



JOB No.: TCS00694/13

**AGREEMENT NO. CE 45/2008 (CE)
LIANTANG/HEUNG YUEN WAI
BOUNDARY CONTROL POINT AND ASSOCIATED WORKS**

**ECOLOGICAL MONITORING REPORT FOR THE
WOODLAND COMPENSATION AREA
(DECEMBER 2018 TO FEBRUARY 2019)**

**PREPARED FOR
CIVIL ENGINEERING AND DEVELOPMENT
DEPARTMENT (CEDD)**

Date	Reference No.	Prepared By	Certified By
14 March 2019	TCS00694/13/600/R1996v2	 Keith Wong (Ecologist)	 Tam Tak Wing (Environmental Team Leader)

Version	Date	Remarks
1	11 March 2019	First Submission
2	14 March 2019	Amended according to the IEC's comments on 13 March 2019



Member of the Surbana Jurong Group

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Our ref: 7076192/L24167/AW/MCC/rw

14 March 2019

AECOM
8/F, Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road
Shatin, N.T.

By Email & Post

Attention: Mr Simon LEUNG

Dear Sir

**Agreement No. CE 45/2008 (CE)
Liantang/Heung Yuen Wai Boundary Control Point and Associated Works
Independent Environmental Checker – Investigation
Quarterly Ecological Monitoring Report for Woodland Compensation Area (No .6) –
December 2018 to February 2019**

With reference to the Quarterly Ecological Monitoring Report for Woodland Compensation Area No. 6 for December 2018 to February 2019 (Version 2) certified by the ET Leader, please be noted that we have no adverse comments on the captioned submission. We herewith verify the captioned submission in accordance with Section 8.3.2.2 of the EM&A Manual.

Thank you for your attention and please do not hesitate to contact the undersigned on tel. 3995-8120 or by email to antony.wong@smec.com; or our Mr Arthur CHIU on tel. 3995-8144 or by email to arthur.chiu@smec.com.

Yours faithfully



Antony WONG

Independent Environmental Checker

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Table of Content

1.	INTRODUCTION	1
1.1	General	1
2.	MONITORING REQUIREMENTS	2
2.1	Monitoring Program of the Initial and Enhancement Planting Phases	2
2.2	Monitoring methodology	2
2.3	Quadrat Sampling	2
2.4	Reporting	4
3.	RESULTS	5
3.1	Transect Inspection	5
3.2	Quadrat Sampling	6

LIST OF TABLES

TABLE 1	TRIGGER AND ACTION LEVELS FOR MONITORING AND ACTION PLAN
TABLE 2	HEALTH CONDITION OF THE ESTABLISHED SEEDLINGS NOTED DURING THE TRANSECT INSPECTION
TABLE 3	THE NUMBER OF SEEDLING RECORDED FOR EACH SPECIES WITHIN THE SAMPLING QUADRATS
TABLE 4	SURVIVAL RATE OF THE PLANTED SPECIES SINCE THE COMMENCEMENT OF THE QUARTERLY MONITORING OF THE INITIAL PLANTING PHASE
TABLE 5	POSSIBLE CAUSE OF POOR SURVIVAL RATE OF THE PLANTED SPECIES AND RECOMMENDED REMEDIAL ACTIONS

LIST OF APPENDICES

APPENDIX A	DRAWING NO. 60212563/SK7037 OF THE WOODLAND COMPENSATION PLAN
APPENDIX B	AS-BUILT PLANTING SCHEDULE FOR INITIAL PLANTING PHASE
APPENDIX C	TRANSECT ROUTES AND SAMPLING QUADRATS OF WOODLAND COMPENSATION MONITORING
APPENDIX D	PHOTOGRAPHIC RECORDS
APPENDIX E	REPLANTING PLAN

1. INTRODUCTION

1.1 GENERAL

- 1.1.1 The “Liantang/Heung Yuen Wai Boundary Control Point and Associated Works Project” (hereinafter referred to as “the Project”) comprises a new Boundary Control Point (BCP) proposed at Liantang/Heung Yuen Wai (LT/HYW), its connecting road and other associated works; and the Environmental Impact Assessment (EIA) report (Register No.:AEIAR-161/2011) of the Project has identified that ~6.2ha of secondary woodlands will be directly lost due to the construction of the portals of tunnels and some sections of the connecting road. Subsequently, creation of a 18.6 ha compensatory woodland at Cheung Shan has been recommended in the EIA report to avoid residual ecological impacts from the Project.
- 1.1.2 Under the Environmental Permit (EP-404/2011/D), an updated Woodland Compensation Plan (WCP) detailed with the planting strategy and the subsequent maintenance and monitoring requirements of the compensatory woodland has been submitted and approved by the Authority in the 4th Quarter of 2015, and a revision of the updated WCP (i.e., WCP Revision 2) has been approved by EPD in 2017.
- 1.1.3 The woodland compensation include an initial planting phase and enhancement planting phase over a 6 years period on the grassland and shrubland at Cheung Shan, i.e., the “Woodland Compensatory Area” (WCA) as shown in the **Drawing No. 60212563/SK7037 of the WCP** and included here as **Appendix A**; and the planting works fall within the work scope of Contract No. CV/2013/08 Liantang/ Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 6.
- 1.1.4 As part of the EM&A’s requirements of the Project and in accordance with the latest status of the initial planting phase (refer to the “as-built” plan as shown in **Appendix B** for details), this submission presents the findings of the 6th quarterly vegetation monitoring after the first year of initial planting, and covers the Reporting Period from December 2018 February 2019.

2. MONITORING REQUIREMENTS

2.1 MONITORING PROGRAM OF THE INITIAL AND ENHANCEMENT PLANTING PHASES

2.1.1 According to the Section 6.5 of the WCP (ver. 2), the frequency of the monitoring is proposed to be bi-monthly during the first year of the initial planting phase and should be reduced to quarterly from the second year.

2.1.2 Change of monitoring frequency if needed will be advised by the Project Ecologist of the ET and approved by Environmental Protection Department (EPD) and Agriculture, Fisheries and Conservation Department (AFCD) before implementation.

2.2 MONITORING METHODOLOGY

2.2.1 An inspection walk monitoring by means of “transect route” and “direct observation” has been undertaken within the WCP as such to provide an overview and observe the general condition of the WCA; After due considerations of the latest planting arrangement within the WCA, the potential trampling damage to the planted seedlings, as well as the limitations in visibility, site access and safety concern when undertaking the monitoring among the steep hillslope, the transect routes has been selected to cover all representative areas where planting has been undertaken within the WCA as far as practicable.

2.2.2 The transect routes are illustrated in **Appendix C**, and the following observations have been made during the inspection walk:

- Weather condition during the time of monitoring
- The general condition of the WCA, including any signs of anthropogenic or natural disturbance/events (such as landslide, lightning strikes, wildlife damage) that has affected the health condition of the planted seedlings, or regeneration or invasive of grassy or self-seeded weedy plants that would or have affected the establishment of the planted vegetation
- The general health condition of each planted species graded in “Good”, “Fair” or “Poor” with the following criteria:
 - i) Phenology – signs of any abnormality in the phenology of the species (such as abnormal flowering/fruitletting/ leaf shedding)
 - ii) Foliage – colour, size and general appearance, signs and severity of insect and fungal infection
 - iii) Branches – presence and extent of die-back, and signs and severity of insect and fungal infection
 - iv) Stem/Trunk - signs and severity of cavities or internal/external decay; signs and severity of insect infection and mechanical damage

2.2.3 Since the monitoring approach adopted for the transect inspection, i.e., “*direct observations*”, would not yield any quantitative information, the survival rate (%) of the planted seedling will be evaluated from the results collected from the quadrat sampling as detailed in next section.

2.3 QUADRAT SAMPLING

2.3.1 A sampling approach has been proposed in the WCP to monitor the survival rate of the planted seedlings by the use of nine 20mx20m quadrats which are to be evenly located within the planted area of the WCA. Based on the as-built planting plan provided by the contractor (see **Appendix B**), as well as the local topography of the planted area within the WCA, the practicality in accessing, placing and monitoring nine 20m x 20m fixed quadrats within the planted area of the WCA has been extensively reviewed, 2 of the monitoring quadrats are fixed on the ridgeline of Cheung Shan and 7 of them are located on the north-facing slope of the WCA (see **Appendix C**).

- 2.3.2 Information collected within each sampling unit include:
- General condition of the sampling quadrat especially those factors that would or have found affected the survival rate of the planted vegetation, including biological or environmental factors (such as inter-specific competition as well as signs of stress from water, heat, or pest and disease, etc)
 - The total number of established seedlings for each planted tree and shrub species
 - Health condition of each planted species graded in “Good”, “Fair” or “Poor” with the following criteria:
 - i) Phenology – signs of any abnormality in the phenology of the species (such as abnormal flowering/fruitletting/ leaf shedding)
 - ii) Foliage – colour, size and general appearance, signs and severity of insect and fungal infection
 - iii) Branches – presence and extent of die-back, and signs and severity of insect and fungal infection
 - iv) Stem/Trunk - signs and severity of cavities or internal/external decay; signs and severity of insect infection and mechanical damage

2.3.3 The survival rate of the planted species during the initial planting phase will be evaluated against the referenced baseline updated for the monitored quadrats after the supplementary planting work undertaken in September 2017, and if needed the implementation of the measures as detailed in the “Trigger and Action Levels” specified in the **Table 3** of the WCP would be recommended (included here as **Table 1** below) .

Table 1 Trigger and Action Levels for Monitoring and Action Plan

Parameters	Trigger and Action Level	Action Plan
General Health Condition of planted species (i.e. good/fair/poor; based on parameters e.g. wilting, insect attack, disease, fungal infection, browsing damage)	Trigger Level: % of individual plant species in poor health condition >20%	- the ET should inform Contractor and IEC immediately; - identify the causes(s) of the exceedance; - advise Contractor the necessity of replanting
	Action Level: % of individual plant species in poor health condition >30%	- the ET should inform Contractor and IEC immediately; - identify the cause(s) of the exceedance; - advise remedial action and work out solution including change of species in re-planting, re-soiling of the target areas; and seek acceptance from AFCD; - once the remedial action has been accepted by AFCD, the Contractor should implement the remedial action.
Survival of Planted Species (i.e. dead)	Trigger Level: Survival rate of individual plant species <80%	- the ET should inform Contractor and IEC immediately; - identify the causes(s) of the exceedance; - advise Contractor the necessity of replanting.

	Action Level: Survival rate of individual plant species <70%	<ul style="list-style-type: none"> - the ET should inform Contractor and IEC immediately; - identify the cause(s) of the exceedance; - advise remedial action and work out solution including change of species in re-planting, re-soiling of the target areas; and seek acceptance from AFCD; - once the remedial action has been accepted by AFCD, the Contractor should implement the remedial action.
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2.3.4 Since most of the planted native species are also naturally grown within the WCA and it would be infeasible and impracticable to differentiate whether the individual plant encountered along the transect or within the quadrat is planted, natural recruited, or regenerated after the pre-planting clearance of the site; and hence all established individuals of the planted species found within the sampling unit has been counted during the monitoring.

2.3.5 The WCA monitoring was undertaken by the Environmental Team (ET) and under the supervision of the Qualified Ecologist of the ET, and the Qualified Ecologist has also undertaken a joint transect inspection with representative of the IEC in the reporting.

2.4 REPORTING

Bi-monthly Woodland Compensation Monitoring Reports

2.4.1 The results and findings of the bi-monthly (i.e., once every two months) monitoring including the landscape inspection during the first year of the initial planting phase and the first year of the enhancement planting phase will be recorded in a bi-monthly woodland compensation monitoring reports prepared and submitted by the ET Leader within 10 working days from the end of each reporting month. The details to be included in the report will follow the Section 7.3 of the WCP.

Quarterly Woodland Compensation Monitoring Reports

2.4.2 Starting from the second year of the initial planting phase and the enhancement planting phase, the frequency of the monitoring is reduced to quarterly basis, the results and findings of the quarterly monitoring as well as the landscape inspection after the first year of the initial planting phase and the first year of the enhancement planting phase shall be recorded in the quarterly woodland compensation monitoring reports prepared and submitted by the ET Leader within 10 working days from the end of each reporting month. The details to be included in the report will follow the Section 7.3 of the WCP.

3. RESULTS

3.1 TRANSECT INSPECTION

3.1.1 The transect inspection was carried out on 26th February 2019 with the ecological specialist of the IEC, an overview of the site condition is presented in *Appendix D* and the following presents the observations made during the transect inspection:

- It was a cloudy day with humidity 80% on the day of the transect inspection.
- It was noted that weeding has been patchily undertaken within the initial planting area of the WCA, which mainly cover the areas along the transect on the north-facing slope and western ridgeline of the Cheung Shan, as well as areas in the lower slope at the western part of the WCA. Moreover, moderate to severe mechanical damage to the aerial plants (leaves and stems) of those woody plants established within the WCA, either planted or self-seeded, was commonly noted, especially for those less than 50cm in height.
- It was also noted that most of the removed vegetation has been deposited on the ground within the WCA, and sometimes in thick mass; whilst this practice may hinder the re-growth of weedy plants, it may also impede the recovery of the damaged woody vegetation underneath
- The overall health condition of the undamaged plants along the inspection transect was found to be generally fair except white-mildew was occasionally noted on the foliage of the planted exotic tree *Acacia mangium*.
- Saplings or young trees of two deciduous tree species planted in the initial planting phase, i.e., the *Sapium discolor* and *Phyllanthus emblica*, have only been occasionally spotted along the transect.

3.1.2 The general health condition of the planted species, based on the observations made along the transect, is tabulated in the following table.

Table 2 Health condition of the established seedlings noted during the transect inspection

Species	Health Condition		
	Good	Fair	Poor
Trees			
<i>Acacia confusa</i>		√	
<i>Acacia mangium</i>	√ ⁽¹⁾		
<i>Castanopsis fissa</i>		√	
<i>Litsea glutinosa</i>		√ ⁽³⁾	
<i>Mallotus paniculatus</i>		√ ⁽³⁾	
<i>Phyllanthus emblica</i>			√ ^{(2), (3), (4)}
<i>Sapium discolor</i>			√ ^{(2), (3)}
<i>Schima superba</i>	√ ⁽³⁾		
Shrubs			
<i>Gordonia axillaris</i>		√	
<i>Melastoma candidum</i>			√ ^{(3), (4)}
<i>Melastoma sanguineum</i>			√ ^{(3), (4)}
<i>Rhaphiolepis indica</i>			√ ^{(2), (3), (4)}
<i>Rhodomytus tomentosa</i>			√ ^{(3), (4)}

Note:

- (1) White mildew was occasionally noted on the leaves
- (2) Deciduous species and most of the foliage is smaller in size
- (3) Self-seeded seedlings or wild population of this species was present within the planting area (initial planting) of the WCA, and since it is impracticable and sometimes unfeasible to differentiate them from the planted seedlings, the health condition was evaluated as a whole

for this species encountered during the transect walk.
 (4) Moderate to severe mechanical damage from vegetation maintenance activities was noted on aerial plants

3.2 QUADRAT SAMPLING

3.2.1 The nine 20m x 20m sampling quadrats have been placed within the planted area of the WCA, and at area where the majority of the seedlings were planted and considered suitable for long term monitoring; in which 2 of them were located on the ridgeline and the rest are located on the north-facing slope of Cheung Shan (see **Appendix C**). The quadrat monitoring was conducted on 25th and 26th February 2019, and the weather was mostly cloudy on both days.

3.2.2 The condition of the quadrats during the time of monitoring is shown in **Appendix D** and the monitoring result of the reporting period and the survival rate of the planted species since the commencement of the quarterly monitoring (initial planting phase) are shown in **Table 3** and **Table 4** respectively.

Table 3 The number of seedling recorded for each species within the sampling quadrats

	Quantity* and General Health^ Condition of the Established Seedling Recorded in Each Sampling Quadrat									Total Qty.
	R1	R2	S3	S4	S5	S6	S7	S8	S9	
Trees										
<i>Acacia confusa</i>	21	12	8	5	12	3	7	6	18	92
<i>Acacia mangium</i>	27	25	22	11	25	0	20	12	25	167
<i>Castanopsis fissa</i>	1	3	1	1	0	2	0	2	2	12
<i>Litsea glutinosa</i>	8	5	5	6	3	0	2	2	5	36
<i>Mallotus paniculatus</i>	19	5	1	3	6	4	2	7	17	64
<i>Phyllanthus emblica</i>	2	0	<u>1</u>	<u>1</u>	<u>4</u>	<u>1</u>	<u>0</u>	<u>1</u>	<u>2</u>	12
<i>Sapium discolor</i>	<u>1</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>1</u>	<u>1</u>	<u>0</u>	<u>1</u>	<u>2</u>	7
<i>Schima superba</i>	17	11	4	11	6	57	0	1	0	107
Sub-Total	96	61	43	38	57	68	31	32	71	497
Shrubs										
<i>Gordonia axillaris</i>	6	18	20	30	42	23	15	10	9	173
<i>Melastoma candidum</i>	23	<u>6</u>	<u>19</u>	<u>20</u>	<u>14</u>	<u>10</u>	<u>8</u>	<u>11</u>	<u>15</u>	126
<i>Melastoma sanguineum</i>	10	<u>40</u>	<u>23</u>	<u>30</u>	<u>48</u>	<u>3</u>	<u>13</u>	<u>5</u>	<u>17</u>	189
<i>Rhaphiolepis indica</i>	40	<u>33</u>	<u>12</u>	<u>11</u>	<u>22</u>	<u>11</u>	<u>10</u>	<u>35</u>	<u>43</u>	217
<i>Rhodomyrtus tomentosa</i>	62	<u>65</u>	<u>29</u>	<u>35</u>	<u>50</u>	<u>18</u>	<u>31</u>	<u>47</u>	<u>80</u>	417
Sub-Total	141	162	103	126	176	65	77	108	164	1122

Notes: ^ General Health Condition:

- Good - No. in normal font type (e.g., "99")
- Fair - No. in Italic font (e.g., "99")
- Poor - No. in italic & underlined (e.g., "99")

* the quantity include all individuals of the planted species within the quadrat regardless whether they are self-seeded or planted (see Section 2.3.4)

Table 4 Survival Rate of the Planted Species since the Commencement of the Quarterly Monitoring of the Initial Planting Phase

Species	Reference baseline [^]	Survival Rate* (%)					
		Nov 17	Jan 18	Mar 18	Aug 18	Nov 18	Feb 19
<i>Acacia confusa</i>	113	52.21	52.21	56.64	68.14	88.50	81.42
<i>Acacia mangium</i>	193	97.41	98.45	95.85	95.34	88.60	86.53
<i>Castanopsis fissa</i>	39	35.90	33.33	33.33	38.46	48.72	30.77
<i>Litsea glutinosa</i>	79	65.82	64.56	63.29	67.09	67.09	45.57
<i>Mallotus paniculatus</i>	80	100.00	100.00	100	100.00	100.00	80.00
<i>Phyllanthus emblica</i>	64	95.31	59.38	78.13	75.00	70.31	18.75
<i>Sapium discolor</i>	39	69.23	56.41	56.41	56.41	46.15	17.95
<i>Schima superba</i>	82	100.00	96.34	84.15	100.00	100.00	100.00
<i>Gordonia axillaris</i>	148	100.00	100.00	100	100.00	100.00	100.00
<i>Melastoma candidum</i>	352	63.07	60.80	59.94	62.50	61.65	35.80
<i>Melastoma sanguineum</i>	313	72.52	85.94	84.66	84.98	82.11	60.38
<i>Rhaphiolepis indica</i>	438	71.23	71.46	68.95	65.98	75.80	49.54
<i>Rhodomyrtus tomentosa</i>	824	66.63	67.72	65.05	65.17	70.51	50.61

[^] updated in Sep 2017 in accordance with the “as-built” planting plan for the initial planting phase as well as the monitoring findings between Aug 2017 and Nov 2017

* no. in bold denotes the survival rate trigger action listed in Table 1

3.2.3 Based on the recorded data and observations made within the sampled quadrats and the data presented in **Table 3** and **Table 4**, the following provides a brief account of the findings from the quadrat monitoring:

- Health condition: Generally speaking the health condition of the planted tree species was found mostly in fair or good condition, except the two deciduous tree species *Sapium discolor* and *Phyllanthus emblica* where only small and newly emerged leaves were noted on their branches/branchlets. The health condition for shrub species was found mostly in poor condition, except *Gordonia axillaris* found in fair condition.
- Substantial mechanical damage and removal of aerial plants of the planted saplings from the vegetation maintenance activities, as reported in Section 3.1.1, has also been noted on the established plants within all but one of the surveyed quadrats (where weeding is yet to be commenced for Quadrat R1).
- The negative impact to the health condition of the affected plants, as well as the plants that could be identified and counted during the monitoring, has been severely affected and reflected in the monitoring results as shown in Table 3 and Table 4; in which a decline in survival rate for all but 2 of the planted species (*Schima superba* and *Gordonia axillaris*) has been recorded for the monitoring period.
- 8 of the planted species were recorded with a survival rate less than 70%, including those planted tree and shrub species where their saplings are generally >50 cm in height within the WCA, i.e., the trees *Castanopsis fissa* (30.77%) and *Litsea glutinosa* (45.57%), as well as the shrubs *Melastoma candidum* (35.8%), *Melastoma sanguineum* (60.38%), *Rhaphiolepis indica* (49.54%), and

Rhodomyrtus tomentosa (50.61%); and the two deciduous tree species *Sapium discolor* and *Phyllanthus emblica* were recorded with a 18.75% and 17.95% respectively.

3.2.4 The possible causes of poor survival rate of the planted species reported previously has been postulated in previous monitoring reports (see Table 5), but the disturbance and interference of the monitoring activities caused by the maintenance works (see bullets 2 & 3 of Section 3.2.3 above) would account for the overall decline in the survival rate recorded during this monitoring period; and recommendation in minimizing the potential disturbance to the planted woody plants from maintenance activities has already been recommended in previous monitoring reports.

Table 5 Possible Cause of Poor Survival Rate of the Planted Species and Recommended Remedial Actions

Possible Cause	Remedial Action
Animal disturbance	Prominent signs of disturbance from animal activities, in addition to those previous noted, has not been observed within the WCA as a whole after the replanting conducted in September 2017, and the necessity for further action to be reviewed
Poor vigor of the planted seedlings	The project team should ensure that: 1) the planting work has been carried out in accordance with the applicable specifications of the project; 2) all of the site preparation works have already been completed before the arrival of the planting material on-site; 3) all of the planting material is conform to the specified size and in good condition; 4) the delivered seedlings would be planted on the same day of arrival as far as possible, and they should be properly handled/stored after arrival to avoid/minimize water stress.
Vegetation maintenance	Strengthen the vegetation maintenance (in particularly weeding and if necessary fertilizing) within the WCA, and provide adequate briefing to the maintenance team to avoid any potential trampling/mechanical damage to the woody plants within the WCA. In addition, the use of motorized weeding equipment in areas densely covered by woody plant should be avoided as far as practicable, and the removed weed should be properly disposed to avoid shadowing of the planted seedlings
Inter-specific competition	

3.2.5 Nonetheless, since the monitoring was undertaken shortly after the maintenance disturbance and at the early onset of the growing season, re-sprouting of shoots and leaves during the growing season would be expected for the two deciduous tree species as well as some but may not be all of the damaged plants within the quadrat, as such the scope and quantity for any replanting work could be further reviewed from the data collected in next monitoring period, and during which the replanting schedule would also need to take into account the program and planting schedule of the 2nd stage of enhancement planting scheduled in this year.

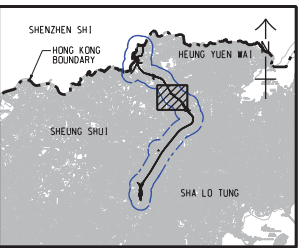
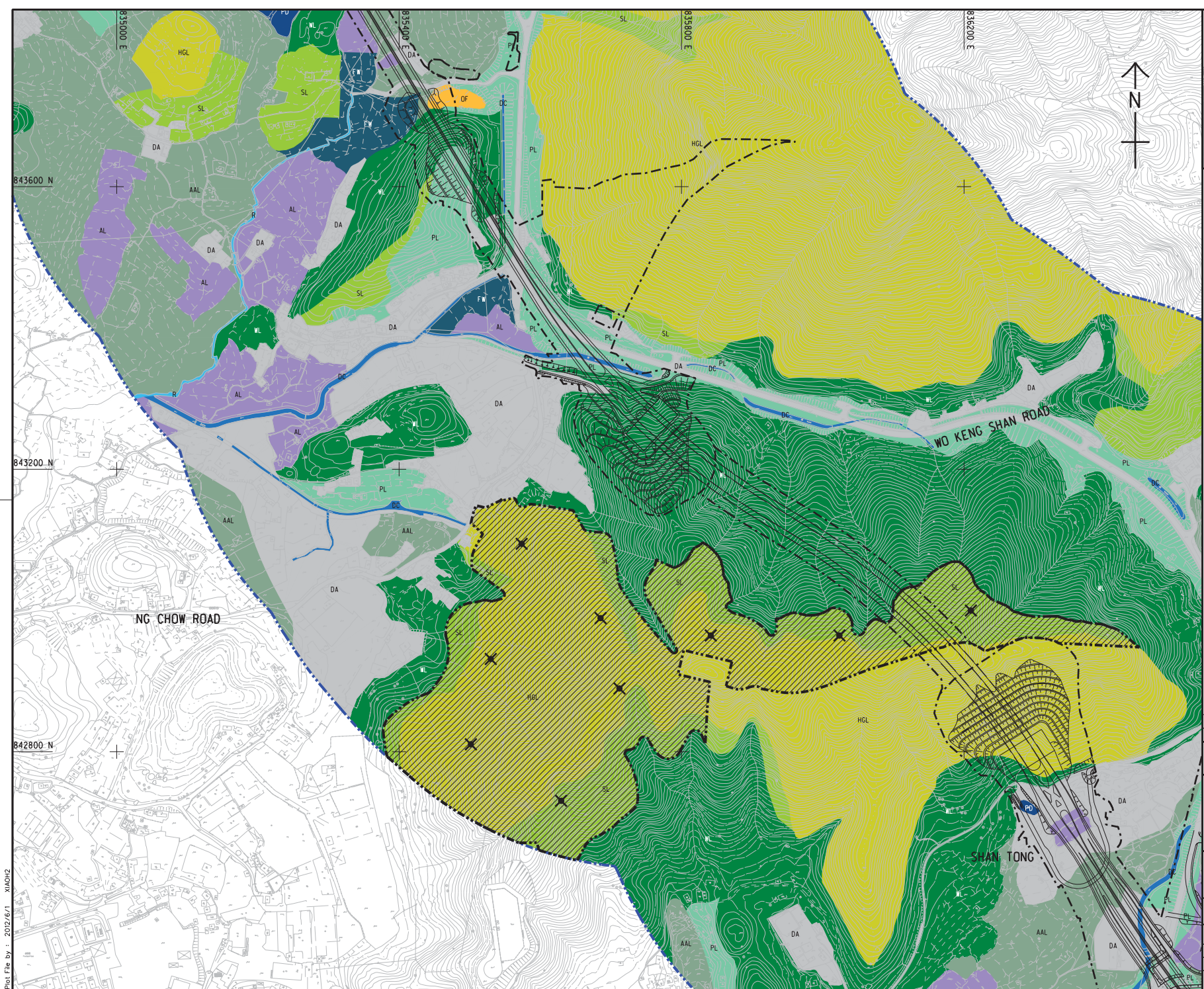
3.2.6 Meanwhile, with respect to the monitoring results of this reporting month as well as the cause of the poor survival rate recorded, the project team is reminded to provide adequate training and briefing to the maintenance team, and during which accentuate the importance in avoiding any mechanical and/or trampling damage to the woody plants during any maintenance activities within the WCA, especially for those species planted under the woodland compensatory program.

- 3.2.7 On the other hand, the project team is recommended to allocate adequate resources in supervising and monitoring the maintenance works within the WCA as such to avoid re-occurring of the similar disturbance incident. Furthermore, all of the removed leave litter should also be properly disposed and preferably removed from the planting areas of the WCA as far as practicable, so as to avoid and/or minimize any shadowing of the woody plant seedlings.
- 3.2.8 According to Table 1, the Contractor would be responsible for implementing action of replanting and other remedial measures agreed by AFCD.

-End-

Appendix A

Drawing No. 60212563/SK7037 of the Woodland Compensation Plan



KEY PLAN
SCALE 1 : 150000

LEGEND:

- 500m ASSESSMENT AREA
- TENTATIVE WORKS AREA
- TUNNEL SECTION**
- WL WOODLAND
- SL SHRUBLAND
- PL PLANTATION
- FW FRESHWATER WETLAND [NET AGRICULTURAL AND (ACTIVE/ABANDONED)]
- AL ACTIVE AGRICULTURAL LAND
- AAL ABANDONED AGRICULTURAL LAND
- HGL HILLSIDE GRASSLAND
- PD POND
- DC DRAINAGE CHANNEL
- R WATERCOURSE
- OF OPEN FIELD
- DA DEVELOPED AREA
- EXTENT OF WOODLAND COMPENSATION PLANTING AREA
- X TENTATIVE WOODLAND MONITORING QUADRAT (THE EXACT LOCATION TO BE DETERMINED BY THE ENGINEER ON SITE)

NO.	DESCRIPTION	DATE

CEDD 土木工程拓展署
Civil Engineering and
Development Department

LIANGTANG/YUEN WAI BOUNDARY CONTROL POINT AND ASSOCIATED WORKS (SITE FORMATION AND INFRASTRUCTURES) DESIGN AND CONSTRUCTION

PROPOSED WOOLAND COMPENSATION AREA

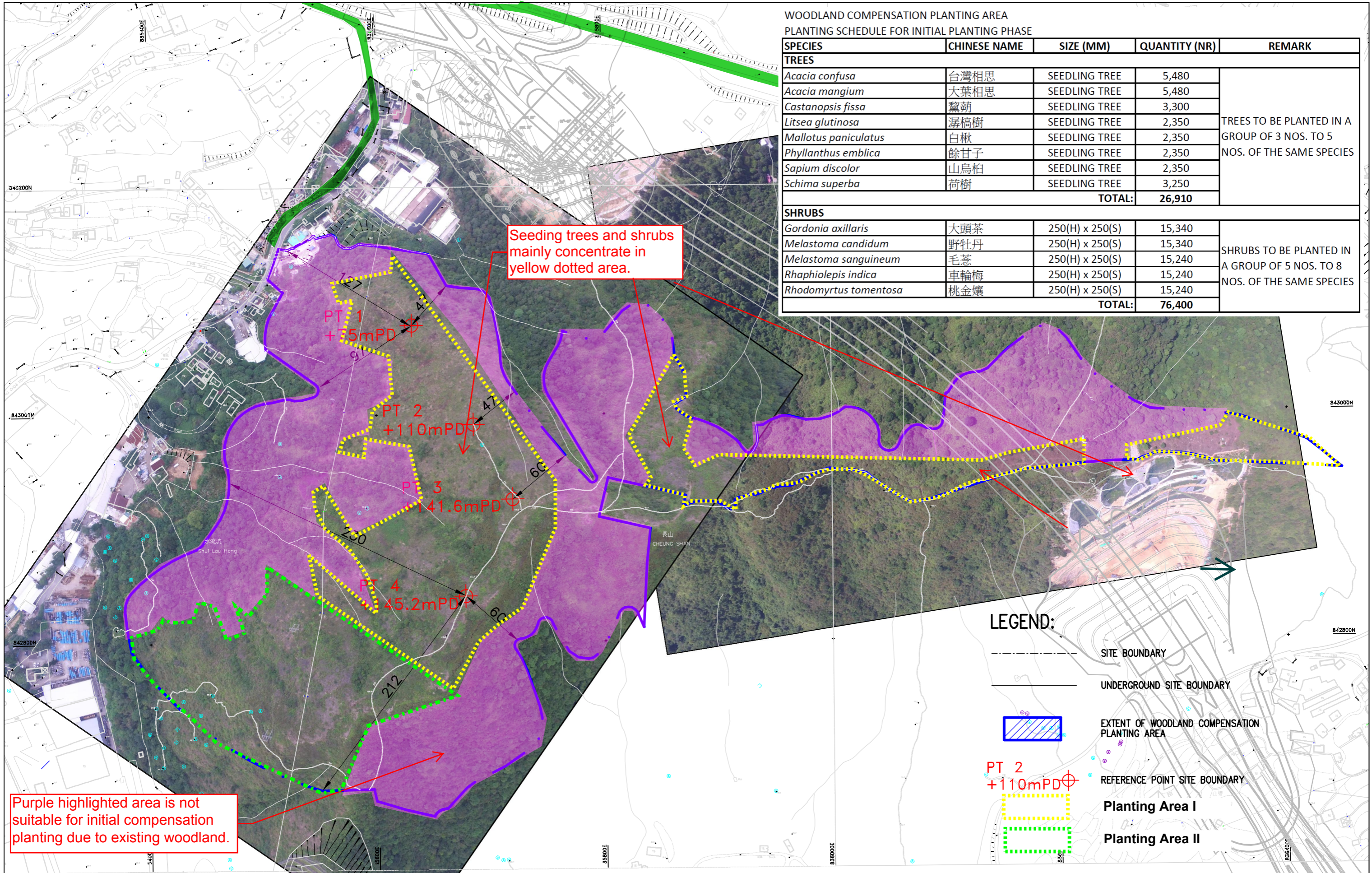
DRGNO.
圖紙編號

DESIGNED BY DWG: KW	CONTRACT NO. SMBR	P. DCR. APPROVED AREA
DRAWN BY YJP	STATUS REV	
SCALE AS 1 : 2500	DRAWING AREA IN METRES	

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Appendix B

As-built Planting Schedule for Initial Planting Phase






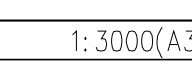
WOODLAND COMPENSATION PLANTING AREA
PLANTING SCHEDULE FOR INITIAL PLANTING PHASE

SPECIES	CHINESE NAME	SIZE (MM)	QUANTITY (NR)	REMARK
TREES				
<i>Acacia confusa</i>	台灣相思	SEEDLING TREE	5,480	TREES TO BE PLANTED IN A GROUP OF 3 NOS. TO 5 NOS. OF THE SAME SPECIES
<i>Acacia mangium</i>	大葉相思	SEEDLING TREE	5,480	
<i>Castanopsis fissa</i>	蠟菊	SEEDLING TREE	3,300	
<i>Litsea glutinosa</i>	潺槁樹	SEEDLING TREE	2,350	
<i>Mallotus paniculatus</i>	白楸	SEEDLING TREE	2,350	
<i>Phyllanthus emblica</i>	餘甘子	SEEDLING TREE	2,350	
<i>Sapium discolor</i>	山烏柏	SEEDLING TREE	2,350	
<i>Schima superba</i>	荷樹	SEEDLING TREE	3,250	
TOTAL:			26,910	
SHRUBS				
<i>Gordonia axillaris</i>	大頭茶	250(H) x 250(S)	15,340	SHRUBS TO BE PLANTED IN A GROUP OF 5 NOS. TO 8 NOS. OF THE SAME SPECIES
<i>Melastoma candidum</i>	野牡丹	250(H) x 250(S)	15,340	
<i>Melastoma sanguineum</i>	毛蕊	250(H) x 250(S)	15,240	
<i>Rhaphiolepis indica</i>	車輪梅	250(H) x 250(S)	15,240	
<i>Rhodomyrtus tomentosa</i>	桃金娘	250(H) x 250(S)	15,240	
TOTAL:			76,400	

Purple highlighted area is not suitable for initial compensation planting due to existing woodland.

Seeding trees and shrubs mainly concentrate in yellow dotted area.

LEGEND:

- SITE BOUNDARY
- UNDERGROUND SITE BOUNDARY
-  EXTENT OF WOODLAND COMPENSATION PLANTING AREA
-  REFERENCE POINT SITE BOUNDARY
-  Planting Area I
-  Planting Area II

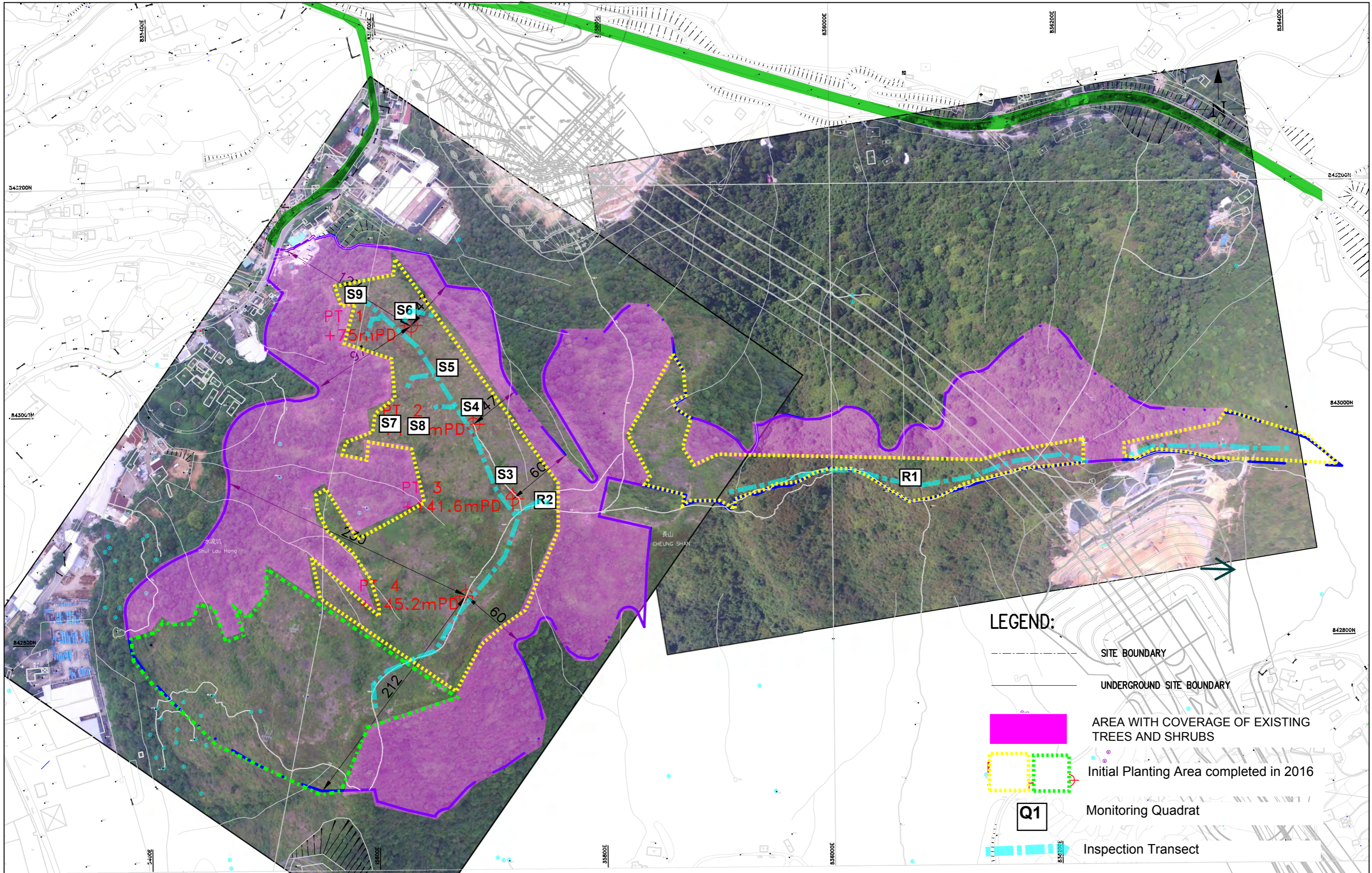
CONTRACT NO. CV/2013/08
LIANTANG/HEUNG YUEN WAI
BOUNDARY CONTROL POINT
SITE FORMATION AND
INFRASTRUCTURE WORKS
- CONTRACT 6

APPENDIX B - As-built Planting Schedule for Initial Planting Phase

SCALE	1:3000(A3)	SURVEY DATE	8 September 2016
CHECK		DRAWN	K W
JOB NO.		SKETCH NO.	
		REV	-

Appendix C

Transect Routes and Sampling Quadrats of Woodland Compensation Monitoring



LEGEND:

- SITE BOUNDARY
- UNDERGROUND SITE BOUNDARY
- AREA WITH COVERAGE OF EXISTING TREES AND SHRUBS
- Initial Planting Area completed in 2016
- Monitoring Quadrat
- Inspection Transect

CONTRACT NO. CV/2013/08
LIANTANG/HEUNG YUEN WAI
BOUNDARY CONTROL POINT
SITE FORMATION AND
INFRASTRUCTURE WORKS
- CONTRACT 6

APPENDIX C - LOCATION OF THE THE INSPECTION TRANSECTS AND MONITORING QUADRATS, 2016

SCALE	1:3000(A3)	SURVEY DATE	N/A
CHECK		DRAWN	K W
JOB NO.		SKETCH NO.	WCA_Monitoring Plan-161130
		REV	-

Appendix D

Photographic Records

Photographic Record of the Woodland Compensation Area - Site Condition



Eastern Ridgeline



Western Ridgeline



North-Facing Slope



Leaf Litter



Damaged *Gordonia axillaris*



Damaged *Melastoma sanguineum*



Damaged *Rhodomyrtus tomentosa*



Damaged Woody Plant (other Species)

Photographic Record of the Woodland Compensation Area - Monitoring Quadrats



R1



R2



S3



S4



S5



S6



S7



S8

Photographic Record of the Woodland Compensation Area - Monitoring Quadrats



S9

Appendix E

Replanting Plan

As-built Replanting Quantity for Initial Planting

Species	Chinese Name	Replanting Quantity		Total Qty.
		Outside Monitoring Quadrats	Within Monitoring Quadrats	
<i>Acacia confusa</i>	台灣相思	2327	49	2376
<i>Castanopsis fissa</i>	蠟菊	0	26	26
<i>Litsea glutinosa</i>	潺槁樹	0	29	29
<i>Sapium discolor</i>	山烏柏	0	17	17
<i>Melastoma candidum</i>	野牡丹	2894	141	3035
<i>Raphiolepis indica</i>	車輪梅	1486	136	1622
<i>Rhodomyrtus tomentosa</i>	桃金娘	1929	288	2217
				9322