路 政 署
HIGHWAYS DEPARTMENT

Contract No. HY/2011/03

Hong Kong-Zhuhai-Macao Bridge Hong Link Road Section between Scenic Hill and Hong Kong Boundary Crossing Facilities

Tree Preservation and Removal Application

(TRA-4)

Amendment to Approval

Rev. A

April 2019

Main Contractor

中國建築工程(香港)有限公司
CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.

Designer

ATKINS

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Nomenclature and Abbreviations

AAHK	Airport Authority Hong Kong
ACL	Atkins China Limited
AEL	Airport Express Line
AFCD	Agriculture, Fisheries and Conservation Department
AFTF	Aviation Fuel Tank Farm
AHR	Airport Height Restriction
AWCG	Advance Work Coordination Group
BCF	Boundary Crossing Facilities
CAD	Civil Aviation Department
C&ED	Customs and Excise Department
CIQ	Customs, Immigration and Quarantine
CPA	Coastal Protection Area
CLK	Chep Lap Kok
CLKSR	Chek Lap Kok South Road
CLP	China Light Power
CNAC	China National Aviation Corporation
DSD	Drainage Service Department
EMSD	Electrical and Mechanical Services Department
EP	Environmental Permit
FS	Feasibility Study
FSD	Fire Services Department
FTNS	Fixed Telecommunication Network Services
GEO	Geotechnical Engineering Office
GFS	Government Flying Service
HAT	Hong Kong Airport Tunnel linking HKBCF to Airport
HKBCF	HZMB Hong Kong Boundary Crossing Facilities
HKIA-APSL	Hong Kong International Airport - Approved Plant Species List
HKLR	HZMB Hong Kong Link Road
HKO	Hong Kong Observatory
HKPF	Hong Kong Police Force
HKSAR	Hong Kong Special Administrative Region
HyD	Highways Department
HyD(LU)	Highways Department Landscape Unit
HKZB	Hong Kong-Zhuhai-Macao Bridge
LandsD	Lands Department
LCSD	Leisure and Cultural Services Department
MTRC	Mass Transit Railway Corporation
NLH	North Lantau Highway
NTHS	Natural Terrain Hazard Study
OZP	Outline Zoning Plan
PlanD	Planning Department
SO	Supervising Officer
TD	Transport Department
TMCLKL	Tuen Mun Chek Lap Kok Link
WSD	Water Supplies Department

1 Introduction

1.1 Background

The Highway Contract No. HY/2011/03 – Hong Kong –Zhuhai-Macao Bridge (HZMB), Hong Kong Link Road (HKLR) – Section between Scenic Hill and Hong Kong Boundary Crossing Facilities (HKBCF) comprises the design and construction of the following: -

- New reclamation along the east coast of the Hong Kong International Airport (HKIA), of approximately 23 hectares;
- Tunnel SHT from Scenic Hill to the new reclamation, of approximately 1 km in length with 3 lanes for east bound carriageway heading to HKBCF and 4 lanes for westbound carriageway heading to the HZMB Main Bridge;
- An abutment of the viaduct portion of the HKLR at the west portal of Tunnel SHT and associated roadworks at west portal of Tunnel SHT;
- An at-grade road on the new reclamation along the east coast of the HKIA to connect with the HKBCF, of approximately 1.6km along dual 3-lane carriageway with hard shoulder for each bound;
- Road links between the HKBCF and the HKIA including new roads and modification of existing roads in the HKIA, involving viaducts, at-grade roads and a Tunnel HAT;
- A highway operation and maintenance area (HMA) located on the new reclamation at south of Dragonair Headquarters Building, including construction of buildings, connection roads and other associated facilities;
- Associated civil, structural, building, geotechnical, marine, environmental protection, landscaping, drainage and sewerage, tunnel and highway electrical and mechanical works, together with installation of street lightings, traffic aids and sign gantries, water mains and fire hydrants, provision of facilities for installation of traffic control and surveillance system (TCSS), re-provisioning works of affected existing facilities, implementation of transplanting, compensatory planting and protection of existing trees, and implementation of an environmental monitoring and audit (EM&A) programme.

China State Construction Engineering (Hong Kong) Ltd were appointed to carry out detail design and construction of the project in June 2012 assisted by Atkins China Limited as consultants and specialist landscape sub consultants Initiatives.

Prior Approvals

The Tree Removal Application was made in two parts: -

- Advance Areas (TRA1) – this included Tree Areas 1-3 located on the west side of Scenic Hill and on the critical path for tunnelling works to commence; and
- Other Areas (TRA-2) – this included Tree Areas 4-17.

Formal Approval was received from DLO relating to TRA-1 for trees on private land in January 2013 and for government land in May 2013.

Formal Approval was received from DLO relating to TRA-2 for trees on private land in August 2013 and for government land in November 2013.

Approval correspondence is included within **Appendix E**.

Subsequent Submissions

Subsequently additional submissions were made to DLO during 2014 under the heading of "TRA-3" highlighting minor additional felling to the Approved Tree Removal Applications resulting from changes during detail design of the works. These changes principally resulted from three areas as detailed below: -

- Tree Area 9a – Expansion of road turning circle for fire services access;
- Tree Area 17 – Introduction of PARDS information display system
- Tree Area 18 – Erection of a 'Big Rescue Sign'

The follow up submission of TRA-3 (Revision C - November 2014) was subsequently suspended due to continually changing site conditions and further restrictions developing from AAHK in terms of land availability for compensatory planting based on new development requirements as well as the type of species suitable for planting in proximity to the airport flight paths following the issue of Hong Kong International Airport Approved Plant Species List (Revision 4.0.1) in October 2015. Specifically: -

- the compensatory planting proposal of new trees in area C12 was not acceptable to **AAHK,** since these new trees would be located at the right-of-way along the eastern side of the development site of Hong Kong Airlines (HX) Flight Training Centre and would adversely affect HX's development in the near future.

As a result, alternative locations for the proposed compensatory planting were exhaustively searched and opportunities explored. Subsequently however further design construction methods, expansion of space required for site activities and interface complications have further impacted site trees and limited the opportunities for compensatory planting within the private lot.

Typhoon damage

Trees on the lot were further impacted by typhoon damage whilst being retained during the works, with a large number of trees particularly having fallen and been removed during the following strong impact events: -

Super Typhoon Mangkhut	(1822)	7 - 17 September 2018
Super Typhoon Hato	(1713)	22 – 23 August 2017
Super Typhoon Haima	(1016)	14 - 22 October 2016
Typhoon Nida	(0416)	29 July – 3 August 2016

Amendment Submission

This Amendment Submission report updates the tree survey information based on the current site condition and makes revised proposals for compensatory planting based on the changed baseline

condition. Furthermore, having exhausted land supply options within the private lot CLK1, significant compensation provision has now been identified and agreed within the new government land created under the project and is scheduled within the report.

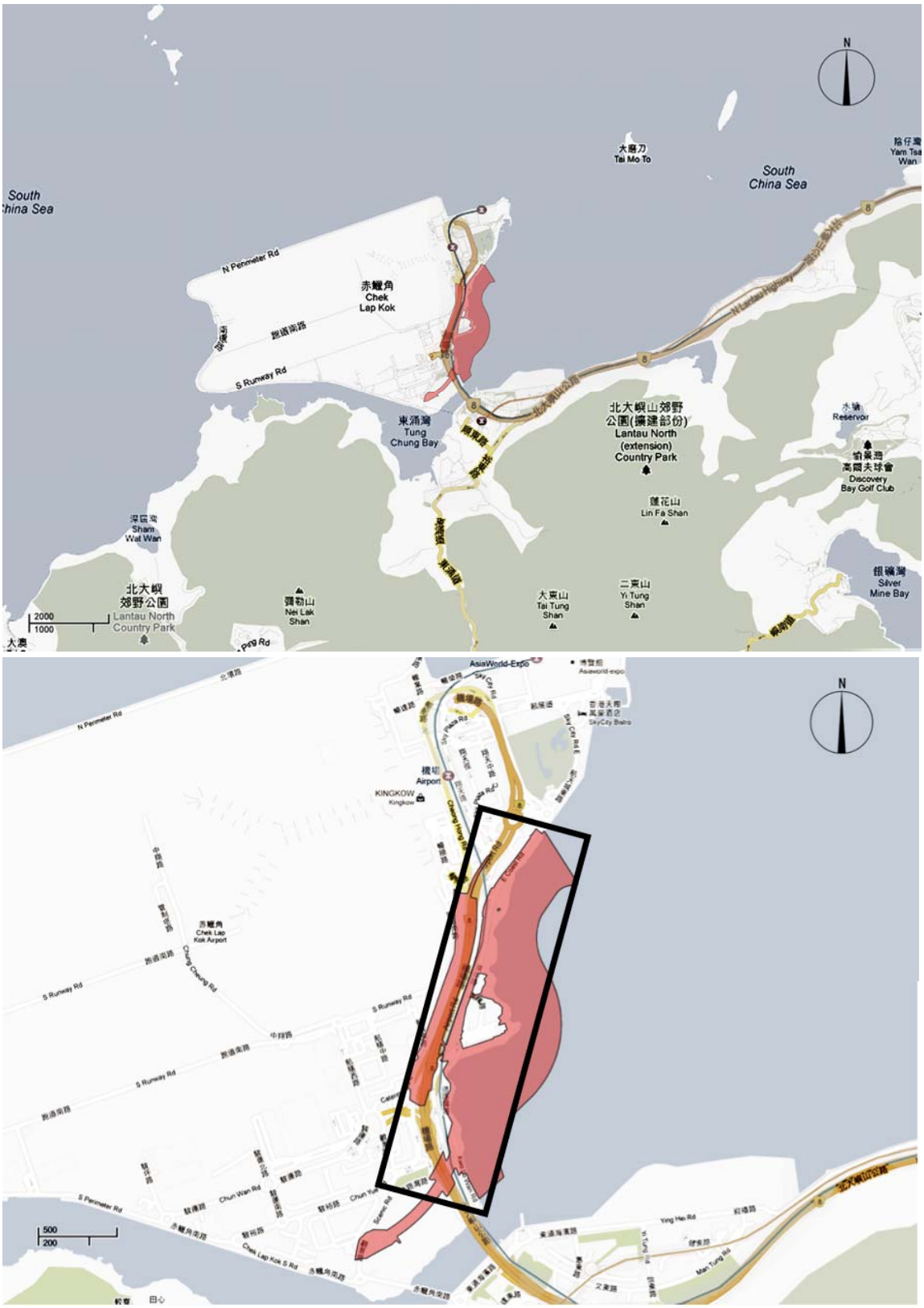
Design Parameters

Extensive discussion with various bodies including HKAA, CAD, HyD and LCSD has resulted in the finalised landscape design proposal for government land on the project, which takes into account the significant restrictions to the landscape design within the airport environment. The compensatory planting has been specifically developed to meet the following parameters:

- ・ The landscape and visual mitigation measures required by the Environmental Permit;
- ・ The Hong Kong International Airport - Approved Plant Species List (HKIA-APSL); and
- ・ The technical requirements under the ER.

The tree surveys have been undertaken throughout the project works at 2-month intervals. Photos of trees, including the last taken before those lost to typhoon are shown in **Appendix C**.

1.2 Location Plans



2 Site Characteristics

2.1 Scenic Hill

Scenic Hill to the south of the site area is a natural feature, zoned as green belt, covered by trees around the lower slopes. The hill also hosts the angle station of the MTR Ngong Ping 360 Cable Car and the Cable Marker Anchor Point as well as a lookout point at hill top. Trees on the slopes of Scenic Hill are predominantly native primary woodland species including Melia azedarach, Mallotus paniculatus, Aporusa chinensis, Rhus succedanea. Plantation species of Acacia confusa and Acacia mangium supplement the woodland around the lower slopes making up approximately 40% of the total trees.

2.2 Coastline

The natural coastline of Chep Lap Kok winds north from Scenic Hill. This has been planted with trees at the time of the development of the airport and is dominated by groups of Cocos nucifera and Hibiscus tiliaceus. Other species commonly found are Bauhinea blakeana and Acacia confusa. Inland the area consists primarily of the transport corridor formed by the Airport Express Railway and North Lantau Expressway as well as the numerous access roads, ramps and connectors linking the various airport facilities. Landscape areas are isolated and incoherent, generally contained within thin slivers of land between parallel road systems.

The landscape character becomes increasingly stark heading northwards, reflecting the planting zoning restrictions of the Hong Kong Airport Authority. North of Dragonair House in HKAA Zone 2, no mature trees (> 5m) are permitted and trees are restricted to small groups and clusters. Near the runway in Zone 1 the highest planting restrictions are followed with only grass and ground cover being acceptable.

3 Tree Survey Methodology

3.1 Guidelines

The tree survey and landscape proposals are carried out in accordance with **Environment Transport and Works Bureau TCW No. 7/2015 – Tree Preservation and LAO Practice Note 7/2007A – Tree Preservation and Tree Removal Application for Building Development in Private Projects**. Further Guidance is obtained from the following: -

Environment Transport and Works Bureau TCW Nos.

- 06/2015 - Maintenance of Vegetation and Hard Landscape Features
- 29/2004 - Registration of Old and Valuable Trees and Guidelines for their Preservation
- 11/2004 - Cyber Manual for Greening
- 34/2003 - Community involvement in Greening Works

Works Bureau Technical Circulars Nos.

- 2/2012 – Allocation of Space for Quality Greening on Roads
- 55/2002 - Village Resite and Expansion Areas Schedule of Maintenance Responsibilities
- 7/2002 - Tree Planting in Public Works

Other Guidelines

- Hong Kong International Airport Approved Plant Species List (Revision 4 – July 2013)
- Requirements for the Handover of Vegetation to Highways Department (2013 version)
- HyDTC No. 3/2008 - Independent Vetting of Tree Works under the Maintenance of Highways Department
- HyDTC No. 10/01 Visibility of Directional Signs
- Agriculture, Fisheries and Conversation Department Publication “Checklist of Hong Kong Plants 2004”
- Agriculture, Fisheries and Conversation Department Nature Conservation Practice Note No. 02(Rev. Jun 2006)
- Agriculture, Fisheries and Conversation Department Publication “Rare and Precious Plants of Hong Kong 2003”
- Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586)

3.2 Drawing Criteria

The tree's reference no. and location are shown on the enclosed tree survey drawings.

All trees surveyed have been evaluated according to the following criteria (ref. Webb, R.(ed.) 1991. Tree Planting & Maintenance in Hong Kong, Hong Kong Government.

Content of the plan, with regard to vegetation, is as follows:

For survey purposes every tree with a diameter of at least 95mm or greater at 1300mm above ground level has been recorded and identified on a plan. The location of the centre of every tree trunk in the survey area is indicated as a cross and the spread of the tree crown drawn as a circle to scale.

3.3 Health

Health condition is evaluated in accordance with the following criteria and consideration:

Foliage

- Evidence of "poor leaf colour and small leaf size (which) may indicate damage of roots;
- Evidence of insect or fungal infection in leaves;
- Evidence of leaf damage owing to typhoons (although it is recognized that trees are usually able to recover from this within one growing season).

Twigs

- Evidence of "poor shoot growth and die-back of twigs in the crown are often symptoms of root problems caused by a change in the water table level or soil compaction resulting from site development work;
- Evidence of insect and fungal infections on the twigs and branches;
- Evidence of twig damage particularly if the tree had been made unbalanced.

Branches

- Dead or crossing branches;
- Evidence of "heavy horizontal branches (which) may make the tree unstable";
- The presence of broken, damaged or cut branches as a possible site for infections;
- Evidence of damaged branches which may make the tree unbalanced or unstable;
- "an edge tree exposed as a result of the removal of adjacent trees often (which) has an unbalanced crown and may hazardous" .

Trunk

- "tightly forked trunks (which) are a source of weakness in the tree as in high winds the tree can be torn
- and bark damage. apart";
- evidence of "cavities or internal rot (which) can be revealed by discoloured bark, moisture seeping through the bark or bracket fungi".
- Open cavities

The health of each tree has been graded as follows:-

G: Trees with a low incidence of the less serious features and a medium change of recovery

can be graded as good;

F: Trees with a higher incidence of the less serious features and a medium chance of recovery can be graded fair;

P: Trees with more serious health features and with a low chance of recovery, even with remedial measures, can be graded poor;

D: Dead or irretrievably unhealthy

3.4 Tree Form

Tree form has been graded in accordance with the following:-

G: Trees with well balanced form, upright evenly branching, well-formed head and generally in accordance with the standard form for its species can be graded good;

F: Trees with generally balanced form with

P: Trees with more serious health features and with a low chance of recovery,

3.5 Amenity Value

Amenity value has been graded in accordance with the following:

H: Rare or precious species

and/or

Has a cultural, historical or memorable significance

and/or

Mature (age – e.g. > 100 yrs old) and has good health condition and form

and/or

forms a significant local landmark or has outstanding visual qualities;

F: Common species with normal visual qualities and has typical condition and form;

P: Common species with negligible functional or visual value or is in poor health condition and form.

4 Updated Survey of Existing Trees

4.1 2019 Update

An updated tree survey has identified all trees within the Works Boundary as well as those within 2m of the Boundary that have been affected by the Works. The survey has been separated into 18 different areas for more simple recording and identification.

Areas 1-3 were included under the approved submission TRA-1 of 2013, including 5 sub-areas (**Areas 1A, 1B, 2a/b/c, 3A, 3B).** Area 1B, was not in eventuality handed over to the project and is now excluded from the project area.

Areas 4-17 were included under the approved submission TRA-2 of 2013, including 18 sub-areas (**Areas 4, 5, 6, 7A, 7B, 7C, 7D, 8, 9A, 9B, 10, 11, 12, 13, 14, 15, 16, 17**.

An additional **Area 18** was introduced in the submissions made under TRA-3 of 2014 and 2015, and is now included in this Report, which is outside of the original contract boundary itself and was not previously included on the survey. This highlights **16 further trees** in the private lot that were not originally included on the existing approvals.

4.2 Distribution of Trees

A total of **1452** (1530) **trees** are now identified on the project and the details of the tree characteristics and actions undertaken is provided in **Appendix B**. The distribution of trees in all 18 survey areas is summarized in **Tables 4.1, 4.2 and 4.3** with changes from the approved submissions highlighted in **red**, and the approved submission shown in brackets.

Table 4.1 Distribution of Surveyed Trees within Survey Areas on Private Land

Survey Area	No. of Trees	Maintenance Department
TREE AREA 1A	52	AAHK
TREE AREA 1B	**0** (119)	AAHK
TREE AREA 4	246	AAHK
TREE AREA 5	76	AAHK
TREE AREA 6	46	AAHK
TREE AREA 7A	62	AAHK
TREE AREA 7B	177	AAHK
TREE AREA 7C	26	AAHK
TREE AREA 7D	131	AAHK
TREE AREA 8	**74** (59)	AAHK
TREE AREA 9A	85	AAHK
TREE AREA 9B	40	AAHK
TREE AREA 10	**73** (63)	AAHK

TREE AREA 11	24	AAHK
TREE AREA 12	3	AAHK
TREE AREA 14	2	AAHK
TREE AREA 15	42	AAHK
TREE AREA 16	40	AAHK
TREE AREA 17	19	AAHK
TREE AREA 18	**16** (0)	**AAHK**
Total	**1234** (1328)	

Table 4.2 Distribution of Surveyed Trees within Survey Areas on Resumed Land

Survey Area	No. of Trees	Maintenance Department
TREE AREA 2	3	HyD
TREE AREA 3A	40	HyD
TREE AREA 3B	68	LandsD*
TREE AREA 13	12	LandsD **
Total	**123**	

Remark:
* TREE AREA 3B is resumed from private lot “CLKL 1 & Ext thereto RP” but not allocated.
** TREE AREA 13 is resumed as shown on the land resumption plan no. ISM1731a-I under Gazette Number G.N. 2762.

Table 4.3 Distribution of Surveyed Trees within Survey Areas on Government Land

Survey Area	No. of Trees	Maintenance Department
TREE AREA 7A	1	LandsD (now allocated to HyD)
TREE AREA 7B	30	LandsD (now allocated to HyD)
TREE AREA 7C	6	LandsD (now allocated to HyD)
TREE AREA 7D	29	LandsD (now allocated to HyD)
TREE AREA 8	22	LandsD (now allocated to HyD)
TREE AREA 9B	7	LandsD (now allocated to HyD)
Total	**95**	

Table 4.4 – Distribution of Surveyed Trees in Areas on Private Land by Species

| TREE SURVEY AREA | TREE SPECIES | | |

Table 4.5 – Distribution of Surveyed Trees in Areas on Resumed Land by Species

TREE SURVEY AREA	TREE SPECIES																					
	Acacia confusa	Acacia mangium	Aporusa chinensis	Cratoxylum cochinchinense	Dalbergia odorifera	Ficus microcarpa	Ficus variegata	Itea chinensis	Litsea rotundifolia	Livistona chinensis	Lophostemon confertus	Mallotus paniculatus	Melia azedarach	Microcos paniculata	Phoenix roebelenii	Pinus massoniana	Rhus succedanea	Sapium discolor	Scheffiera heptaphylla	Schima superba	Scolopia chinensis	Sterculia lanceolata	*TOTAL*
2	2	1																					**3**
3a	6	8	1	3		1	1	2	1			1	2	4		2	7	1					**40**
3b	7	26		1	3						6	3	6			1	2		8	2	1	1	**68**
13										11					1								**12**
TOTAL	8	9	1	3		1	1	2	1	11		1	2	4	1	2	7	1					123

Table 4.6 – Distribution of Surveyed Trees in Areas on existing Government Land by Species

TREE SURVEY AREA	TREE SPECIES									
	Acacia confusa	Acacia mangium	Archontophoenix alexandrae	Bauhinia blakeana	Casuarina equisetifolia	Cocos nucifera	Hibiscus tiliaceus	Melia azedarach	*DEAD*	*TOTAL*
7A	1									**1**
7B						11			19	**30**
7C	6									**6**
7D			13			8			8	**29**
8	2	10			4		4	1	1	**22**
9B		2		1	3		1			**7**
TOTAL	**9**	**12**	**13**	**1**	**7**	**19**	**5**	**1**	**28**	**95**

5 Impact to Trees

Generally, any trees or tree groups on the fringes of the HKLR alignment are retained as well as those that do not directly impact the construction works. However, the construction of abutments, viaduct superstructure and substructure, tunnelling through cut and cover method, highway construction, work to underground culverts and utility diversion involve the removal of trees. Where possible, proposed work on slopes, both in cutting and on embankment, is feathered at the edge of the slopes to allow trees to be retained. In general, trees have been proposed to be transplanted or felled under the following circumstances: -

- Trees located within the construction area of the proposed at-grade road, viaduct substructure, tunnel portal, tunnel constructed by cut and cover method, and utility diversion works.
- Trees underneath the viaduct with less than 4.5m clearance from the deck / pierhead soffit.

5.1 Updated Details of Individual Tree by Area

Tree Area 1A - AAHK

This area consisted of a group of trees along the roadside at the foot of Scenic Hill. A total of 52 no. trees of 11 species were recorded during the original survey. Trees in the site were mostly common plantation species introduced as a green buffer along Scenic Road at development of the Airport. Dominant species include the exotics; *Acacia confusa* and *Acacia mangium* with native species *Melia azedarach*. There were no rare or endangered species found within the survey area, nor any trees found to have potential to be registered as Old and Valuable Trees.

- All 52 no. trees were in conflict with the proposed viaduct construction area and the resulting overhead height restrictions and were felled as per the approval under TRA-1.

Tree Survey Area 1B - AAHK

This area of trees includes a cluster isolated between the Ngong Ping 360 Angle Station Access Road and Scenic Road as well as those outside the site boundary on the west side of Scenic Road. A total of 119 no. trees of 7 species were recorded during the original survey, including 4 nos. of collapsed trees and 26 no. located outside the boundary. Trees in the area are mostly common plantation species introduced as a green buffer along Scenic Road at development of the Airport. Dominant species include the exotics; Acacia confusa, and Acacia mangium with native species Melia azedarach. No rare or endangered species were found within the survey area, nor any trees found to have potential to be registered as Old and Valuable Trees.

- In Area 1B all trees were to be retained during the works. The area was subsequently formerly handed back to HKIA in 2017 and all 119 no. trees are **now considered as being outside of the project boundary**.

Tree Survey Area 2 (a/b/c) - HyD

These areas are located at the centre of Tree Area 1A but are identified separately as the land was resumed for potential construction of three piers (a,b,c) for the HKLR viaduct under the Roads (Works, Use and Compensation) Ordinance. A total of 3 trees of 2 species were recorded during the original

survey in Area 2a, including 2 no. *Acacia confusa* and 1 no. *Acacia mangium*. No trees were found in areas 2b or 2c.

- These 3 no. trees were felled as per the original approval under TRA-1.

Tree Survey Area 3A - HyD

This Tree Area is formed on the lower west slope of Scenic Hill on land resumed for construction of the HKLR Scenic Hill Tunnel Portal and Ventilation Building. A total of 40 no. trees made up of 14 species were recorded during the survey. Trees in the site included the plantation species *Acacia confusa* and *Acacia mangium* however the slopes contain a more varied mix of native trees usually found in rural areas or natural woodlands including *Rhus succedanea*, *Microcos paniculata*, *Melia azedarach and Cratoxylum Cochinchinense*.

- The 40 no. trees within this area were felled as per previous approval under TRA-1.

Tree Survey Area 3B - LandsD

This area includes the surrounding slopes of Scenic Hill that were not allocated to the HKLR with trees generally gathered at the area adjacent to Scenic Road and exhibiting the characteristics of Area 1A. A total of 68 trees of 14 species were recorded during the survey, including 4 nos. of collapsed trees and 11 nos. of trees outside the boundary. Trees in the area are mostly common plantation species introduced as a green buffer along Scenic Road at development of the Airport. Dominant species include the exotics; *Acacia confusa*, and *Acacia mangium* with native species *Melia azedarach*.

- Within survey Area-3B, none of the 68 no. trees surveyed were in conflict with the Project. These continue to be protected and retained during the works. However, the density of trees in this area was high and 14 no. additional trees have been lost to typhoon over recent years as a result of overcrowding and insufficient root stability. The survey is updated accordingly.

Tree Survey Area 4 - AAHK

A total of 246 no. trees of 11 species were recorded, including 9 no. trees located outside boundary and 19 no. of dead / missing trees. Trees in the area are mostly common plantation species at the foot of Scenic Hill, introduced as a green buffer along Scenic Road at development of the Airport. Dominant species include the exotics: *Acacia confusa* and *Acacia mangium* with native species *Melia azedarach*.

- Within this area, 102 no. trees were felled in accordance with the approval under TRA-2 in an area in conflict with the cut and cover tunnelling works under the existing Airport Road, however trees on the site margins were retained during the works as intended. The 6 no. trees that had been identified for transplantation were not able to be successfully transplanted from this area due to rootball conflicts and were felled as a result. The density of planting in this area was high and a number of trees have been lost recently to typhoons in an overcrowded area. Furthermore, 4no. trees have been removed subsequent to recommendations of Tree Risk Assessment undertaken in 2016 and 2018. The survey is updated accordingly.

Tree Survey Area 5 - AAHK

This group of trees was located on a narrow strip of land between Airport Road (southbound) and the Airport Express Railway (AEL). A total of 76 no. trees of 7 species were recorded during the survey, including 4 dead / missing trees and 4 trees located outside the boundary. Within this area, 24 no. trees were proposed to be transplanted and 44 no. trees to be retained.

- Of the original 44 no. trees to be retained only 14 no. remain on site. Trees in this area were affected by the surrounding intensive construction works, exposure during typhoon and poor and compacted root condition. 11 no. trees were identified for removal during risk assessment. Furthermore, the row of 24 no. Bauhinia trees identified for transplantation were unable to have sufficient rootball preparation due to access and time conflicts and were felled. The survey is updated accordingly.

Tree Survey Area 6 - AAHK

Trees in this area are found on the coastal area between the Airport Express Line (AEL) and Kwo Lo Wan Road. A total of 46 no. scattered trees of 7 species were recorded during the survey. Within this area, 13 no. trees were proposed to be felled, 5 no. trees to be transplanted, 28 no. trees to be retained.

- No trees have been retained in this area during the works, with 33 trees having died and 13 requiring to be felled, including the trees intended for transplantation. The survey is updated accordingly.

Tree Survey Area 7A – AAHK / HyD

This block of trees is planted on the coastal margin next to Kwo Lo Wan Road. A total of 63 no. trees of 3 species were recorded during the survey, including 33 dead / missing trees. Within this area, 26 no. trees were proposed to be felled and 4 no. trees to be transplanted.

The predominant species were the exotic species *Cocos nucifera,* mixed with stands of *Archontophoenix alexandrae*. Self seeded specimens of *Acacia confusa* were also extant. This area is largely affected by the coastal environmental condition, ie strong wind and salty air. Whilst most of the identified trees are generally well adapted to such conditions the coconut trees were exhibiting impact from cold winds and pest attack, and were not generally in good health. A large number of the trees had previously been lost during high winds prior to approval being granted and coconut trees were proposed to be felled rather than transplanted due to their poor health condition and a large number of affected by typhoon.

- No trees were intended to be retained in this area during the works. The 4 no. Archontophoenix stands intended to be transplanted were not able to be successfully accessed for transplantation and were felled. The survey is updated.

Tree Survey Area 7B - AAHK / HyD

This block of trees is planted on the coastal margin next to Kwo Lo Wan Road and north of area 7A. A total of 207 no. trees of 3 species were recorded during the survey, including 92 dead / missing trees

and 15 no. trees located outside the boundary. The predominant species is the exotic *Cocos nucifera.* Several self-seeded specimens of *Hibiscus tiiaceus* and *Melia azedarach* were also found.

- Within this area, 100 no. trees were proposed to be retained, however only 61 remain on site. A large number of coconuts have continued to exhibit poor health and died. They have also been heavily susceptible to annual typhoon impact.

Tree Survey Area 7C – AAHK / HyD

A total of 32 no. trees of 3 species were recorded during the survey, including 3 no. trees located outside boundary and 3 no. dead / missing trees. The exotic species *Acacia confusa* and *Acacia mangium* dominate the area. They have been introduced as a green buffer along the coast, providing shelter from onshore winds.

- Within this area, 26 no. trees were proposed to be retained however only 1 remains recorded on site following heavy typhoon damage and subsequent risk assessment. The survey is updated accordingly.
- The area was subsequently handed back to AAHK in December 2017.

Tree Survey Area 7D – AAHK / HyD

A total of 160 no. trees of 3 species were recorded during the survey, including 9 no. trees located outside boundary and 44 no. dead / missing trees. The predominant species is the exotic *Cocos nucifera and s*everal specimens of *Archontophoenix alexandrae* and *Roystonea regia* were also found.

- Within this area 107 no. trees were proposed to be retained but only 76 remain. This area is strongly affected by the coastal environmental condition, (ie strong onshore winds and salty air) as is th case for Areas 7A and 7B. Whilst most of the identified trees are generally well adapted to such conditions the coconut trees in particular have continually exhibited poor health and hence been extremely susceptible to the recent super typhoons.
- The area was subsequently handed back to AAHK in December 2017.

Tree Survey Area 8

A total of 96 (81) no. trees of 6 species were recorded during the survey, including 1 dead tree. Trees in the area are mostly common plantation species introduced as a green buffer along East Coast Road, including the exotic *Acacia confusa*, with native species *Melia azedarach and Bauhinia blakeana.*

- Within this area, 41 no. trees were approved to be felled in accordance with the approval under TRA-2, where trees conflicted with the cut and cover tunnelling works. However, a change in construction method to mined tunnelling allowed a large number of these to be retained.
- 8 no. trees that were proposed to be retained were however lost due to poor health and typhoon impact.

Tree Survey Area 9A

A total of **85 no. trees** of 9 species were recorded during the original survey in this area including 12 dead / missing trees. Dominant species include the exotic *Acacia confusa*, *Acacia mangium* with native species *Bauhinia variegata.*

- Within this area, 8 no. trees were approved to be transplanted under TRA-2, but this was not possible. Of the 47 no. trees designated to be retained none now remain. The survey is updated accordingly.
- The area was subsequently handed back to AAHK in December 2017.

Tree Survey Area 9B

A total of 47 no. trees of 8 species were recorded during the survey, including 2 dead trees. Within this area, 2 no. trees are proposed to be felled. The predominant species is the native *Hibiscus tiliaceus,* along with isolated stands of the native *Ficus altissima* and the exotic *Acacia auriculiformis.* Trees exhibit wind-blow form in adapting to the conditions and do not exhibit the best form or health.

- Of the 42 no. trees designated to be retained only 19 now remain. The survey is updated accordingly.

Tree Survey Area 10

A total of 73 (63) no. trees of 6 species were recorded during the original survey in this area located on a thin strip of land between the East Coast Road flyover and the Airport Express Line, making it generally inaccessible and difficult to maintain. The trees were located tightly together on a slope. The predominant species are the exotic species *Acacia confusa and Acacia mangium.* Several stands of the native *Melia azedarach* were also extant.

- A change in construction method from cut and cover to mined tunnelling meant that this area was no longer required for project works and the 49 no. trees in this area approved for felling could be retained. However, 6 no. trees have died over the course of the project works due to poor health from over crowding leading to typhoon impact. The survey is updated accordingly.

Tree Survey Area 11

A total of 24 no. trees of 2 species were recorded during the survey, including 1 no. dead tree. The predominant species were the native species *Hibiscus tiliaceus.* with two stands of *Acacia confusa* located remotely from the main group. The trees have been clustered in a formal group of 3 rows but exhibit very different growth characteristics amongst themselves due to the local winds prevailing. The trees can be accessed by a local maintenance footpath.

- Within this area, the trees intended for both removal and transplantation in accordance with the approval under TRA-2 were retained on site after the change in tunnelling construction method. However, they were strongly impacted as a group by typhoon and all were blown over and subsequently removed. The survey is updated accordingly.

Tree Survey Area 12

A total of 3 no. trees of exotic species *Livistonia chinensis* were recorded during the survey. The trees form part of a longer row of trees in association with Area 13.

- All 3 no. trees were proposed to be transplanted however only 2 survived successfully for transplantation to area T-02 as shown on **Drawing 4809/LD/9103-G** in **Appendix D**. These were handed over to AAHK on 3 August 2015. Please refer to the handover correspondence in **Appendix F**. The survey is updated accordingly.

Tree Survey Area 13 – LandsD / HyD

A total of 12 no. trees of 2 species were recorded during the survey, including 1 dead tree. The trees form part of a longer row of trees in association with Area 12.

- Upon resumption of the land, subsequently allocated to Highways Department for construction of the Link Road, these trees were no longer in the private lot of HKAA and were successfully transplanted to government land off-site to an LCSD managed transplant area in Tung Chung on 17 June 2015. The planting location (T-06) is identified on compensatory planting plan **Drawing 4809/LD/9111-G** in **Appendix D**. Please refer to handover documentation in **Appendix F.**

Tree Survey Area 14

Two individual specimens of *Hibiscus tiliaceus* were recorded during the survey at the junction of Tung Fai Road and East Coast Road, remote from other tree planting.

- Both trees were felled in accordance with the approval under TRA-2.

Tree Survey Area 15

A total of 42 no. trees of 4 species were recorded during the survey, including 5 no. trees located outside the works boundary and 1 dead tree, the predominant species being the native *Ficus microcarpa. Several Acacia confusa* and *Acacia auriculiformis* specimens were also present, located separately from the main group.

- The Ficus trees were excellent specimens located in the reserve between the northbound and southbound carriageways of Airport Road at the north of the works area. 32 no. of the 33 trees approved for transplantation under the approved TRA-2 were moved successfully to transplant areas T-01 and T-03 in August 2016 as shown on **Drawings 4809/LD/9102-G** and **4809/LD/9103-G** in **Appendix D**. Please refer to handover documentation in **Appendix F.** 3 no. trees were retained. One transplanted tree died and the survey is updated accordingly.

Tree Survey Area 16

A total of 40 no. stands of the exotic Cocos nucifera were recorded during the survey, including 1 no. tree located outside the boundary and 5 no. dead trees. The trees are located in a large group at the north of the works area on the coastal margin of East Coast Road. As for other coconuts they have not developed particularly well since planting, evidenced by dry crowns, trunk wounds and stunted growth.

- Within this area 1 no. of the 34 no. trees to be retained has died. The survey is updated accordingly.

Tree Survey Area 17

A total of **19 no. trees** of 2 species were recorded during the original survey consisting of the native *Hibiscus tiliaceus* with two stands of *Jacaranda mimosifolia* also present. The area lies on a thin section of land between the East Coast Road and Airport Road northern carriageways. It is rather inaccessible, with the trees growing in a row at a low point between the roads where they receive storm water flowing off the surrounding slopes.

- The installation of PARDS T2a at Area 17 required the removal of 6 trees as highlighted in correspondence submitted under TRA 3. 3 no. trees required to be removed for the base construction and a further 3 trees due to their obscuring visibility for traffic. Since an extra sign (DS XX1) was erected in front of the PARDS T2a, the PARDS could not be moved further towards the central divider as the sight lines would be blocked by the new signage.
- A further 6 trees were noted as missing in February 2018 and 2 were felled in April 2018 due to Risk Assessment.

Tree Survey Area 18

A total of **16 no. trees** of 1 species were recorded during an extended survey. The trees in this area were not previously covered by the approved TRA and are additional to the Report.

The species present is solely the exotic *Acacia confusa.* The area lies at the southern end of Kwo Lo Wan Road and forms the western embankment of the North Lantau Highway Bridge.

There are no rare or endangered species found within the survey area, nor any trees found to have potential to be registered as Old and Valuable Trees.

The construction of PARDS T1a at Area 18 required the existing Big Rescue Sign to be relocated further south to fulfill advance directional sign requirements. As Highways Department refused to allow the Big Rescue Sign to be mounted on the Tung Chung Bridge, it was necessary to be located on the bridge embankment. The relocation of the Sign required the removal of 3 no. trees for the base construction. In order to avoid sight lines being blocked by trees in front of PARDS T1a, removal of 7 no. trees at the top of the embankment was also necessary.

5.2 Summary of Impacts to Trees

A total of **1571** (1530) trees were identified within and surrounding Tree Survey Areas 1-18. Of these **226** had already died, been blown over or were missing at the hand over of the project site following the typhoons between 2011 and 2013. A further **227** have died due to poor health conditions and typhoon between 2013 and 2018. Furthermore changes in the scope of works have impacted trees previously not identified and a number of trees have been felled in emergent conditions due to ongoing project tree risk assessment. The impacts to trees and the resulting course of action is summarised in the tables **5.1, 5.2, 5.3** and the calculation of aggregated diameter in table **5.4, 5.5** below: -

Table 5.1 - Summary of Trees Impacted in Areas on Private Land

TREE AREA	FELL		TRANSPLANT		RETAIN		OUTSIDE BOUNDARY	FAILED (2019)	DEAD (2012)	TOTAL (Qty)
	TRA4	TRA1/2	TRA4	TRA1/2	TRA4	TRA1/2				
1A	52	52	0	0	0	0	0	0	0	52
1B	0	0	0	0	0	89	115 (26)	0	4	119
4	112	102	0	6	71	110	9	35	19	246
5	35	0	0	24	14	44	4	19	4	76
6	13	13	0	5	0	28	0	33	0	46
7A	25	25	0	4	0	0	0	4	33	62
7B	2	0	0	0	53	89	15	34	73	177
7C	0	0	0	0	1	20	17 (3)	5	3	26
7D	0	0	0	0	58	86	18 (9)	19	36	131
8	0	46	0	0	46	13	0	28	0	74 (59)
9A	29	18	0	8	0	47	34 (0)	10	12	85
9B	10	1	0	0	15	37	0	13	2	40
10	2	55	0	0	60	8	0	11	0	73 (63)
11	10	10	0	11	0	2	0	13	1	24
12	0	0	2	3	0	0	0	1	0	3
14	2	2	0	0	0	0	0	0	0	2
15	0	0	32	33	3	3	5	1	1	42
16	0	0	0	0	33	34	1	1	5	40
17	8	0	0	0	7	19	0	4	0	19
18	10	-	0	-	6	-	0	-	-	16
Total	310	324	34	94	367	629	218	231	193	1353

Table 5.2 - Summary of Trees Impacted in Areas on Resumed Land

TREE AREA	FELL		TRANSPLANT		RETAIN		OUTSIDE BOUNDARY	FAILED (2019)	DEAD (2012)	TOTAL (Qty)
	TRA4	TRA1/2	TRA4	TRA1/2	TRA4	TRA1/2				
2	3	3	0	0	0	0	0	0	0	3
3A	40	40	0	0	0	0	0	0	0	40
3B	0	0	0	0	39	53	11	14	4	68
13	0	0	11	11	0	0	0	0	1	12
Total	43	43	11	11	39	53	11	14	5	123

Table 5.3 - Summary of Trees Impacted in Areas on Government Land

TREE AREA	FELL		TRANSPLANT		RETAIN		OUTSIDE BOUNDARY	FAILED (2019)	DEAD (2012)	TOTAL (Qty)
	TRA4	TRA1/2	TRA4	TRA1/2	TRA4	TRA1/2				
7A(g)	1	1	0	0	0	0	0	0	0	1
7B(g)	0	0	0	0	8	11	0	3	19	30
7C(g)	5	0	0	0	1	6	0	0	0	6
7D(g)	0	0	0	0	18	21	0	3	8	29
8(g)	19	13	0	0	0	8	0	2	1	22
9B(g)	2	2	0	0	4	5	0	1	0	7
Total	27	16	0	0	31	51	0	9	28	95

5.3 Trees to be FELLED (Private Land)

A total of **734** (517) no. of trees have been lost within Areas 1-18 on PRIVATE LAND, including: -

193 dead or missing trees at project inception,

324 that were approved for felling under TRA 1 and TRA 2,

204 trees that have died, fallen in typhoon or are now missing; and

13 additional trees identified for felling that either pose safety risk or conflict with the works.

This is an increase of **217** additional trees needing to be replaced over and above the approved number. Many of these were slated for transplantation originally, however site and time constraints made this not possible.

All trees on private land lie within the land lot under lease by Hong Kong Airport Authority. The calculated aggregated girth of felled trees is assessed in **Table 5.4** below:

Table 5.4 - Aggregated Diameter of Trees FELLED and FAILED in Areas on PRIVATE Land

	TRA 1 / TRA 2 (2012)		TRA 4 (2019)		Management Body
	DEAD / FELL	Aggregate Diameter (mm)	FELLED & FAILED	Aggregate Diameter (mm)	
AREA 1A	52	8665	**52**	**8665**	AAHK
AREA 1B	0	0	**0**	**0**	AAHK
AREA 4	102	15210	**147**	**21740**	AAHK
AREA 5	0	0	**54**	**7595**	AAHK
AREA 6	13	1725	**46**	**5885**	AAHK
AREA 7A	25	5235	**29**	**5875**	AAHK
AREA 7B	0	0	**36**	**7850**	AAHK
AREA 7C	0	0	**5**	**710**	AAHK
AREA 7D	0	0	**19**	**3280**	AAHK
AREA 8	46	6450	**28**	**3970**	AAHK
AREA 9A	18	2430	**39**	**5190**	AAHK
AREA 9B	1	180	**23**	**3210**	AAHK
AREA 10	55	8255	**13**	**1870**	AAHK
AREA 11	10	2000	**23**	**4580**	AAHK
AREA 12	0	0	**1**	**190**	AAHK
AREA 13	0	0	**0**	**0**	AAHK
AREA 14	2	510	**2**	**510**	AAHK
AREA 15	0	0	**1**	**225**	AAHK
AREA 16	0	0	**1**	**240**	AAHK
AREA 17	8	2235	**12**	**3415**	AAHK
AREA 18	-	-	**10**	**1515**	AAHK
TOTAL	**332**	**52895**	**541**	**86,515**	

5.4 Trees to be FELLED (Government Land)

A total of **126** no. of trees have been lost within Areas 1-18 on GOVERNMENT LAND, including: -

33 dead or missing trees at project inception,

59 that were approved for felling under TRA 1 and TRA 2,

23 trees that have died, fallen in typhoon or are now missing; and

11 additional trees identified for felling that either pose safety risk or conflict with the works.

This is an increase of **34** additional trees that need to be replaced over and above the approved number.

The comparable aggregated girth of trees felled is assessed in **Table 5.5** below:

Table 5.5- Aggregated Diameter of Trees FELLED and FAILED in Areas on GOVERNMENT Land

Species	TRA 1 / TRA 2 (2012)		TRA 4 (2019)		Management Body
	FELL	Aggregate Diameter (mm)	FELLED & FAILED	Aggregate Diameter (mm)	
AREA 2	3	455	**3**	**455**	HyD
AREA 3A	40	6625	**40**	**6625**	HyD
AREA 3B	0	0	**14**	**2230**	LandsD
AREA 7A(g)	1	105	**1**	**105**	(HyD)
AREA 7B(g)	0	0	**3**	**740**	(HyD)
AREA 7C(g)	0	0	**5**	**820**	(HyD)
AREA 7D(g)	0	0	**3**	**630**	(HyD)
AREA 8(g)	13	1885	**21**	**2755**	(HyD)
AREA 9B(g)	2	435	**3**	**675**	(HyD)
TOTAL	**59**	**9505**	**93**	**15,035**	

5.5 Trees to be TRANSPLANTED to Private Land

A total of **94 no**. of trees were unavoidably impacted by the works within Areas 1-18 and originally proposed as suitable for transplantation. Only **34** no. of these were successfully transplanted from their current locations to new areas within the project works boundary however.

Transplantation was made to two areas identified within the approved TRA 2 submission, utilising areas T-01, T-02 and T-03 in HKAA Zone 3. Other areas previously identified were no longer available for transplantation as the land was reserved for new major projects or interfered with underground utility projects. The transplanting schedule is detailed in Table 7.3 below: -

The summary of trees for transplantation on private land is shown in **Table 5.6** below and the handover documentation attached in **Appendix F:** -

Table 5.6 – Summary of Trees for Transplantation in areas to be Maintained by HKAA

Species	Trees to be Transplanted **TR4** (TRA2)	Management Body	Transplant Destination	Remark

AREA 4	**0** (6)	**HKAA**		Trees were not able to be transplanted and were felled
Lophostemon confertus	0 (1)			
Melia azedarach	0 (5)			
AREA 5	**0** (24)	**HKAA**		Trees were not able to be transplanted and were felled
Bauhinia blakeana	0 (14)			
Bauhinia variegata	0 (10)			
AREA 6	**0** (5)	**HKAA**		Trees were not able to be transplanted and were felled
Hibiscus tiliaceus	0 (4)			
Lophostemon confertus	0 (1)			
AREA 7A	**0** (4)	**HKAA**		Trees were not able to be transplanted and were felled
Archontophoenix alexandrae	0 (4)			
AREA 9A	**0** (8)	**HKAA**		Trees were not able to be transplanted and were felled
Cassia siamea	0 (3)			
Hibiscus tiliaceus	0 (5)			
AREA 11	**0** (11)	**HKAA**		Trees were not able to be transplanted and were felled
Hibiscus tiliaceus	0 (11)			
AREA 12	**2** (3)	**HKAA**		2 no. transplanted trees were handed over to AAHK on 3 August 2015
Livistona chinensis	2 (3)		T-02	
AREA 15	**32** (33)	**HKAA**		32 no. transplanted trees were handed over to AAHK on 25 August 2016
Ficus microcarpa	32 (33)		13# - T-01 19# - T-03	
TOTAL	**34** (94)			

5.6 Trees to be TRANSPLANTED to Government Land

A total of **11 no**. of trees were unavoidably impacted by the works on GOVERNMENT land within Area 13 proposed as suitable for transplantation. All 11 trees were successfully transplanted from their current locations to new areas at the recipient location **T-06** located at Tung Chung Waterfront Road. The trees were handed over to LCSD. Please refer to the handover documentation in **Appendix E**.

Table 5.7 – Summary of Trees for Transplantation in Areas to be Maintained by LCSD *

Species	Trees to be Transplanted (Qty)	Management Body	Transplant Destination	Remarks
AREA 13	**11**	**LCSD**		
Livistona chinensis	10		T-06 -	handed to LCSD - 17 June 2015
Phoenix robelenii	1			
TOTAL	**11**			

6 Compensatory Planting Proposal

The transplantation and compensatory planting areas are detailed on **Drawing No.s 4809-LD-9101-13** in **Appendix D**.

In accordance with LAO Practice Notes 7/2007A and ETWB TC(W) No. 7/2015, the proposed compensatory planting proposal should be of a ratio not less than 1:1 in terms of quality and quantity within the site. This proposal includes compensatory planting of Heavy Standard (HS) stock and Light Standard (LS) trees supplemented by large shrub intermediate planting. Whilst HS trees shall give immediate greening qualities to the planting areas, it is considered that inclusion of smaller light standard trees and seedlings as further planting will provide a more resilient and faster growing planting scheme and such trees can be expected to outperform the larger trees in terms of size, quality and site adaptability within 5 years.

6.1 Compensatory Planting Sizes

The quantity of compensatory trees is based on the following size presumptions for aggregated diameter: - **Heavy Standard Trees - 120mm DBH / Large Palms – 60mm / Light Standard Trees - 40mm DBH / Seedlings / Whips - 20mm DBH**

	Species	Size	Assumed Aggregated Girth
Palms			
CO	Cariota mitis	LP	60mm
PL	Phoenix loureiroi	LP	60mm
RM	Ravenalia madagascariensis	LP	60mm
SN	Strelitzia nicolai	LP	60mm
Small Trees			
CV	Callistemon viminalis	LS	40mm
PR	Plumeria rubra	LS	40mm
GR	Grevillea robusta	LS	40mm
TC	Tabebuia chrysantha	LS	40mm
Medium Trees			
BP	Bauhinia purpurea	HS	120mm
BV	Bauhinia variegata	HS	120mm
BX	Bauhinia variegata var. ‘candida’	HS	120mm
TP	Thespesia populnea	LS	40mm
Large Trees			
AC	Acacia confusa	Seedling	20mm
AL	Albizia lebbek	HS	120mm
SS	Senna siamea	HS	120mm
TM	Terminalia mantaly	HS	120mm

6.2 Compensatory Planting Inside the Private Lot (to be maintained by HKAA)

Within the private lot, **193** originally dead / missing trees need to be compensated as well as **231** newly dead trees identified in 2019. The number of trees to be felled has been reduced from the original 324 to **310** no. composed of thirty-two different species. The aggregate trunk diameter of these **541 no. trees** is **86,515** mm. The newly proposed on-site compensation within the private lot area consists of **222** (296) no. HS trees at 120mm DBH (aggregated diameter **26,640 mm)** plus **953** (437) shrubs. Please refer to T**able 7.1** below and to **Drawing No.s 4809-LD-9102-13** in **Appendix D**.

Table 7.1 - Compensatory Planting Area Comparison on PRIVATE Land (Maintained by HKAA)

Planting Area	Planting Area (m^2)		Tree Planting (Qty)		Seedling / Shrub Planting (Qty)	
	TRA 4	TRA 2	TRA 4	TRA 2	TRA 4	TRA 2
C-02	**753**	(1077)	**30**	36	**297**	58
C-03a	**142**	(1265)	**25**	42	**79**	69
C-03b	**100**	-	**10**	-	**32**	-
C-04	**1966**	(2580)	**82**	73	**545**	148
C-05 (NOT USED)	**0**	1040	**0**	29	**0**	51
C-06 (NOT USED)	**0**	965	**0**	26	**0**	61
C-07 (NOT USED)	**-**	-	**0**	50	**-**	-
C-08 (NOT USED)	**0**	250	**0**	10	**0**	12
C-09 (NOT USED)	**0**	250	**0**	10	**0**	13
C-10 (NOT USED)	**0**	500	**0**	20	**0**	25
C-11	**2661**	-	**75**	-	-	-
TOTAL		**6662**	**222**	**296**	**953**	**437**

Table 7.2 - Compensatory Planting Proposed by SPECIES (Maintained by HKAA)

	Species	Size	Qty.	Aggregated Girth
TREES	Bauhinia blakeana	HS	30	3,600
	Bauhinia variegata	HS	192	23,040
	TOTAL		**222**	**26,640**
SHRUBS	Nerium oleander	Small Shrub	134	
	Osmanthus fragrans	Small Shrub	522	
	Rhododendron spp	Small Shrub	297	
	TOTAL		**953**	

6.3 Compensatory Planting on Government Land (to be maintained by LCSD)

Within the government land, **33 no.** originally dead / missing trees need to be compensated as well as **93** (59) no. trees felled dead or missing during the works, composed of twenty-seven different species. The aggregate trunk diameter of the **93 no. trees** is **15,035** mm.

Compensation for the above trees is carried out on the government land created through the project allocated to HyD and maintained by LCSD with their agreement. Furthermore, to make up for any perceived shortfall in adequately compensating trees lost on the private lot, significant additional compensate ory tree planting is made under the project.

Total tree planting of **1241** trees in area **G1, G2, G3 and G4** is proposed. The details of such additional compensation is scheduled on **Tables 7.4** and **7.5** below and outlined on **Drawing No.s 4809-LD-9100-13** in **Appendix D.**

Table 7.4 - Compensatory Planting on Government Land (Maintained by LCSD)

Planting Area	Planting Zone	Planting Area (m^2)	Tree Planting (Qty)
AREA G1			**536**
G1-a1	3	**100**	4
G1-a2	3	**100**	6
G1-a3	3	**85**	9
G1-a4	3	**342**	16
G1-a6	3	**275**	25
G1-a7	3	**1059**	42
G1-a8	3	**209**	7
G1-a9	3	**309**	19
G1-a10	3	**225**	10
G1-b1	3	**405**	14
G1-b3	3	**1515**	60
G1-b4	3	**40**	2
G1-b6	3	**358**	11
G1-b7	3	**57**	1
G1-c1	3	**514**	12
G1-c2	3	**702**	11
G1-d1	3	**390**	23
G1-e1	3	**576**	34
G1-e2	3	**1577**	77
G1-e3	3	**1116**	42
G1-f1	3	**1586**	63
G1-f2	3	**529**	33
G1-g1	3	**351**	10
G1-g2	3	**107**	5
AREA G2			**239**
G2-a2	3	**125**	15
G2-a3	3	**135**	11
G2-a4	3	**79**	13

G2-a5	3	**97**	7
G2-a6	3	**152**	21
G2-b1	3	**118**	8
G2-c1	3	**482**	29
G2-c2	3	**914**	42
G2-c5	2	**493**	20
G2-c6	2	**155**	17
G2-c10	2	**133**	16
G2-c14	2	**101**	13
G2-c18	2	**92**	15
G2-c22	2	**114**	12
AREA G 3			**147**
G3-a1	3	**745**	29
G3-a2	3	**2359**	85
G3-a3	3	**1055**	33
AREA G 4			**319**
G4-b3	2	**500**	39
G4-d5	2	**400**	39
G4-e1	3	**781**	40
G4-f1	3	**59**	6
G4-f3	2	**461**	39
G4-f5	2	**310**	39
G4-h2	2	**492**	39
G4-k5	2	**453**	39
G4-k7	2	**784**	39
TOTAL			**1241**

Table 7.5 - Compensatory Planting Quantity by SPECIES (Maintained by LCSD)

	Species	Size	Qty.	Aggregated Girth
Palms				
CO	Cariota mitis	LP	67	4020
PL	Phoenix Loureiroi	LP	122	7320
RM	Ravenalia madagascariensis	LP	86	5160
SN	Strelitzia nicolai	LP	89	5340
Small Trees				
CV	Callistemon viminalis	LS	56	2240
PR	Plumeria rubra	LS	342	13680
GR	Grevillea robusta	LS	81	3240
TC	Tabebuia chrysantha	LS	27	1080
Medium Trees				
BP	Bauhinia purpurea	HS	44	5280
BV	Bauhinia variegata	HS	59	7080

BX	Bauhinia variegata var. 'candida'	HS	70	8400
TP	Thespesia populnea	LS	137	5480
Large Trees				
AC	Acacia confusa	Seedling	35	700
AL	Albizia lebbek	HS	8	960
SS	Senna siamea	HS	8	960
TM	Terminalia mantaly	HS	10	1200
TOTAL			**1241**	**72,140**

6.4 Summary of Compensatory Planting

In summary, the proposed compensatory planting is allocated to two areas: -

- **222** no. Heavy Standard trees and **953** shrubs within the private lot maintained by AAHK; and
- **1241** new trees on the project government roadside amenity areas to be maintained by LCSD.

This is proposed as sufficient provision for the loss of the **734** no. trees on private land and the **126** no. trees on government land, predominantly plantation species within the existing areas. For the dead or missing trees it is not intended to replace these in the same locations since the density of tree planting is already beyond that deemed appropriate for good management. Trees have become unstable in the woodland blocks due to over dense planting and these woodland areas require thinning out in order to encourage the development of larger tree stands.

The landscape proposal is considered to meet requirements in terms of protection of existing trees as well as in the quality and quantity of compensatory planting for the loss of identified trees required to be felled.