 2	0.27
Lin Ma Hang Road works area	0.20	Site 3	0.33
		Site 4	0.39
Additional area in revised project boundary		Site 5	(Deleted)
Sandy Ridge development and works areas	0.45	Site 6	(Deleted)
		Site 7	0.26
		Site 8	0.08
		Site 9	0.22
Total	1.65	Total	2.56
Compensation ratio: 1:1.55			

Table 2.1 Compensation ratio

2.1.2 In the selection of the WCA, the locations with low-valued vegetation and no rare flora species were identified. The sites are mostly natural slopes with no human

settlement/agricultural activities in the vicinity.

2.1.3 Site 5, located within Sandy Ridge Cemetery, north of SIMAR slope 3NW-C/C432, was removed as WCA as sign of soil erosion was observed and the stability of the concerned site is questionable. Site 6, located on the slope north of Lo Wu Station Road near Sandy Ridge and Cemetery, was also removed from Woodland Compensation Plan due to objection from responsible party (FEHD). The proposed compensation whips are distributed to Site 1, 2, 4, 7 and 9. Quantity of whips in Site 3, Site 8 and the total number of compensatory trees remains unchanged and details are provided in **Appendix D**.

2.1.4 Maintenance parties of WCAs are given in Table 2.2. For details and confirmation on the responsibility, please refer to **Appendix H**.

Woodland Compensation Area	To be maintained by
Site 1	FEHD
Site 2	FEHD
Site 3	ArchSD
Site 4	FEHD
Site 7	FEHD
Site 8	FEHD
Site 9	FEHD

Table 2.2 Maintenance agent of Woodland Compensation Area

2.1.5 The indicative location of the Woodland Compensation Area is shown in Landscape Drawing of Contract No. CV/2016/10 Site Formation and Associated Infrastructure Works for Development of Columbarium at Sandy Ridge Cemetery. Relevant drawings were extracted in **Appendix C**.

2.1.6 Site 1 is a natural slope located on the north of MacIntosh Fort and Sha Ling Road. The existing plantation composed mainly by *Lophostemon confertus* on the western and southwestern part of the site would be retained. Other part of the slope is currently upland grassland dominated by *Dicranopteris pedata*, *Baekkea frutescens*, *Rhodomyrtus tomentosa* and young *Lophostemon confertus*.

2.1.7 Site 2 is currently low-valued grassland dominated by *Panicum maximum*, which has developed through succession from abandoned former paddies and agricultural

land.

- 2.1.8 Site 3 is a naturally regenerated secondary woodlands which is retained and sheltered from storms and hill fire events due the protection afforded by natural topography. The woodland canopy dominants include *Bridelia tomentosa*, *Litsea glutinosa* and *Cratogeomys cochinchinense*. The understory was dominated by shrub species such as *Ficus hirta*, *Psychotria asiatica* and *Litsea rotundifolia* var. *oblongifolia*. The site would be a man-made filled slope on the southwest of the proposed platform after completion of relevant works.
- 2.1.9 Site 4 to site 9 are in general natural grassland within Sandy Ridge Cemetery. These areas are dominated by typical upland grassland species including herbaceous species such as *Dicranopteris pedata*, *Neyraudia reynaudiana*, the climbing vines *Smilax china*, *Smilax glabra*, and *Embelia laeta*, and shrub species such as *Rhodomyrtus tomentosa*, *Baeckea frutescens* and *Helicteres angustifolia*.
- 2.1.10 Actual quantity of whips to be planted in WCAs would be subject to actual site condition during planting stages including but not limited to slope gradient, soil condition and space available.

2.2 PLANTING SCHEME – DETAILS ON PLANT SPECIES SELECTION

- 2.2.1 The compensatory woodland planting shall be in woodland mixed shrubs, seeding, and whips. The principle of the location shall be the extension of the existing woodland, as well as the original lost woodland location. Please refer to **Appendix D** for the proposed planting species.
- 2.2.2 The proposed species are native species which are commonly found in natural woodland environment in Hong Kong. Species that are lost in the affected fragments of woodland and in the vicinity of the WCAs are also included.

2.3 ECOLOGICAL ENHANCEMENT

- 2.3.1 By replicating features on the nearby wet woodland, Site 2 would provide additional resources for species that occur locally in the wet woodland, including some species of conservation concern along with the suite of terrestrial mammal species that occur locally.
- 2.3.2 Prior to planting, the local topography should be mechanically manipulated to

reflect that of the wet woodland, such as a series of pools and interconnecting ditches to form a range of ephemeral and permeant wetland features, interspersed with woody shrubs and trees to create a closed canopy woodland. Planting of native species found in the vicinity is considered to be beneficial to create an ecological linkage with the existing wet woodland and marsh mosaic habitat in this area

2.4 PLANTING SCHEME – SCHEDULE

2.4.1 Considering the survival rates of the planted tree whips could be higher if the planting is to be conducted in early wet season, the initial planting phase is recommended to be conducted in the second quarter of Year 1 (tentatively 2020). Planting of shrubs/whips should be supervised by a qualified botanist/ horticulturist/ Certified Arborist with relevant experience in reforestation.

2.4.2 As discussed in approved EIA report, woodland planting shall be scheduled to be undertaken in two Phases, each with a time frame of approximately 3 months. For Phase 1, species that are more tolerant of exposed areas and the consequent effect of sunlight, wind and drying out of soils shall be planted. Pioneer species are selected to be planted in Planting Phase 1 in order to improve the existing microclimate condition at the beginning for Phase 2 planting. The proposed schedule for planting is shown in **Appendix G**.

Scientific Name	Chinese Name	Standard (mm)	Spacing (mm)	Quantity
<i>Phyllanthus emblica</i>	油甘子	Whips	1500	As stated in Appendix D
<i>Schima superba</i>	木荷	Whips	1500	
<i>Litsea rotundifolia</i> var. <i>oblongifolia</i>	豺皮樟	300 x 300	400	
<i>Melastoma sanguineum</i>	毛蕊	350 x 350	350	
<i>Melastoma malabathricum</i>	野牡丹	350 x 350	350	
<i>Psychotria asiatica</i>	九節	350 x 350	400	
<i>Raphiolepis indica</i>	石斑木	300 x 300	400	
<i>Ligustrum sinense</i>	山指甲	350 x 350	350	
<i>Ardisia crenata</i>	朱砂根	300 x 300	350	

Table 2.3 Proposed species in Planting Phase 1

2.4.3 For Phase 2, as a more favorable soil condition is created by the ground cover planted in Phase 1, tree species in form of whips should be planted according to the

methodology stated in **Appendix E**.

Scientific Name	Chinese Name	Standard (mm)	Spacing (mm)	Quantity
<i>Cratogeomys cochinchinense</i>	黃牛木	Whips	1500	As stated in Appendix D
<i>Daphniphyllum calycinum</i>	半耳楓	Whips	1500	
<i>Machilus pauhoi</i>	刨花潤楠	Whips	1500	
<i>Cleistocalyx nervosum</i>	水翁	Whips	1500	
<i>Bridelia tomentosa</i>	土蜜樹	Whips	1500	
<i>Bischofia javanica</i>	秋楓	Whips	1500	
<i>Celtis sinensis</i>	朴樹	Whips	1500	
<i>Glochidion zeylanicum</i>	香港算盤子	Whips	1500	
<i>Glochidion hirsutum</i>	厚葉算盤子	Whips	1500	
<i>Cinnamomum camphora</i>	樟	Whips	1500	
<i>Liquidambar formosana</i>	楓香	Whips	1500	
<i>Machilus chekiangensis</i>	浙江潤楠	Whips	1500	

Table 2.4 Proposed species in Planting Phase 2

2.4.4 Thinning of exotic species should be carried out where appropriate in order to provide space for the native species for further growth in advance or during the planting phases.

2.5 FIRE CONTROL

2.5.1 To reduce the potential for hill fires, appropriate measures should be adopted keep sources of fire (over heated machinery, hot works, smoking areas) away from areas of upland grassland. These are as follows:

- Put up signs to alert site staff about any locations which are ecologically sensitive and measures to prevent accidental impacts;
- Erection of temporary geotextile silt or sediment fences/oil traps around any earth-moving works to trap any sediments and prevent them from entering watercourses;
- Prohibition of soil storage against trees or close to waterbodies;
- Delineation of works site to prevent encroachment onto adjacent habitats and fence off areas which have some ecological value;
- No smoking, hot works or sources of fire close to upland grassland;
- No on-site burning of waste; and

- Waste and refuse in appropriate receptacles.

2.5.2 Fire protection zone will be proposed along the edge of compensatory woodland which is adjacent to human activities and existing villages. Native species *Schima superba* (木荷) will be planted in this buffer zone as a shelterbelt and therefore serve as a firebreak. Proposed location of the fire protection zone is given in **Appendix F**.

3. POST-PLANTING MONITORING

3.1 MONITORING PROGRAMME

- 3.1.1 A 5-year monitoring and maintenance period of the enhancement planting is proposed (please refer to **Appendix G**). During the monitoring and maintenance period, the progress and success of the establishment of the woodland compensation area and the growth performance should be reviewed. Should the establishment of the enhancement woodland area by end of Year 5 is less satisfactory (including but not limited to poor survival rates (< 70%) of the overall number of the planted seedlings and poor site condition), the duration of the monitoring and maintenance (throughout the construction phase) would be adjusted subject to the situation and advice provided by the qualified ecologist/ botanist of the Environmental Team
- 3.1.2 A baseline quantitative monitoring and a walk-through survey should be carried out after the completion of the planting. The baseline monitoring conducted in the third quarter of the year of planting (preferably late August/early September) can allow measurement of the growth/establishment increment during the wet season.
- 3.1.3 Bi-annual (twice per year) quantitative monitoring will be carried out in the followed Years 2 to 5. In addition, walk-through survey will be conducted on a bi-monthly basis (once every two months) in the year of planting, while reduced to quarterly in the following year. The walk-through survey should be undertaken in order to inform any adaptive or proactive management measurement, such as the need to clear invasive vegetation.
- 3.1.4 Monitoring of the woodland planting should be undertaken by means of a walk-through survey (by a qualified ecologist/botanist) covering all representative areas of the planting area, and quantitative survey on a fixed number of 10m x 10m quadrats in the area. During the walk-through survey, the surveyor should inspect the general health condition and survival of the planted species by direct observation. For quantitative monitoring, the surveyor should measure growth parameter (height and basal diameter), health condition, and survival rate of each planted individual within each surveyed quadrat. The monitoring of the woodland planting shall be conducted by the Environmental Team (ET) and supervised by a qualified botanist/ horticulturist/ ecologist of the ET.

3.1.5 In addition to the monitoring of the survival and health condition of trees and shrubs, other factors which aid in provision of verifiable measurements of the success of establishment, including canopy cover, rate of growth and any natural recruitment should be monitored along the transects. The surveyor should also check other factors that may be influencing establishment, such as aggressive grasses or forbs, or human interference.

3.2 ACTION PLAN

3.2.1 The Trigger and Action Levels for monitoring and Action Plan of the Woodland Compensation Area is shown in Table 3.1.

Parameters	Trigger and Action Level		Action Plan
General health condition of plants	Trigger Level	Percentage of individual plant species in poor health condition >20%	<ul style="list-style-type: none"> - ET notify Contractor and IEC - Identify the cause(s) of deterioration in plant health - advise Contractor the necessity of replanting
	Action Level	Percentage of individual plant species in poor health condition >30%	<ul style="list-style-type: none"> - ET notify Contractor and IEC - Identify the cause(s) of deterioration in plant health - advise remedial action and work out solution including but not limited to change of species in replanting; and seek acceptance from AFCD - The Contractor should implement the remedial action once the remedial action has been accepted by AFCD
Survival of plants	Trigger Level	Survival rate of individual plant species <80%	<ul style="list-style-type: none"> - ET notify Contractor and IEC - Identify the cause(s) of decrease in survival rate - advise Contractor the necessity of replanting
	Action Level	Survival rate of individual plant	<ul style="list-style-type: none"> - ET notify Contractor and IEC - Identify the cause(s) of

		species <70%	<p>deterioration in plant health</p> <ul style="list-style-type: none"> - advise remedial action and work out solution including but not limited to change of species in replanting; and seek acceptance from AFCD - The Contractor should implement the remedial action once the remedial action has been accepted by AFCD
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Table 3.1 Trigger and Action Levels for monitoring and Action Plan of the Woodland Compensation Area

3.3 REPORTING

3.3.1 The monitoring findings, site observations and recommendations should be reported in periodic monitoring reports prepared by a qualified ecologist. Relevant government department(s) should be included in the circulation list of the monitoring reports.

3.3.2 The monitoring should include at least but not be limited to the following information:

- Project background
- Action and Limit levels
- Monitoring results
 - monitoring locations
 - monitoring date, time, frequency, and duration
 - parameters monitored
 - monitoring methodology
- Analysis and interpretation of monitoring results
- Any non-compliance (exceedances) of the environmental quality performance limits
- Actions taken in the event of non-compliance and deficiency, and follow-up actions related to earlier non-compliance

3.3.3 Each monitoring report shall be submitted to the following parties: the Contractor, the Independent Environmental Checker (IEC), the Engineer Representative (ER), Civil Engineering and Development Department (CEDD), Environmental

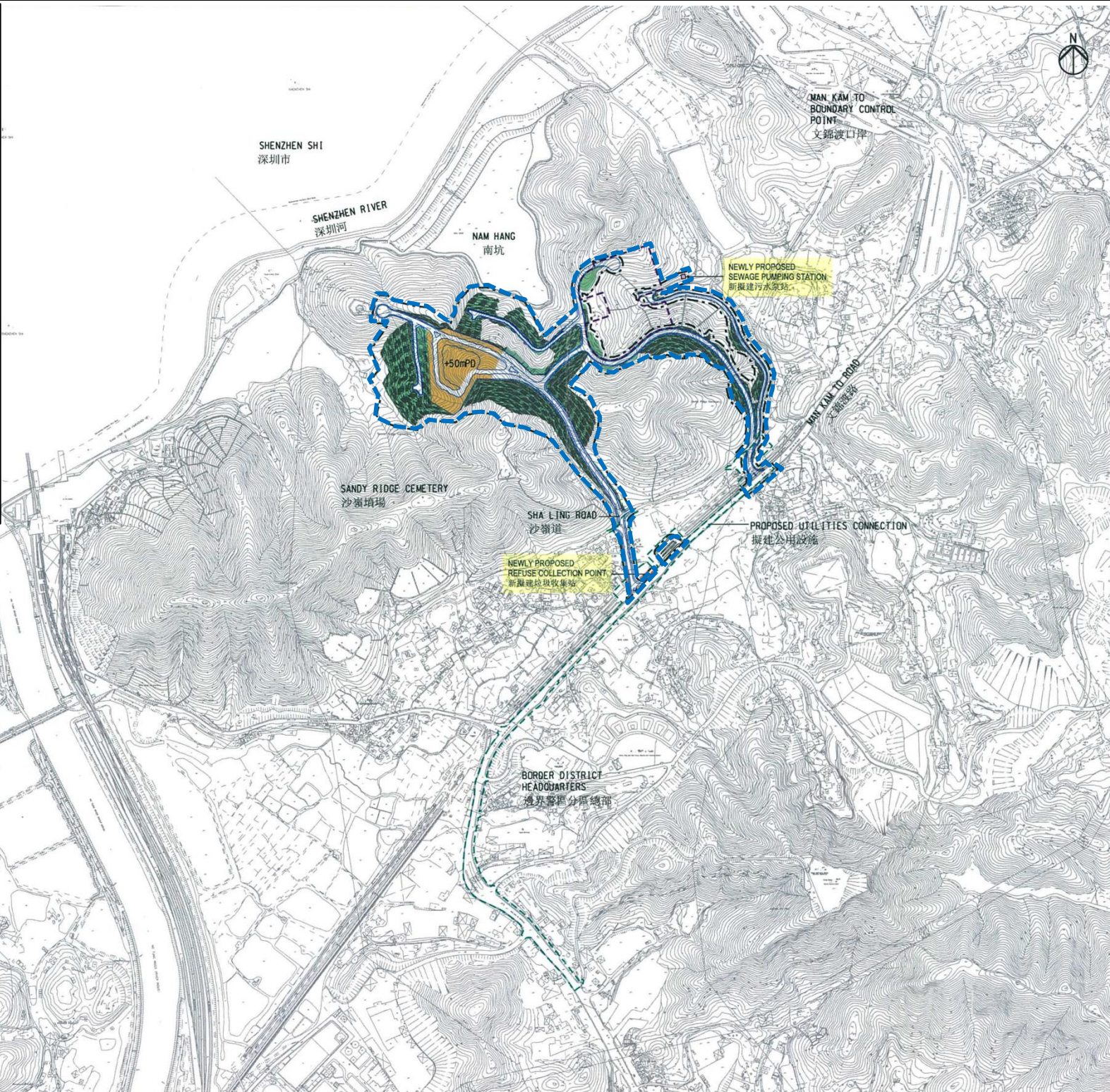
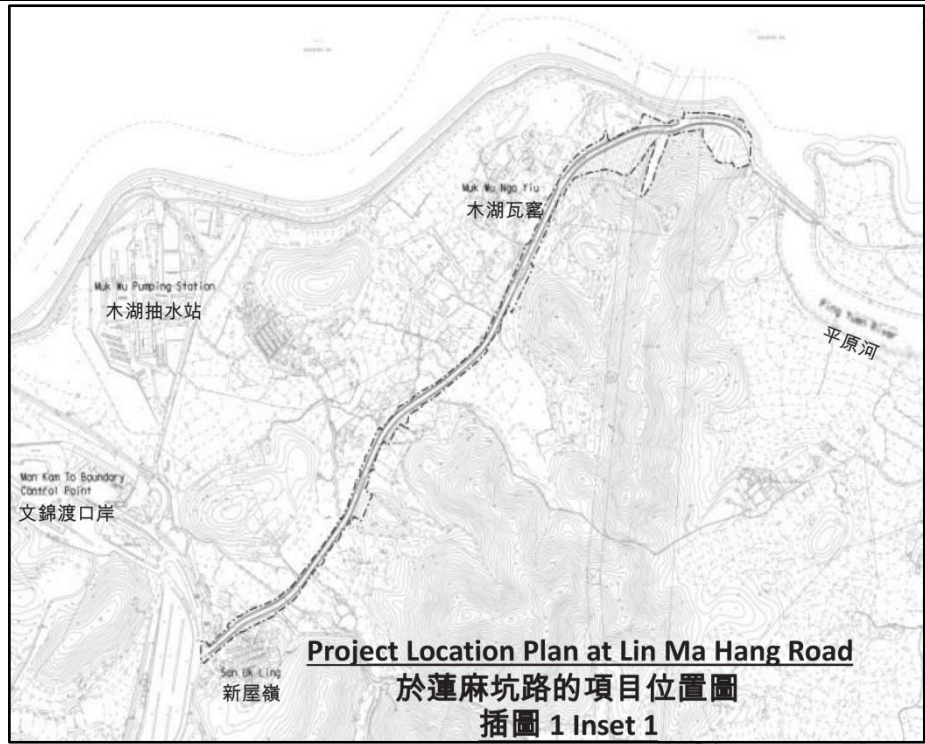
Protection Department (EPD) and Agriculture, Fisheries and Conservation Department (AFCD). Before the submission of the monitoring report, the ET shall liaise with the parties on the required number of copies and format of the monitoring reports in both hard copy and electronic medium.

4. CONCLUSION

- 4.1 Fragments of woodland habitats with moderate ecological value would be inevitably affected by the Project. The Woodland Compensation Plan provides a comprehensive guide on implementation, establishment, monitoring and maintenance of the proposed woodland mitigation. The compensatory woodland planting shall be in woodland mixed shrubs, seeding, and whips. Species proposed for woodland planting are pioneer native tree and shrub species often present in natural woodlands in Hong Kong. The planting works would be carried out in two phases, followed by a 5-year monitoring programme. The necessity for further monitoring shall be reviewed after the 5-year post-planting monitoring programme.

APPENDIX A

Project Boundary



- LEGEND
圖例
- PROJECT BOUNDARY
項目範圍
 - UTILITIES CONSTRUCTION
興建公用設施
 - PROPOSED ACCESS ROAD / EVA
擬建場內通道 / 緊急車輛通道
 - PROPOSED PLATFORMS FOR COLUMBARIUM
擬建土地平整工程用以興建沙嶺墳場骨灰龕
 - PROPOSED CUT / FILL SLOPE
斜坡工程
 - PROPOSED SEWAGE PUMPING STATION
擬建污水泵站
 - PROPOSED REFUSE COLLECTION POINT
擬建垃圾收集站
 - PROJECT BOUNDARY FOR CREMATORIUM AND RELATED FACILITIES (BY OTHERS)
項目範圍用以興建沙嶺墳場火葬場及有關設施(由其他倡議人負責)
 - BARGING POINT AREA
轉運站範圍
 - PROPOSED PICK-UP AND DROP-OFF POINT
擬建上客、落客範圍

Project Title: Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery
工程名稱：沙嶺墳場興建骨灰龕、火葬場及有關設施的工地平整及相關基建工程

Figure 1: Project Location Plan

圖 1：項目位置圖

(This figure was prepared based on Figure 1 attached to the VEP Application No. VEP-554/2018 and Figures 1.2 and 1.3 of the Approved EIA Report No. AEIAR-198/2016))

(本圖是根據更改環境許可証申請文件編號 VEP-554/2018 所隨附的圖 1 和環境影響評估報告編號 AEIAR-198/2016 圖 1.2 及 1.3 編制)

Environmental Permit No.: EP-534/2017/A
環境許可證編號：EP-534/2017/A



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843500 N

843000 N



Approximate Northern River Bank

SHAM CHUN RIVER (SHENZHEN HE)

NAM HANG

Yuen Leng Chi

Sandy Ridge Cemetery

Sandy Ridge Cemetery

SHAM RIVER

SANDY RIDGE

SHA LING

LEGEND:

- CONTRACT 1 SITE BOUNDARY
- CONTRACT 2 SITE BOUNDARY
- CONTRACT 3 SITE BOUNDARY

Rev	Description	By	Date
Consultant			
ARUP			
Contract No. and Title:			
Contract No. CV/2017/02			
Development of Columbarium at Sandy Ridge Cemetery - Infrastructural Works at Man Kam To Road and Lin Ma Hang Road			
Drawing title			
Drawing no. 231448/SK/366			
Drawn XXX	Date 06/18	Checked AW	Approved DL
Scale 1:2000 @A1	Status PRELIMINARY		

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Civil Engineering and
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APPENDIX B

Habitat Map at Sandy Ridge

Indicative location of woodland area within project boundary



Legend

- Project Boundary
- Utilities Construction
- Sandy Ridge Works Area
- Lin Ma Hang Road Works Area
- 500m Assessment Area
- Watercourse
- Seasonal Watercourse
- Pond
- Developed Area
- Agricultural Land
- Marsh
- Wasteland
- Grassland
- Upland Grassland
- Shrubland
- Plantation
- Woodland
- Wet Woodland
- Village Area
- Revised project boundary

G	SEVENTH ISSUE	GL	02/16
F	SIXTH ISSUE	GL	01/16
E	FIFTH ISSUE	GL	12/15
D	FOURTH ISSUE	GL	10/15
Rev	Description	By	Date

Consultant

ARUP

Contract No. and Title:

Agreement No. CE 1/2013(CE)

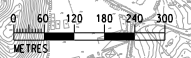
Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery - Design and Construction

Drawing title

Habitat Map at Sandy Ridge

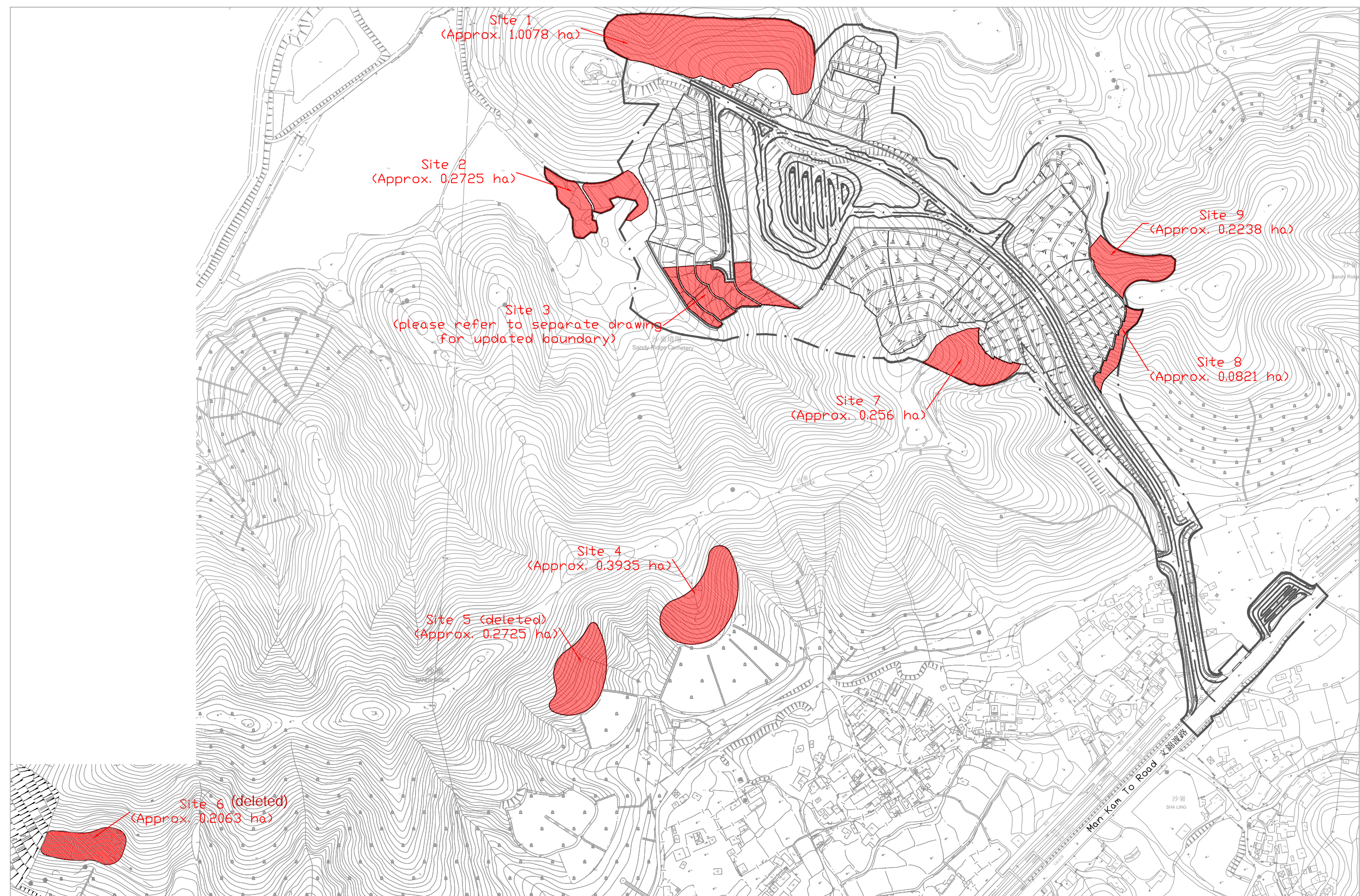
Drawing no.		Figure 9.4b		Rev.	G
Drawn	Date	Checked	Approved		
GL	02/16	EL	ST		
Scale	AS SHOWN		Status	PRELIMINARY	

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APPENDIX C

Location of Woodland Compensation Area



Layout Plan for Woodland
Compensation Area

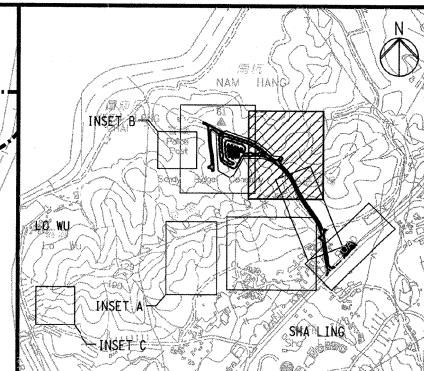
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Site 7
(Approx. 0.256 ha)

Site 8
(Approx. 0.0821 ha)

Site 9
(Approx. 0.2238 ha)

MATCH LINE
FOR CONTINUATION
SEE DRG 231448/C1/LS/1021



KEY PLAN

NOTES:

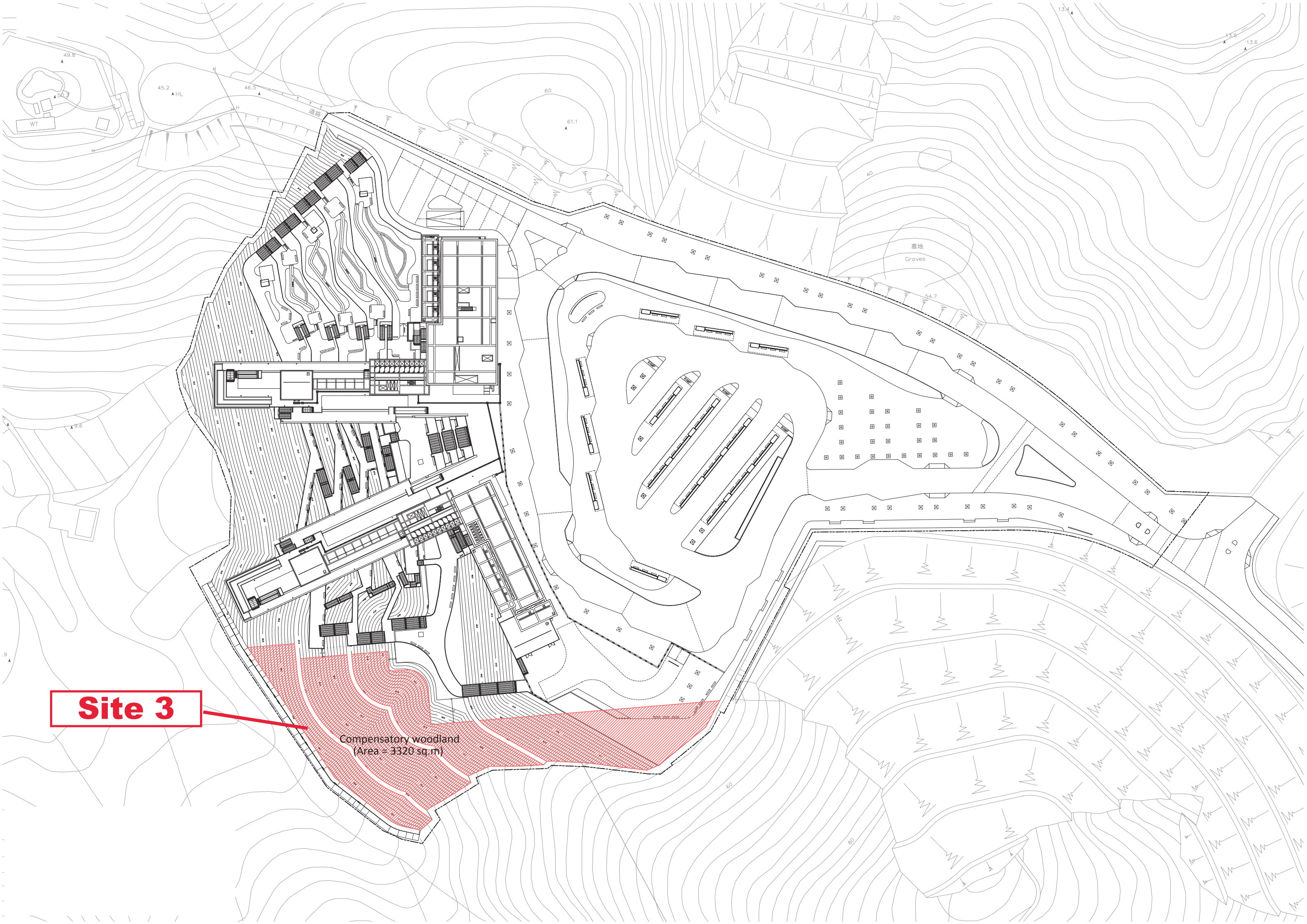
1. FOR NOTES AND LENGED REFER TO DRAWING NO. 231448/C1/LS/1021.

Rev	Description	By	Date
Consultant			
ARUP			
Contract No. and Title: Contract No. CV/2016/10 Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery			
Drawing title TREE PLANTING AND IRRIGATION PLAN (SHEET 2 OF 5)			
Drawing no. 231448/C1/LS/1022	Rev. -		
Drawn MM	Date 12/16	Checked AW	Approved DL
Scale 1:500 @A1	Status CONTRACT		

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Development Department



Site 3

Compensatory woodland
(Area = 3320 sq.m)

APPENDIX D

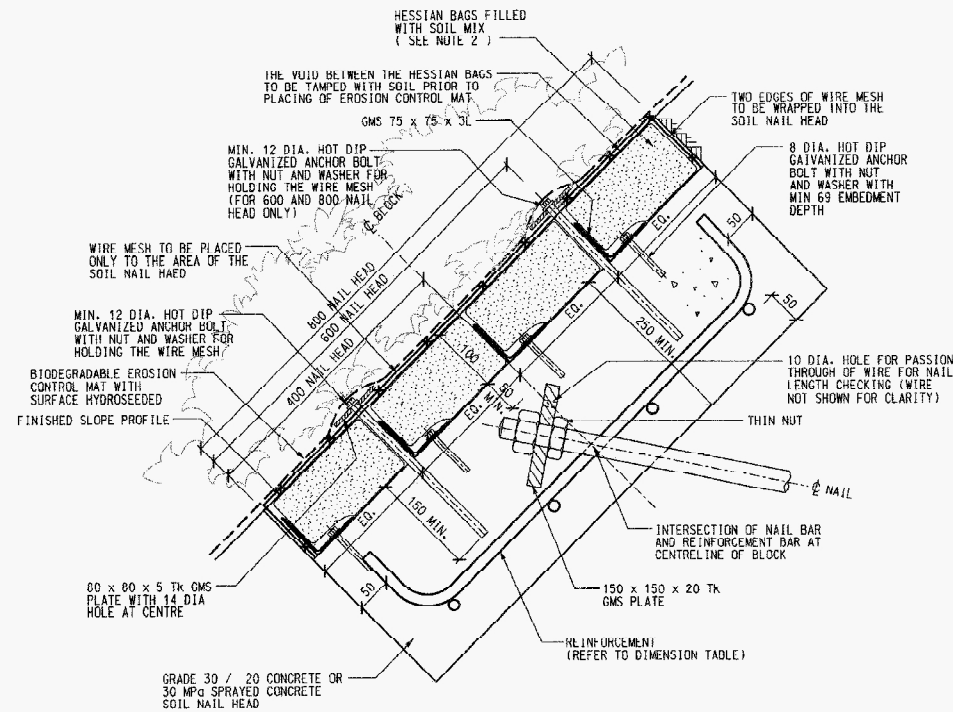
Proposed Planting Species

WCA	Area (hectare)	Tree					Ground cover/Shrubs						
		Species		Standard	Spacing (mm)	Quantity	Total	Species		Standard	Spacing (mm)	Quantity	Total
Site 1	1.0078	<i>Cratoxylum cochinchinense</i>	黃牛木	Whips	1500	700	3000						
		<i>Machilus pauhoi</i>	刨花潤楠	Whips	1500	700							
		<i>Bridelia tomentosa</i>	土蜜樹	Whips	1500	200							
		<i>Schima superba</i>	木荷	Whips	1500	700							
		<i>Phyllanthus emblica</i>	油甘子	Whips	1500	700							
Site 2	0.2725	<i>Cleistocalyx nervosum</i>	水翁	Whips	1500	250	975	<i>Melastoma malabathricum</i>	野牡丹	350 x 350	350	3000	6000
		<i>Bridelia tomentosa</i>	土蜜樹	Whips	1500	125		<i>Psychotria asiatica</i>	九節	350 x 350	400	3000	
		<i>Cratoxylum cochinchinense</i>	黃牛木	Whips	1500	200							
		<i>Glochidion zeylanicum</i>	香港算盤子	Whips	1500	100							
		<i>Glochidion hirsutum</i>	厚葉算盤子	Whips	1500	100							
		<i>Daphniphyllum calycinum</i>	牛耳楓	Whips	1500	200							
Site 3	0.3320	<i>Bridelia tomentosa</i>	土蜜樹	Whips	1500	400	1200	<i>Rhaphiolepis indica</i>	石斑木	300 x 300	400	2000	6000
		<i>Cratoxylum cochinchinense</i>	黃牛木	Whips	1500	400		<i>Melastoma malabathricum</i>	野牡丹	350 x 350	350	2000	
		<i>Machilus pauhoi</i>	刨花潤楠	Whips	1500	400		<i>Ardisia crenata</i>	朱砂根	300 x 300	350	2000	
Site 4	0.3935	<i>Celtis sinensis</i>	朴樹	Whips	1500	425	2100	<i>Melastoma sanguineum</i>	毛茛	350 x 350	350	700	2100
		<i>Machilus chekiangensis</i>	浙江潤楠	Whips	1500	425		<i>Litsea rotundifolia</i> var. <i>oblongifolia</i>	豺皮樟	300 x 300	400	700	
		<i>Cratoxylum cochinchinense</i>	黃牛木	Whips	1500	200		<i>Ligustrum sinense</i>	山指甲	350 x 350	350	700	
		<i>Machilus pauhoi</i>	刨花潤楠	Whips	1500	200							
		<i>Daphniphyllum calycinum</i>	牛耳楓	Whips	1500	425							
		<i>Bischofia javanica</i>	秋楓	Whips	1500	425							
Site 5		Deleted from compensation plan											
Site 6		Deleted from compensation plan											
Site 7	0.2560	<i>Cratoxylum cochinchinense</i>	黃牛木	Whips	1500	486	1333	<i>Melastoma sanguineum</i>	毛茛	350 x 350	350	1000	2000
		<i>Bridelia tomentosa</i>	土蜜樹	Whips	1500	200		<i>Litsea rotundifolia</i> var. <i>oblongifolia</i>	豺皮樟	300 x 300	400	1000	
		<i>Daphniphyllum calycinum</i>	牛耳楓	Whips	1500	161							
		<i>Phyllanthus emblica</i>	油甘子	Whips	1500	486							
Site 8	0.0821	<i>Bischofia javanica</i>	秋楓	Whips	1500	161	483	<i>Melastoma malabathricum</i>	野牡丹	350 x 350	350	500	500
		<i>Cinnamomum camphora</i>	樟	Whips	1500	161							
		<i>Machilus pauhoi</i>	刨花潤楠	Whips	1500	161							
Site 9	0.2238	<i>Bischofia javanica</i>	秋楓	Whips	1500	161	808	<i>Melastoma sanguineum</i>	毛茛	350 x 350	350	2500	4500
		<i>Cinnamomum camphora</i>	樟	Whips	1500	161		<i>Litsea rotundifolia</i> var. <i>oblongifolia</i>	豺皮樟	300 x 300	400	2000	
		<i>Liquidambar formosana</i>	楓香	Whips	1500	161							
		<i>Machilus pauhoi</i>	刨花潤楠	Whips	1500	325							
						9899							21100

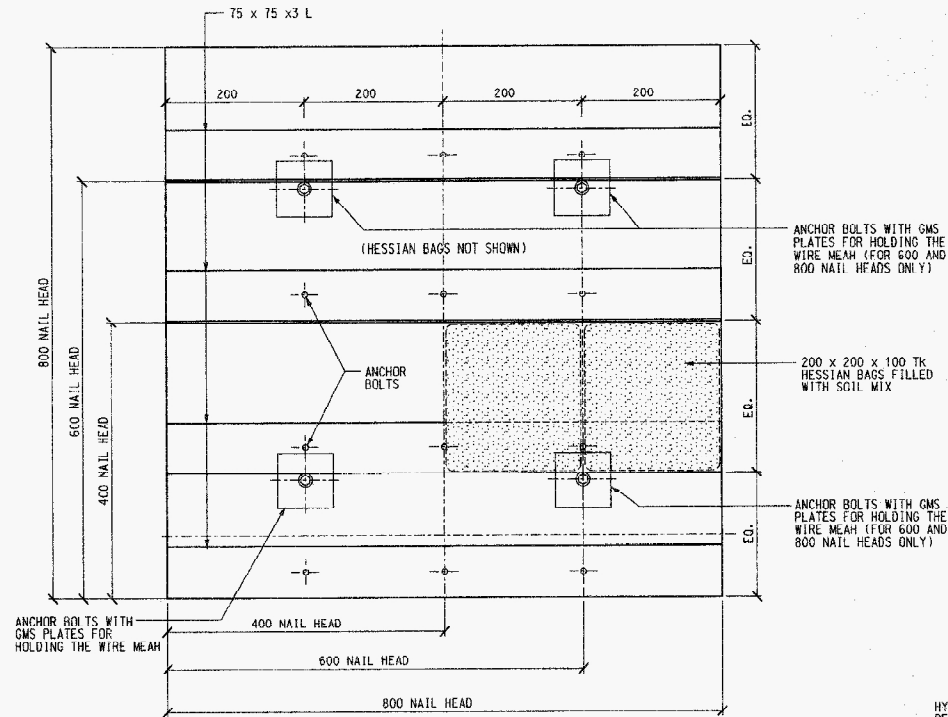
APPENDIX E

Slope Planting Details

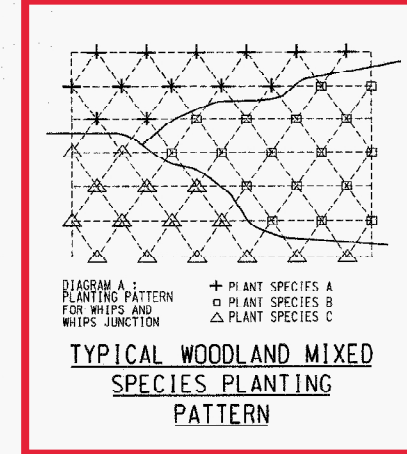
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TYPICAL SECTION OF PLANTING ON ROCK SLOPE
(CASE 1)



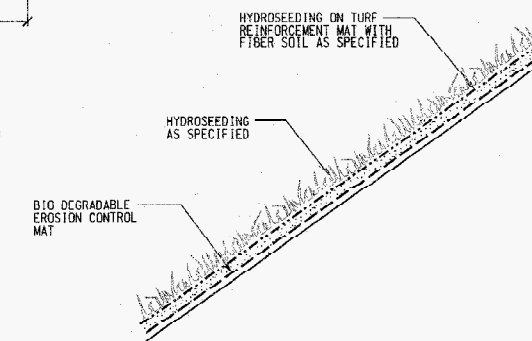
TYPICAL PLAN OF PLANTING ON ROCK SLOPE
(CASE 1)



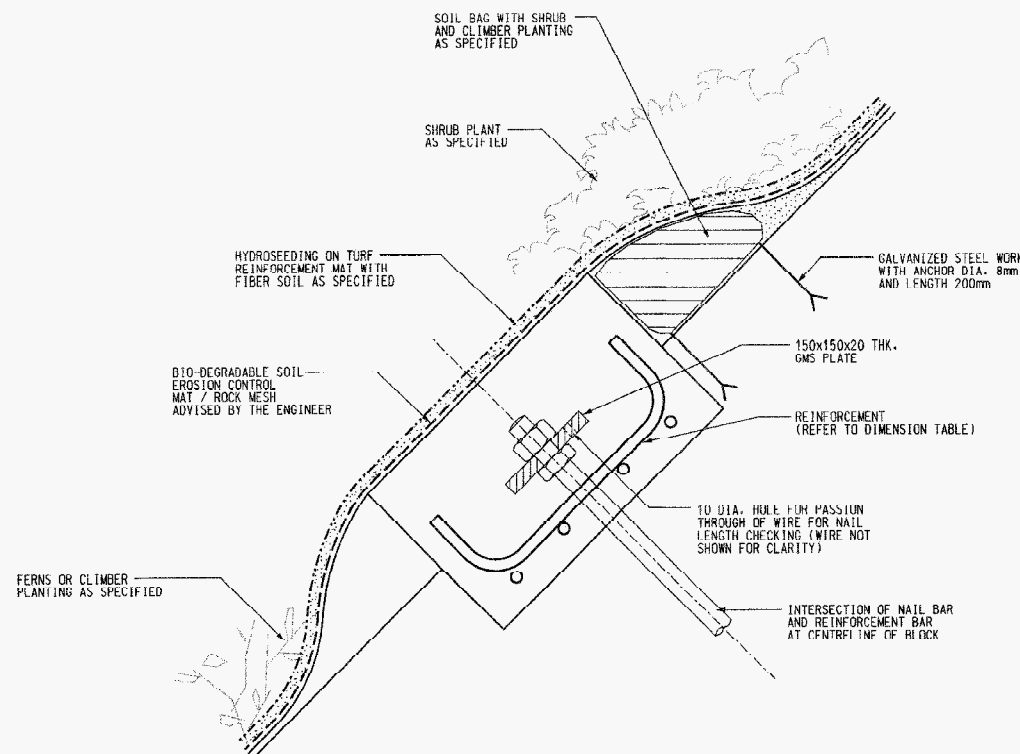
TYPICAL WOODLAND MIXED
SPECIES PLANTING
PATTERN

NOTE:

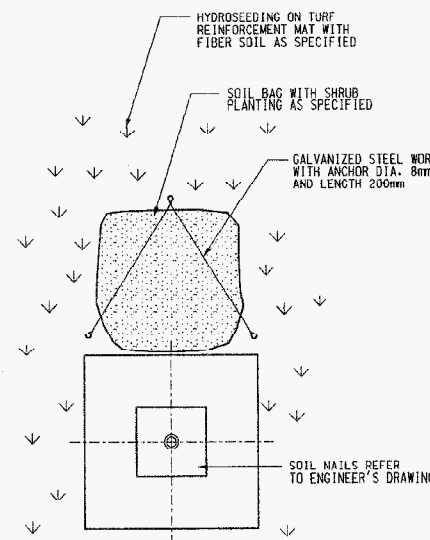
- ALL DIMENSIONS ARE IN MILLIMETER.
- FOR EVERY 200x200x100 THK BAG OF SOIL MIX, INCORPORATE 50g OF PRE-PLANTING FERTILIZER AND 10g OF WATER RETAINING CRYSTALS.
- B DENOTES GRADE 500B RIBBED REINFORCEMENT.
- WIRE MESH SHALL BE 80x60x2.2 DIA. PVC COATED GALVANIZED STEEL WIRE WOVEN INTO A DOUBLE TWIST HEXAGONAL MESH OR EQUIVALENT. COLOUR OF PVC COATING SHALL BE DARK GREEN OR AS SPECIFIED.
- FOR SOIL NAIL HEADS CONSTRUCTED BY 2 STAGE SPRAYED CONCRETE ACCORDING TO GENERAL SPECIFICATION FOR CIVIL ENGINEERING WORKS, THE THIN NUT SHALL BE OMITTED.
- SOIL NAIL DETAILS SHALL REFER TO CEDD STANDARD DRAWINGS.



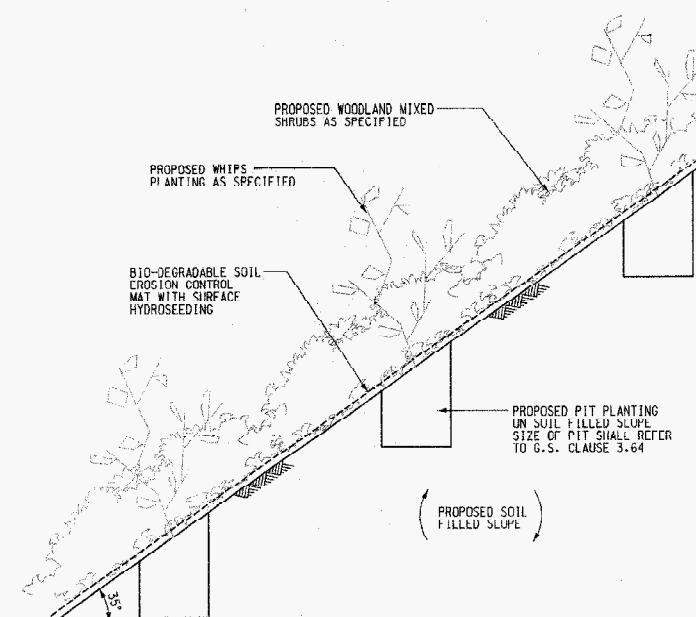
TYPICAL SECTION OF PLANTING
ON ROCK SLOPE (CASE 3)



TYPICAL SECTION OF PLANTING ON ROCK SLOPE
(CASE 2)



TYPICAL PLAN OF PLANTING ON ROCK SLOPE
(CASE 2)

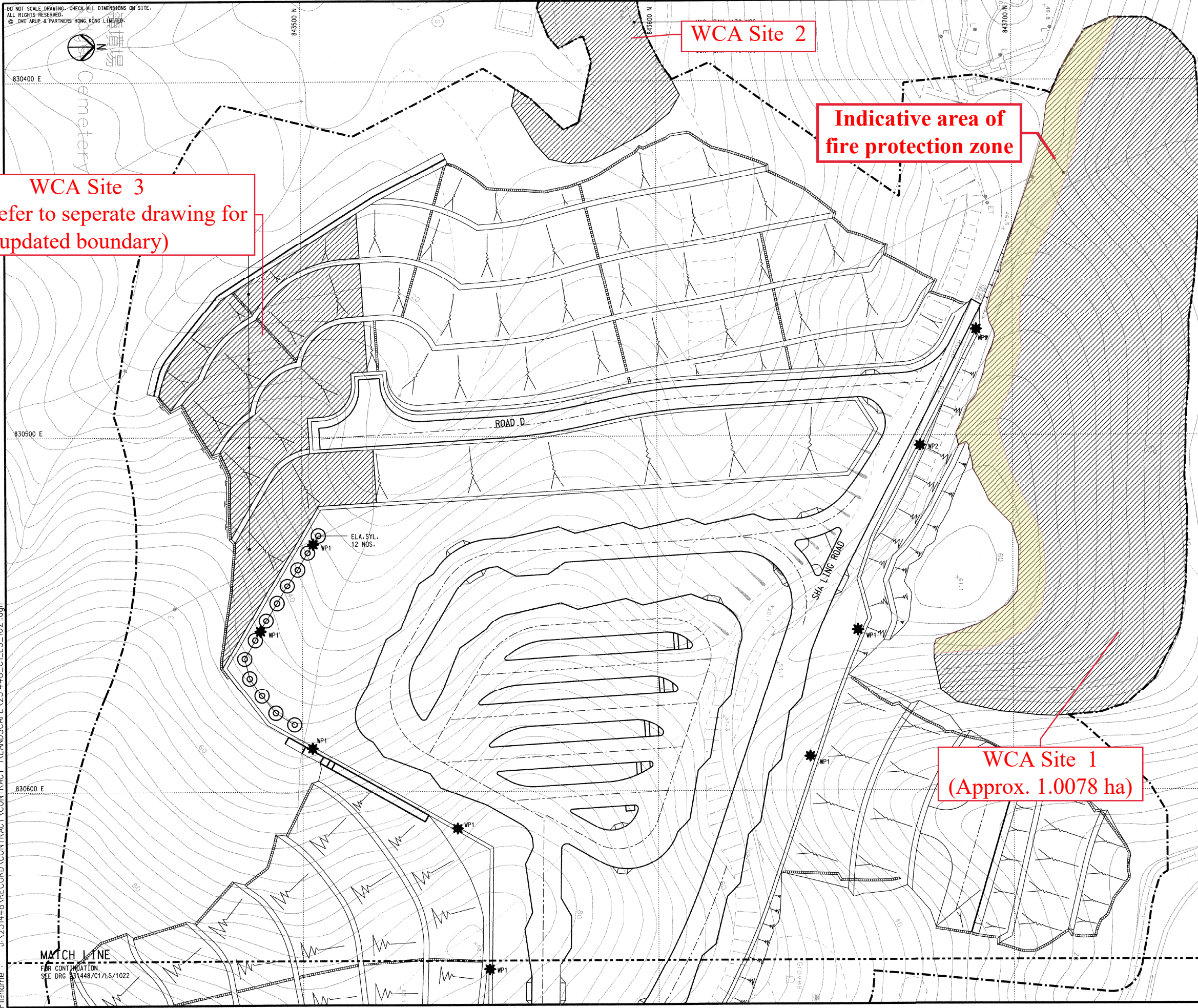


TYPICAL WHIPS PLANTING
ON SOIL FILLED SLOPE

Rev	Description	By	Date
Consultant			
ARUP			
Contract No. and Title:			
Contract No. CV/2016/10			
Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery			
Drawing title			
SLOPE PLANTING DETAILS			
Drawing no.			
231448/C1/LS/1072			
Drawn	Date	Checked	Approved
WM	12/16	AW	DL
Scale	N.T.S.	Status	CONTRACT
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APPENDIX F

Location of Fire Protection Zone

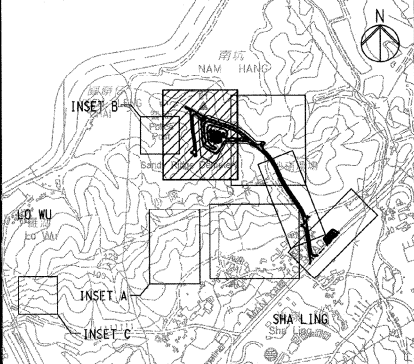


WCA Site 3
(please refer to separate drawing for updated boundary)

WCA Site 2

Indicative area of fire protection zone

WCA Site 1
(Approx. 1.0078 ha)



KEY PLAN

- NOTES:
1. ALL DIMENSIONS ARE IN METERS, UNLESS NOTES OTHERWISE.
 2. ALL LEVEL ARE IN METERS AND REFER TO PRINCIPAL DATUM.
 3. ALL CO-ORDINATES ARE IN ACCORDANCE WITH HK(1980) GRID CO-ORDINATE SYSTEM.
 4. FOR ROAD SETTING OUT DETAILS REFER TO DRAWING NO. 231448/C1/RD/1021 - 1023.
 5. FOR ROAD VERTICAL PROFILE REFER TO DRAWING NO. 231448/C1/RD/1031 - 1033.
 6. FOR KERB AND PAVING LAYOUT REFER TO DRAWING NO. 231448/C1/RD/1051 - 1053.

- LEGEND:
- PROPOSED WORK SITE
 - PROPOSED CUT SLOPE
 - PROPOSED FILLED SLOPE
 - PROPOSED WOODLAND PLANTING WITH WHIPS AND SHRUBS
 - PROPOSED HEAVY STANDARD TREE
 - PROPOSED LIGHT STANDARD TREE
 - PROPOSED IRRIGATION POINT
 - PROPOSED NEW HYDRO SIMAR SLOPE
 - RECEPTOR SITE FOR TRANSPLANTED TREES MAINTAINED BY FEED

Rev	Description	By	Date

Consultant

ARUP

Contract No. and Title:
Contract No. CV/2016/10

Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery

Drawing title
TREE PLANTING AND IRRIGATION PLAN (SHEET 1 OF 5)

Drawing no. 231448/C1/LS/1021 Rev. -

Drawn	Date	Checked	Approved
WM	12/16	AW	DL

Scale 1:500 @A1

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APPENDIX G

Monitoring Programme of Vegetation Establishment

for Woodland Compensation Area

Woodland planting task/Monitoring		Year 1				Year 2				Year 3				Year 4				Year 5			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Planting work#	Phase 1		*																		
	Phase 2						*														
Baseline quantitative monitoring	Phase 1			*																	
	Phase 2							*													
Quantitative monitoring						*		*		*		*		*		*		*		*	
Walk-through monitoring			Bi-monthly basis since the completion of planting works							Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q

Note:

- thinning of exotic species should be carried out where appropriate to provide space for native species for further growth in advance or during the planting phases

* - the planting work or monitoring will be conducted once in the selected quarter

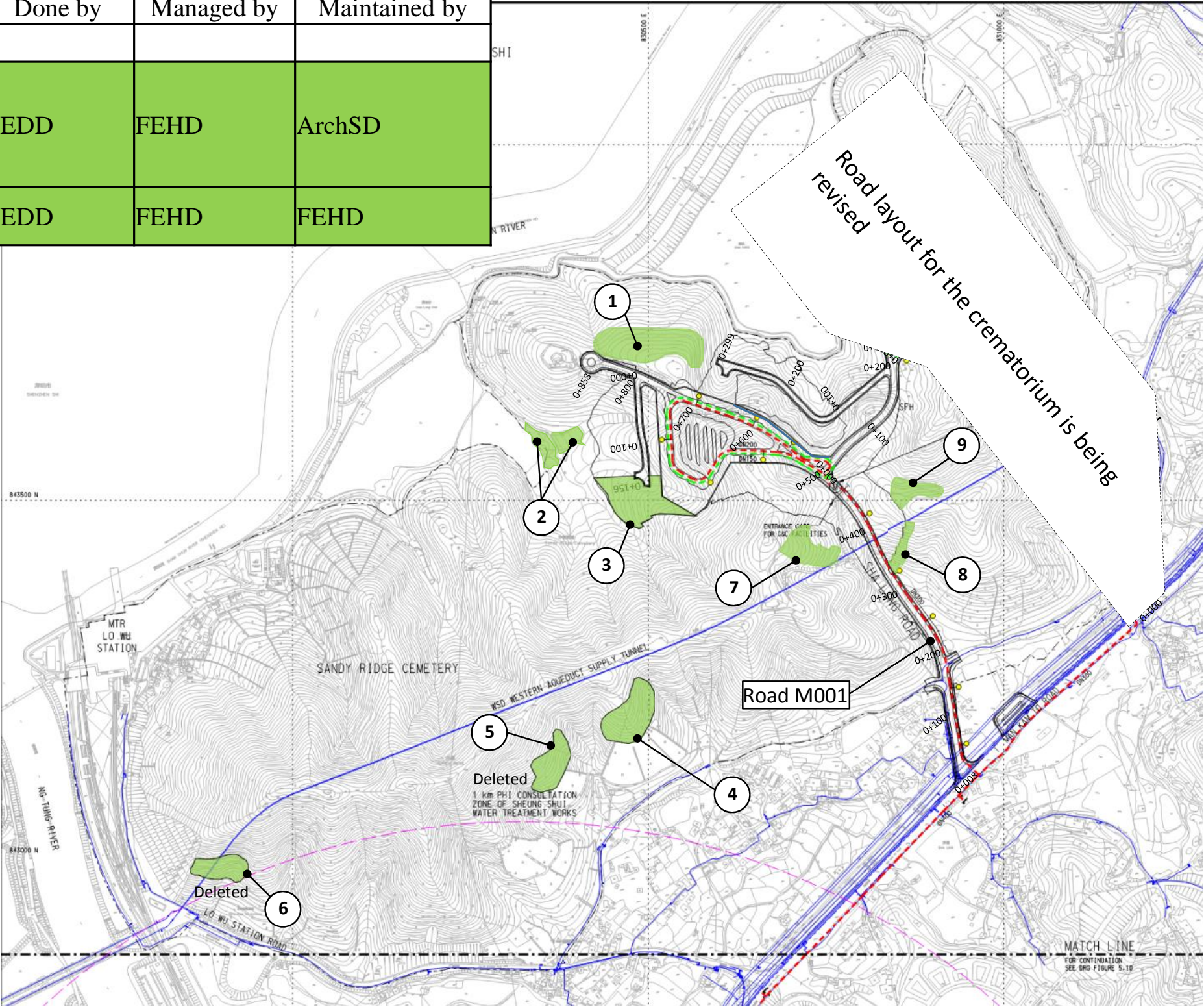
Q - the monitoring will be conducted on a quarterly basis in the selected quarter

APPENDIX H

Maintenance agents of Woodland Compensation

Areas

Item		Works to be Done by	To be Managed by	To be Maintained by
Site	Vegetation			
3	Whip, shrubs, trees and Hydroseeding / Hydromulching on SIMAR slopes along Sha Ling Road, Road M001 [#] (upper part - within Sandy Ridge Cemetery) and the internal roads within Sandy Ridge Cemetery	CEDD	FEHD	ArchSD
1,2,4,7,8,9	Other new whips and trees within Sandy Ridge Cemetery	CEDD	FEHD	FEHD



Proposed Vegetation Layout inside/outside Sandy Ridge Cemetery

Diagram 10

APPENDIX I

Environmental Permit requirement

Contract No. CV/2016/10
**Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and
Related Facilities at Sandy Ridge Cemetery**

Checklist for specific requirement under
Further Environment Permit (FEP) No. FEP-01/534/2017/A
Condition 2.17

Requirement in EP condition	Included in Woodland Compensatory Plan	Relevant Chapter/Appendix
Identify and quantify the area of loss of woodland with moderate or high ecological value	✓	Section 1.3, Appendix B
Provide at least 1:1 compensatory woodland planting	✓	Section 2.1
Details on plant species selection	✓	Section 2.2, Appendix D
Planting scheme and schedule	✓	Section 2.2, Section 2.4, Appendix E, Appendix G
Fire control	✓	Section 2.5, Appendix F
Post-planting monitoring and maintenance	✓	Section 3.1, Appendix G
Setting of action targets	✓	Section 3.2

APPENDIX J

Summary of Implementation Schedule

Woodland Compensation Area	Location	Coordinates	Size (hectare)	Planting				Remarks	Duration	Monitoring				Maintenance parties/agents								
				Phase 1		Phase 2				Quantitative monitoring		Walk-through survey			Parameter							
				Commencement and completion	Species	Commencement and completion	Species			Interval	Conducted by	Interval	Conducted by		General health condition of plants		Survival of plants					
															Trigger Level	Action Plan (Trigger Level)	Action Level	Action Plan (Action Level)	Trigger Level	Action Plan (Trigger Level)	Action Level	Action Plan (Action Level)
Site 1	On the slope north of MacIntosh Fort and Sha Ling Road	843710 N 830468 E	1.01	Second Quarter of Year 1	- <i>Schima superba</i> 木荷 - <i>Phyllanthus emblica</i> 油甘子	Second Quarter of Year 2	- <i>Cratoxylum cochinchinense</i> 黄牛木 - <i>Machilus pauhoi</i> 刨花潤楠 - <i>Bridelia tomentosa</i> 土蜜樹	All planting works should be planned, supervised by a qualified ecologist/arborist. Measures should be implemented according to the Woodland Compensation Plan to ensure successful planting and high survival rate. Key factors for successful planting: - Spacing requirements: Sufficient spacing between individual plants as set out in the Plan (Section 2.4) to allow proper health and structure development - Timing: Planting to be completed in early wet season - Water management: Adequate watering and proper drainage system - Removal/Thinning of exotic species: Clearance of invasive plants or aggressive grasses prior to planting works - Fire control: Keeping source of fire away from planting sites (measures listed in Section 2.5 of the Plan) - Access control: Minimize human interference to the planting sites	5 years	Baseline quantitative monitoring: Third quarter of Year 1 and Year 2 Regular monitoring: Twice per year from Years 2 to 5	Qualified ecologist/arborist	Once every two months in the year of planting (Year 1 and 2), while reduced to quarterly in the following year (Year 3 to 5)	Qualified ecologist/arborist	Percentage of individual plant species in poor health condition >20%	- ET notify Contractor and IEC - Identify the cause(s) of deterioration in plant health - advise Contractor the necessity of replanting	Percentage of individual plant species in poor health condition >30%	- ET notify Contractor and IEC - Identify the cause(s) of deterioration in plant health - advise remedial action and work out solution including but not limited to change of species in replanting, and seek acceptance from AFCD - The Contractor should implement the remedial action once the remedial action has been accepted by AFCD	Survival rate of individual plant species <80%	- ET notify Contractor and IEC - Identify the cause(s) of decrease in survival rate - advise Contractor the necessity of replanting	Survival rate of individual plant species <70%	- ET notify Contractor and IEC - Identify the cause(s) of deterioration in plant health - advise remedial action and work out solution including but not limited to change of species in replanting; and seek acceptance from AFCD - The Contractor should implement the remedial action once the remedial action has been accepted by AFCD	FEHD
Site 2	In the valley below MacIntosh Fort	843578 N 830369 E	0.27		- <i>Melastoma malabathricum</i> 野牡丹 - <i>Psychotria asiatica</i> 九節		- <i>Cleistocalyx nervosum</i> 水翁 - <i>Cratoxylum cochinchinense</i> 黄牛木 - <i>Glochidion zeylanicum</i> 香港算盤子 - <i>Glochidion hirsutum</i> 厚葉算盤子 - <i>Daphniphyllum calycinum</i> 牛耳楓 - <i>Bridelia tomentosa</i> 土蜜樹															FEHD
Site 3	On the filled slope west of the proposed platform	843500 N 830500 E	0.33		- <i>Rhaphirolepis indica</i> 石斑木 - <i>Melastoma malabathricum</i> 野牡丹 - <i>Ardisia crenata</i> 朱砂根		- <i>Bridelia tomentosa</i> 土蜜樹 - <i>Cratoxylum cochinchinense</i> 黄牛木 - <i>Machilus pauhoi</i> 刨花潤楠															ArchSD
Site 4	Within Sandy Ridge Cemetery, north of SIMAR slope 3NW-C/C433	843190 N 830481 E	0.39		- <i>Melastoma sanguineum</i> 毛茛 - <i>Litsea rotundifolia</i> var. <i>oblongifolia</i> 豺皮樟 - <i>Ligustrum sinense</i> 山指甲		- <i>Celtis sinensis</i> 朴樹 - <i>Machilus chekiangensis</i> 浙江潤楠 - <i>Machilus pauhoi</i> 刨花潤楠 - <i>Daphniphyllum calycinum</i> 牛耳楓 - <i>Bischofia javanica</i> 秋楓 - <i>Cratoxylum cochinchinense</i> 黃牛木															FEHD
Site 7	On the top of proposed cut slope south of Sha Ling Road	843428 N 830728 E	0.26		- <i>Melastoma sanguineum</i> 毛茛 - <i>Litsea rotundifolia</i> var. <i>oblongifolia</i> 豺皮樟 - <i>Phyllanthus emblica</i> 油甘子		- <i>Cratoxylum cochinchinense</i> 黄牛木 - <i>Daphniphyllum calycinum</i> 牛耳楓 - <i>Bridelia tomentosa</i> 土蜜樹															FEHD
Site 8	On the south of proposed cut slope east of Sha Ling Road	843439 N 830849 E	0.08	- <i>Melastoma malabathricum</i> 野牡丹	- <i>Bischofia javanica</i> 秋楓 - <i>Cinnamomum camphora</i> 樟 - <i>Machilus pauhoi</i> 刨花潤楠	FEHD																
Site 9	On the top of proposed cut slope east of Sha Ling Road	843510 N 830891 E	0.22	- <i>Melastoma sanguineum</i> 毛茛 - <i>Litsea rotundifolia</i> var. <i>oblongifolia</i> 豺皮樟	- <i>Bischofia javanica</i> 秋楓 - <i>Cinnamomum camphora</i> 樟 - <i>Liquidambar formosana</i> 楓香 - <i>Machilus pauhoi</i> 刨花潤楠	FEHD																