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MEMO

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<i>Ref.</i> (7KQL) in HyD MWSD/11-2/(HY/2011/09)/M45/100	<i>(Attn. :</i> _____)
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<i>Fax. No.</i> 3188 6614	<i>Dated</i> _____ <i>Fax No</i> _____
<i>Date</i> 20 July 2021	<i>Total Pages</i> 1 + Encl.

Contract No. HY/2011/09
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill

Environmental Permit No. EP-352/2009/D
Landscape Monitoring Report (Long Term Management)
- 23 May 2020 to 22 May 2021

Pursuant to Table 14.1 of the updated Environmental Monitoring and Audit (EM&A) Manual of Hong Kong-Zhuhai-Macao Bridge (HZMB) Hong Kong Link Road (HKLR), we submit herewith the Landscape Monitoring Report for the second year of Long Term Management.

2. Should you have any enquiries, please contact the undersigned.

(Maurice K H LAM)
 for Chief Engineer 6/Major Works
 Major Works Project Management Office (Special Duties)
 Highways Department

Encl.

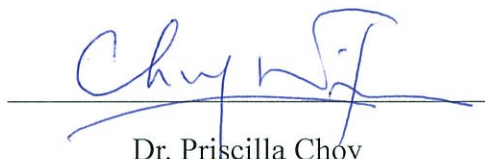
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Contract HY/2011/09
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Link Road-Section between
HKSAR Boundary and Scenic Hill
Landscape Monitoring Report
(Long Term Management)


(23 May 2020 – 22 May 2021)

Certified By 
Dr. Priscilla Choy
Environmental Team Leader

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

WELLAB accepts no responsibility for changes made to this report by third parties

Counter-signed by 
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Date: 20 July 2021

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1 INTRODUCTION

Background

- 1.1 The Hong Kong - Zhuhai - Macao Bridge Hong Kong Link Road (HKLR) comprises a 9.4km long viaduct section from the HKSAR boundary to Scenic Hill on the Airport Island; a 1km tunnel section to the reclamation formed along the east coast of the Airport Island and a 1.6km long at-grade road section on the reclamation connecting to the HKBCF. The tunnel section of HKLR will pass under Scenic Hill, Airport Road and Airport Railway to minimize the environmental and visual impacts to Tung Chung residents.
- 1.2 An Environmental Impact Assessment (EIA) Study (Reg. No. AEIAR-144/2009) has been undertaken to provide information on nature and extent of environmental impacts arising from the construction and operation of HKLR. Pursuant to Section 13 of the EIAO, the Director of Environmental Protection has issued Further Environmental Permit (No. FEP-01/352/2009/D) based on the Application No. FEP-186/2018 for HKLR to the Airport Authority as the Permit Holder on 29 March 2018.
- 1.3 The Hong Kong Link Road project has been separated into two contracts. They are Contract No. HY/2011/03 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between Scenic Hill and Hong Kong Boundary Crossing Facilities and Contract No. HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill (hereafter referred to as the Contract).
- 1.4 Dragages -China Harbour-VSL JV (hereinafter called “the Contractor”) was the main contractor of the Contract. All construction activities undertaken by Contract No. HY/2011/09 for construction of a dual 3-lane carriageway in the form of viaduct from the HKSAR boundary to Scenic Hill of approximately 9.4km in length under the Environmental Permit (EP-352/2009/D) have been completed in August 2018. In addition, HKLR has been commissioned on 24 October 2018.
- 1.5 According to Environmental Monitoring and Audit Manual for Hong Kong Link Road (EM&A Manual), monitoring of the long-term management of the planting works in the period up to 10 years after completion of the construction works are required. All landscape works were completed on 22nd May 2019. Wellab Limited (Wellab) was appointed to undertake this Annual Monitoring of Long Term Management of Planting Works.

Purpose of the Report

- 1.6 This Annual Monitoring Report for Long Term Management of Planting Works under the Contract which present the monitoring methodology of the long-term management of the planting work and report any areas of vegetation (i.e. newly planted trees) which is failed to establish.

2 METHODOLOGY

- 2.1 In accordance with Section 14.2.10 of the EM&A Manual, the planting works shall be monitored during the first 10 years of the operation phase of the project. Any areas of vegetation which is failed to establish, should be corrected by the relevant maintenance parties at the earliest opportunity. The maintenance requirement of the planting works stated under the 10-Year Management Programme is included in the monitoring requirement.
- 2.2 According to Environment, Transport and Works Bureau Technical Circular (Works) No. 2/2004, maintenance operations for vegetation on landscape areas are required to ensure the healthy establishment and growth of plants, which in general include watering, fertilizing, weeding, pruning, mulching, pest control, replacement etc. as appropriate.
- 2.3 This annual monitoring is to check the location and plant species which have been planted according to the approved Soft Landscape Layout Plan and ensure the planting maintenance operations are properly carried out during the operation phase of the Contract, including:
- Inspection for fungal / viral attacks and pest infestations;
 - Litter collection;
 - Watering;
 - Weeding removal;
 - Replacement of defective planting material;
 - Grass cutting / groundcover trimming and removal of arisings;
 - Fertilizing application as required in specification; and
 - Aeration / mulching application.

Location of Planting Area

- 2.4 The soft landscape layout plan provides updated information of details such as locations of planting works and species, and these were agreed by the Airport Authority Hong Kong is shown in **Appendix A**.

Monitoring Frequency

- 2.5 Monitoring of planting works shall be carried out annually for 10 years after completion of the landscape construction works on 22nd May 2019.

3 ANNUAL MONITORING FOR PLANTING WORKS

Monitoring

- 3.1 This Annual Monitoring for Long Term Management of Planting Works under the Contract was conducted on 22nd May 2021 (Saturday).

Site Description

- 3.2 There are 4 tree species planted at the designated planting zones at Hong Kong International Airport. The summary of these plant species are shown in **Table 3.1**.

Table 3.1 Summary of Plant Species

1. TREE SPECIES		
Botanical Name	Chinese Name	Quantity
<i>Bauhinia blakeana</i>	洋紫荊	26
<i>Plumeria rubra</i>	雞蛋花	184
<i>Phoenix roebelenii</i>	日本葵	28
<i>Bauhinia variegata</i>	宮粉羊蹄甲	18

Observation on Planting Works and Maintenance Operations

- 3.3 The location and plant species have been checked during the inspection which are followed the approved Soft Landscape Layout Plan in **Appendix A**. No vegetation was found fail to establish.

Growing of Plants in Planting Area

- 3.4 During the site inspection, planted trees were observed generally growing at the designated planting area. However, some minor health defects were also observed, and all these defects of some plants were mainly due to the site constraints.


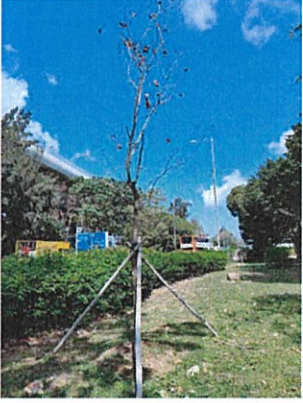




Site Constraints




- 3.5 According to Clause 2.6(i) of Guidelines on Tree Transplanting (September 2014) that “The locations of the tree and/or the receptor site may pose constraints to the transplanting works. Locations like underneath a flyover or footbridge, adjacent to a slope, too close to a building/structure, vehicular and pedestrian flows may add considerable difficulties to the transplanting work.”

Minor Health Defects

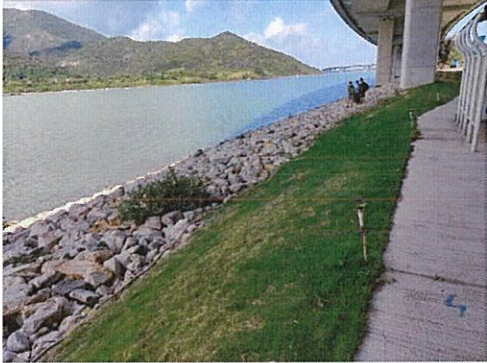

- 3.6 Minor health defects were commonly observed on the planted trees. Health defects, including vigorous growth of epicormics shoots, root exposure, decay on branches, white spots on trees' bark (i.e. Fungal Disease), dieback twigs on tree crown and cracks or fissures on the branches, were observed.
- 3.7 The photographic records of the minor health defects observed on trees are shown in **Table 3.2**.

Table 3.2 Minor Health Defects observed on Trees

A. Tree - <i>Bauhinia blakeana</i> (Location: HKLR9/MMH/DDA/AI/LS/00105)	
	
<u>Vigorous growth of epicormic shoots</u>	<u>Dieback twigs on tree crown</u>
	
<u>Root exposure</u>	<u>Cracks or fissures on the branches</u>
B. Tree - <i>Plumeria rubra</i> (Location: HKLR9/MMH/DDA/AI/LS/00103-105)	
	
<u>White spots on trees' bark (i.e. Fungal Disease)</u>	<u>Decay on branches</u>
C. Tree - <i>Phoenix roebelenii</i> (Location: HKLR9/MMH/DDA/AI/LS/00109)	

	
<u>The tips of the fronds to turn yellow (i.e. potassium deficiency)</u>	
D. Tree - <i>Bauhinia variegata</i> (Location: HKLR9/MMH/DDA/AI/LS/00105)	
	
<u>Root exposure</u>	<u>Vigorous growth of epicormic shoots</u>

3.8 During the inspection, sprinkler irrigation system was installed for the landscape areas, but no watering was observed (Photo 1). In addition, litter collection and weeding removal were also observed (Photo 2).

	
<u>Photo 1 - Sprinkler Irrigation System</u>	<u>Photo 2 - Litter Collection and Weeding Removal</u>

4 CONCLUSIONS

- 4.1 There are 4 tree species planted according to the approved soft landscape layout plan at the designated planting zones at Hong Kong International Airport under the Contract. All planted trees were observed generally growing at the designated planting area, but minor health defects are commonly observed. No vegetation was found fail to establish.

5 RECOMMENDATIONS

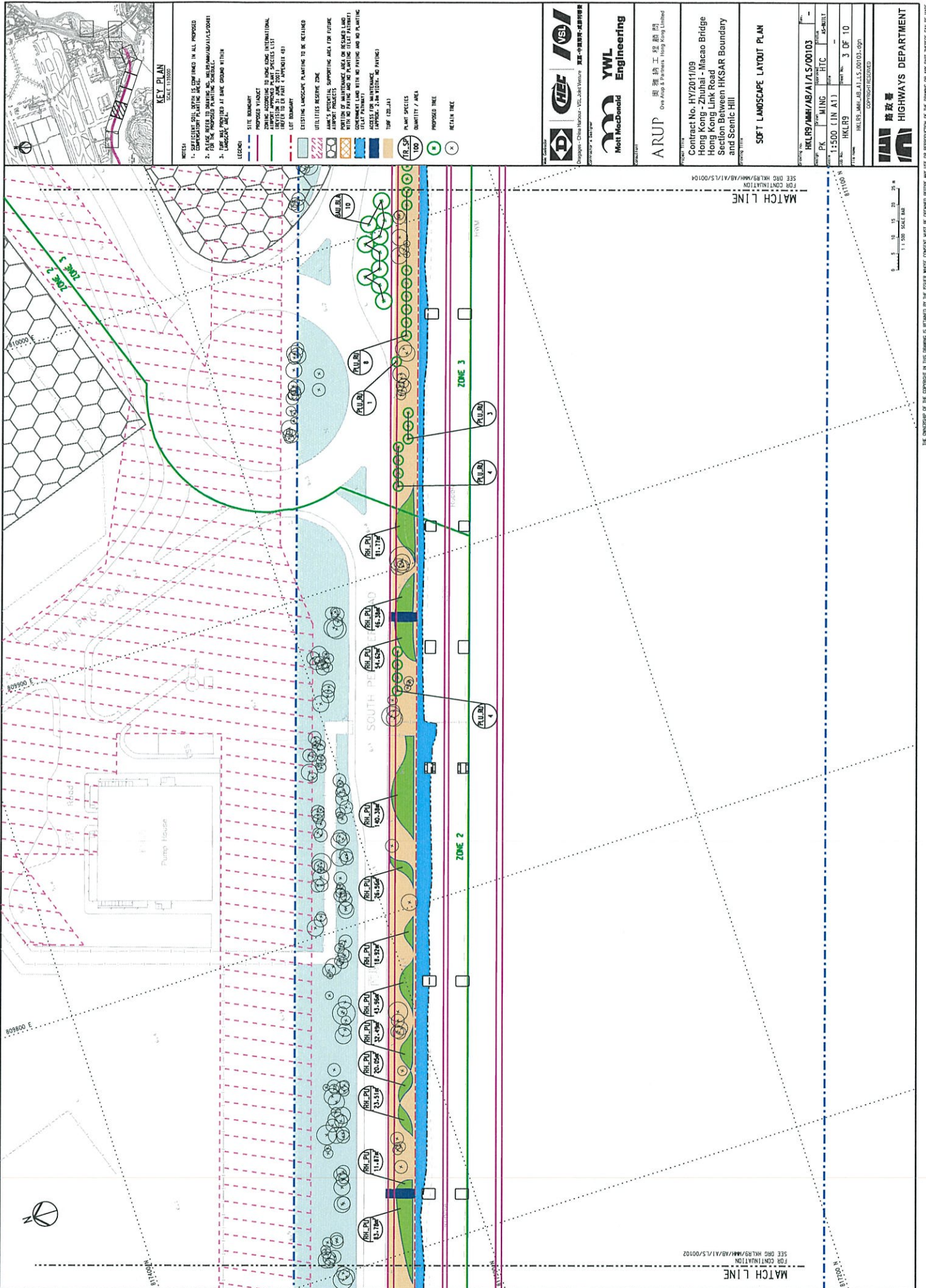
- 5.1 The summary of recommendations for Long Term Management of Planting Works are presented in **Table 5.1**.

Table 5.1 Summary of Recommendations for Long Term Management of Planting Works

No.	Description	Recommendations
1	Soil condition	For the soil in the planting zone which is not fertile enough and dry, esp. in hot and dry weather condition, provide fertilizer and frequent watering esp. in the dry and hot weather condition.
2	Vigorous growth of epicormics shoots	Properly pruning on epicormic shoots
3	Dieback twigs on tree crown	Properly pruning of die back tree branches
4	Cracks or Fissures on the branches	Remove any loose hanging bark; properly pruned to expedite the healing process
5	Root exposure	To make the area of mulch as large as it needs to be completely cover the exposed roots
6	White spots on trees' bark / pale spots on upper leaf surface (i.e. Fungal Disease)	Apply fungicides if necessary
7	Decay on branches	Use a sharp knife or wood chisel to give a clean cut to the wound area so the dead bark is not impeding the growth of the callous or “wound wood” that will grow to attempt to compartmentalize the decay of the wound
8	Crinkly leaves / The tips of the fronds to turn yellow (i.e. potassium deficiency)	Fertilizing, watering and mulching the plants regularly to replenish the soil with nutrients and microorganisms

**APPENDIX A
SOFT LANDSCAPE LAYOUT PLAN**





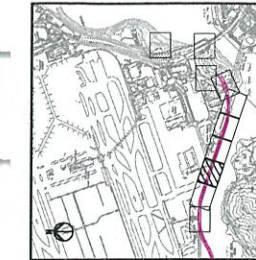
KEY PLAN
 SCALE: 1:15000

NOTES:

1. EXISTING VEGETATION TO BE REMOVED IN ALL PROPOSED CONTEMPORARY PLANTING AREAS.
2. PLANTING TO BE INSTALLED IN ACCORDANCE WITH THE PROPOSED PLANTING SCHEDULE.
3. TREES TO BE PLANTED AT BARE SOILS WITHIN LANDSCAPE AREAS.

LEGEND:

- SITE BOUNDARY
- PROPOSED VIADUCT
- PROPOSED ROADWAY
- PROPOSED PLANTING SCHEDULE
- EXISTING PLANTING SCHEDULE
- LEFT BOUNDARY
- RIGHT BOUNDARY
- UTILITIES RESERVE ZONE
- AREA'S POTENTIAL SUPPORTING AREA FOR FUTURE POSITION OF MAINTENANCE AREA OR RECREATION LAND WITH NO PAVING AND NO PLANTING (TREAT PLANTING)
- UTILITIES RESERVE ZONE
- ACCESS FOR MAINTENANCE (PROPOSED, 2.5M WIDTH, NO PAVING)
- TOP OF ROAD
- PLANT SPECIES
- QUANTITY / AREA
- PROPOSED TREE
- RETAIN TREE



ARUP
 奥雅纳工程顾问
 One Aup & Partners, Hong Kong Limited

Mott MacDonald

YWL Engineering

HEC / VSL

Contract No. HY2011/09
 Hong Kong - Zhuhai - Macao Bridge
 Hong Kong Link Road
 Section Between HKSAR Boundary
 and Scenic Hill

SOFT LANDSCAPE LAYOUT PLAN

PROJECT TITLE: H.K.L.R./MH/AB/AL/S/00103

DATE: 1:500 (I.N. A1)

NO. OF SHEETS: 3 OF 10

DESIGNED BY: H.K.L.R./MH/AB/AL/S/00103-001

CHECKED BY: H.K.L.R./MH/AB/AL/S/00103-001

DATE: 1:500 (I.N. A1)

SCALE: 1:1500

陸政署
HIGHWAYS DEPARTMENT



PROJECT NO.	HKL/R9/MMH/AB/A1/LS/00104
GROUP	PK
PK	1:500 (IN A1)
DATE	4 DF 10
PROJECT TITLE	HONG KONG - ZHUZHAI - MACAO BRIDGE SECTION BETWEEN HKSAR BOUNDARY AND SCENIC HILL

SOFT LANDSCAPE LAYOUT PLAN

Contract No. HY/2011/09
 Hong Kong - Zhuhai - Macao Bridge
 Section Between HKSAR Boundary
 and Scenic Hill

ARUP 奥雅设计有限公司
 Ouy Arab & Partners, Hong Kong Limited

YWL Engineering
 怡和工程

KEY PLAN
 关键位置图

NOTES:
 1. THE SOFT LANDSCAPE LAYOUT PLAN IS TO BE CO-ORDINATED WITH ALL PROPOSED HARD LANDSCAPE LAYOUT PLANS.
 2. PLEASE REFER TO DRAWING NO. HKSAR/MMH/AB/A1/LS/00104 FOR THE PROPOSED PLANTING SCHEDULE.
 3. LANDSCAPE DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

LEGEND:

- PROPOSED VIADUCT
- EXISTING LANDSCAPE PLANTING TO BE RETAINED
- UTILITIES RESERVE ZONE
- AMK'S PROTECTIVE SUPPORTING AREA FOR FUTURE AIRPORT PROJECTS
- GOVERNMENT LAND WITH NO PAVING AND NO PLANTING
- FLYOVER
- PAVING
- TYPE (20.2) A1
- PLANT SPECIES
- QUANTITY / AREA
- PROPOSED TREE
- RETAIN TREE

