MOTT MACDONALD

Agreement No. HMWSD 1/2019 (EP) Post-Construction Monitoring of Chinese White Dolphin (Line-transect Vessel Surveys) for the Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road at West Lantau Waters – Investigation

Monthly EM&A Report – May 2020

Highways Department

MOTT MACDONALD

Ramboll Hong Kong Limited
21st Floor, BEA Harbour View Centre
56 Gloucester Road
Wan Chai, Hong Kong

Attention: Mr. Manson Yeung – Independent Environmental Checker

Our Reference
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Agreement No. HMWSD 1/2019 (EP)
Post-Construction Monitoring of Chinese White Dolphin (Line-transect Vessel Surveys) for the Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road at West Lantau Waters – Investigation

Monthly EM&A Report for May 2020

23 July 2020
By Email

Dear Sir,

In accordance with Condition 4.4 of the Environmental Permit (EP-352/2009/D) covering the captioned assignment, we are pleased to submit the certified Monthly EM&A Report for May 2020 for your verification.

Yours faithfully,
For Mott MacDonald Hong Kong Limited

Gary Chow
Environmental Team Leader

Encl.

cc.
Highways Department – Mr. Xavier Yam (By Email)

Ref.: HYDHZMBEEM00_0_8127L.20

23 July 2020

By Fax (3188 6614) and By Post

Highways Department
Major Works Project Management Office (Special Duties)
4th Floor, Ho Man Tin Government Offices
88 Chung Hau Street, Ho Man Tin, Kowloon

Attention: Mr David Chan

Dear Sirs,

Re: Agreement No. CE 48/2011 (EP)
Environmental Project Office for the
HZMB Hong Kong Link Road, HZMB Hong Kong Boundary Crossing Facilities, and Tuen Mun-Chek Lap Kok Link – Investigation

Agreement No. HMWSD 1/2019 (EP)
Post-Construction Monitoring of Chinese White Dolphin (Line-transect Vessel Surveys) for the Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road at West Lantau Waters - Investigation
Monthly EM&A Report for May 2020

Reference is made to the Environmental Team's submission of the Monthly EM&A Report for May 2020 certified by the ET Leader (ET's ref.: "GC/HY/jt/411565/L023" dated 23 July 2020) and provided to us via e-mail on 23 July 2020.

We are pleased to inform you that we have no adverse comments on the captioned submission. We write to verify the captioned submission in accordance with Condition 4.4 the Environmental Permit No. EP-352/2009/D.

Thank you very much for your attention and please feel free to contact the undersigned should you require further information.

Yours faithfully,
For and on behalf of
Ramboll Hong Kong Limited

Manson Yeung
Independent Environmental Checker
HZMB HKLR

c.c.	HyD	Attn.: Ms Karen Ho	(By Fax: 3188 6614)
	MMHK	Attn.: Mr Gary Chow	(By Fax: 2827 1823)

Internal: DY, YH, ENPO Site

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This Monthly Environmental Monitoring and Audit (EM&A) Report is prepared for "Agreement No. HMWSD 1/2019 (EP) Post-Construction Monitoring of Chinese White Dolphin (Line-transect Vessel Surveys) for the Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road at West Lantau Waters – Investigation" (hereafter referred to as "the Assignment") for the Highways Department of Hong Kong Special Administrative Region (HKSAR).

Mott MacDonald Hong Kong Limited was appointed by the Highways Department of HKSAR to undertake the Environmental Team services for this Assignment for the post-construction monitoring of Chinese White Dolphin in West Lantau waters for the Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road Project.

This is the Monthly EM&A Report for the 19th month of the post-construction phase of the Project which summarises findings of the post-construction EM&A activities during the reporting period from 1 to 31 May 2020.

Environmental Monitoring and Audit Progress

A summary of the post-construction monitoring activities during the reporting period is listed as below:

- Chinese White Dolphin Monitoring (Line-transect Vessel Surveys): 6 and 20 May 2020
- Landscape establishment monitoring (bi-monthly, conducted for Contract No. HY/2011/09 by other parties): 11 and 22 May 2020

1 Introduction

1.1 Background of the Project

The Hong Kong-Zhuhai-Macao Bridge (HZMB) Hong Kong Link Road (HKLR) is a designated project under the Environmental Impact Assessment Ordinance (EIAO). The Environmental Impact Assessment (EIA) Report and Environmental Monitoring and Audit (EM&A) Manual (EIA Register No.: AEIAR-144/2009) for the project were approved by the Director of Environmental Protection in October 2009 and the Environmental Permit No. EP-352/2009 (EP) was issued in November 2009. The EP has been subject to several variations and the current one is EP No. EP-352/2009/D.

The HZMB HKLR was constructed under two works contracts namely Contract No. HY/2011/03 (HZMB HKLR – Section between Scenic Hill and Hong Kong Boundary Crossing Facilities (HKBCF)) and Contract No. HY/2011/09 (HZMB HKLR – Section between HKSAR Boundary and Scenic Hill). In accordance with the EP, the Contractors of Contract No. HY/2011/03 and Contract No. HY/2011/09 have separately employed their own Environmental Team (ET) and ET Leader to conduct construction phase monitoring of Chinese White Dolphin (CWD) in the North Lantau (NL) and West Lantau (WL) waters following the requirements specified in the EM&A Manual and the relevant contract specifications of the two contracts.

In accordance with Section 10.3 of the EM&A Manual, an ecological monitoring and audit programme is needed which will monitor potential impacts through construction and operation activities, and will verify the assessments which were made in the EIA report. In particular, the programme should include dolphin monitoring at NL and WL waters to be set up in order to verify the predictions of impacts and to ensure that there are no unforeseen impacts on the dolphin population during construction phase. Such dolphin monitoring should cover the pre-construction phase, the entire period of construction phase and after the completion of construction works (i.e. post-construction phase). In accordance with Section 14.2.1 of the EM&A Manual, mitigation measures for landscape and visual impacts implemented during construction phase should be checked every 2 months to ensure compliance with the intended aims throughout the one-year landscape establishment period in the post-construction phase.

The main objective of the current Assignment commissioned by the Highways Department (HyD) is to conduct Post-Construction Monitoring of CWD in WL waters in compliance with the requirements stipulated in the EM&A Manual and the EP for the HZMB HKLR Project. The post-construction monitoring of CWD should be conducted for two years upon the completion of all marine-based construction activities.

The marine-based construction activities for the Contract No. HY/2011/09 was completed in October 2018. Subsequently, 10 months of post-construction dolphin monitoring had been carried out by the Contract, while the remaining 14 months of post-construction dolphin monitoring will be completed under this Assignment, from 1 September 2019 to 31 October 2020.

In August 2019, Mott MacDonald Hong Kong Limited was appointed by the HyD to undertake the Environmental Team (ET) services for this Assignment for the post-construction monitoring of CWD in WL waters for the HZMB HKLR Project. This is the Monthly EM&A Report for the 19th month of the post-construction phase of the Project summarising the findings of the post-construction EM&A activities during the reporting period from 1 to 31 May 2020, and is submitted to fulfil Condition 4.4 of the EP.

1.2 Project Organisation

The project organisation and lines of communication with respect to the environmental management structure are shown in **Appendix A**. The key personnel contact names and numbers are summarised in **Table 1.1**.

Table 1.1: Contact Information of Key Personnel

Party	Position	Name	Telephone	Fax
Permit Holder (HyD)	Engineer	Ms. Karen Ho	2762 4979	3188 6614
Environmental Project Office / Independent Environmental Checker (Ramboll Hong Kong Limited)	Environmental Project Office Leader	Mr. Y H Hui	3465 2888	3465 2899
	Independent Environmental Checker	Mr. Ray Yan / Mr. Manson Yeung	3465 2806	3465 2899
Environmental Team (Mott MacDonald Hong Kong Limited)	Environmental Team Leader	Mr. Gary Chow	2828 5874	2827 1823

1.3 Environmental Status and Programme

As described in Section 1.1, the current Assignment is under the post-construction phase of the HZMB HKLR Project with all marine-based construction activities completed, thus there were no construction works involved.

The CWD monitoring programme covers all transect lines in WL survey area (refer to **Figure 1**) for twice per month throughout the entire post-construction monitoring period for two years. The current reporting period is the 19th month of the post-construction CWD monitoring.

The CWD monitoring schedule for this reporting period and the tentative schedule of the planned CWD monitoring in the next reporting period are provided in **Appendix C**.

Landscape monitoring has been conducted by other parties for Contract No. HY/2011/09 since July 2019 with a monitoring programme for once in bi-monthly intervals throughout the landscape establishment period for one year. The 6th bi-monthly landscape establishment monitoring covering the reporting periods from April to May 2020 has been conducted in this reporting period. The landscape establishment monitoring checklist, soft landscape layout plans and photographic records are provided in **Appendix D**.

2 Chinese White Dolphin Monitoring

2.1 Monitoring Requirements

According to the requirement stated in the EM&A Manual, a CWD monitoring programme was set up to conduct surveys for twice per month adopting the line-transect vessel survey method and covering the following transect lines in the West Lantau (WL) survey area as in the AFCD long-term marine mammal monitoring programme.

The CWD monitoring works were undertaken by a dedicated survey team comprising qualified dolphin specialist and experienced CWD surveyors. The qualified dolphin specialist was approved by the AFCD and EPD.

2.2 Monitoring Locations

The location of the WL survey area and all transect lines are depicted in **Figure 1**. The co-ordinates of all transect lines are shown in **Table 2.1**.

Table 2.1: Co-ordinates of Transect Lines in WL Survey Area

Line No.		Easting	Northing	Line No.		Easting	Northing
1	Start Point	803750	818500	7	Start Point	800200	810450
1	End Point	803750	815500	7	End Point	801400	810450
2	Start Point	803750	815500	8	Start Point	801300	809450
2	End Point	802940	815500	8	End Point	799750	809450
3	Start Point	802550	814500	9	Start Point	799400	808450
3	End Point	803700	814500	9	End Point	801430	808450
4	Start Point	803120	813600	10	Start Point	801500	807450
4	End Point	801640	813600	10	End Point	799600	807450
5	Start Point	801100	812450	11	Start Point	800300	806500
5	End Point	802900	812450	11	End Point	801750	806500
6	Start Point	802400	811500	12	Start Point	801760	805450
6	End Point	800660	811500	12	End Point	800700	805450

2.3 Monitoring Methodology

2.3.1 Line-transect Vessel Survey

The following monitoring protocol is consistent and compatible with the baseline and construction phase dolphin monitoring methodology, which was also designed and adopted by the Hong Kong Cetacean Research Project (HKCRP) team for the HZMB monitoring since 2011.

The survey team used standard line-transect methods (Buckland et al. 2001) to conduct the systematic vessel surveys, and followed the same technique of data collection that has been adopted over the past two decades of marine mammal monitoring surveys in Hong Kong developed by HKCRP (see Hung 2018, 2019). For each monitoring vessel survey, a 15-m inboard vessel with an open upper deck (about 4.5 m above water surface) was used to make observations from the flying bridge area.

Two experienced observers (a data recorder and a primary observer) made up the on-effort survey team, and the survey vessel transited through different transect lines at a constant speed of 13-15 km per hour. The data recorder searched with unaided eyes and filled out the datasheets, while the primary observer searched for CWD continuously through 7 x 50 *Fujinon* marine binoculars. Both observers searched the sea ahead of the vessel, between 270^{o} and 90^{o} (in relation to the bow, which is defined as 0^{o}). One to two additional experienced observers were available on the boat to work in shift (i.e. rotate every 30 minutes) in order to minimize fatigue of the survey team members. All observers are experienced in small cetacean survey techniques and identifying local cetacean species.

During on-effort survey periods, the survey team recorded effort data including time, position (latitude and longitude), weather conditions (Beaufort sea state and visibility), and distance travelled in each series (a continuous period of search effort) with the assistance of a handheld GPS (*Garmin eTrex*). Data including time, position and vessel speed were automatically and continuously logged by a handheld GPS throughout the entire survey for subsequent review.

When dolphins were sighted, the survey team would end the survey effort, and immediately record the initial sighting distance and angle of the dolphin group from the survey vessel, as well as the sighting time and position. Then, the research vessel would be diverted from its course to approach the animals for species identification, group size estimation, assessment of group composition, and behavioural observations. The perpendicular distance (PSD) of the dolphin group to the transect line would later be calculated from the initial sighting distance and angle.

Survey effort being conducted along the parallel transect lines that were perpendicular to the coastlines (as indicated in **Figure 1**) was labelled as “primary” survey effort, while the survey effort being conducted along the connecting lines between parallel lines was labelled as “secondary” survey effort. According to HKCRP long-term dolphin monitoring data, encounter rates of CWD deduced from effort and sighting data collected along primary and secondary lines have been similar in survey areas around Lantau Island. Therefore, both primary and secondary survey effort were presented as on-effort survey effort.

Encounter rates of CWD (number of on-effort sightings per 100 km of survey effort) were calculated in WL survey area in relation to the amount of survey effort conducted during each month of monitoring survey. Only data collected under Beaufort 3 or below condition would be used for encounter rate analysis. Dolphin encounter rates were calculated using primary survey effort alone, as well as the combined survey effort from both primary and secondary lines.

2.3.2 Photo-identification Work

When a group of CWD was sighted during the line-transect survey, the survey team would end effort and approach the group slowly from the side and behind to take photographs of them. Every attempt was made to photograph every dolphin in the group, and even photograph both sides of the dolphins whenever possible, since the colouration and markings on both sides may not be symmetrical.

At least one professional digital camera (Canon EOS 7D model) equipped with long telephoto lens (100-400 mm zoom) was available on board for researchers to take sharp, close-up photographs of dolphins as they surface. The images were shot at the highest available resolution and stored on Compact Flash memory cards for downloading onto a computer.

All digital images taken in the field were first examined, and those containing potentially identifiable individuals were sorted out. These photographs were then examined in greater detail, and were carefully compared to the existing CWD photo-identification catalogue maintained by HKCRP since 1995. CWDs can be identified by their natural markings, such as nicks, cuts, scars and deformities on their dorsal fin and body, and their unique spotting patterns can also be used as secondary identifying features (Jefferson 2000).

All photographs of each individual were then compiled and arranged in chronological order, with data including the date and location first identified (initial sighting), re-sightings, associated dolphins, distinctive features, and age classes entered into a computer database.

2.4 Monitoring Results

2.4.1 Line-transect Vessel Survey

Two sets of systematic line-transect vessel surveys were conducted on 6 and 20 May 2020, to cover all transect lines in WL survey area twice. The survey routes of each survey day are presented in Figures 2 to 3 of **Appendix B**.

A total of 66.55 km of survey effort was collected, with 100% of total survey effort being conducted under favourable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility), as detailed in **Appendix B**. Out of the 66.55 km of survey effort, the total survey effort conducted on primary lines was 43.63 km, while the effort on secondary lines was 22.92 km.

During the two sets of monitoring surveys, eight groups of 34 CWDs were sighted. All dolphin groups were sighted during on-effort search, with half of these sightings being made on primary lines (refer to sighting data presented in **Appendix B**). None of these dolphin groups were associated with operating fishing vessel.

Distribution of the dolphin sightings made in the reporting period is shown in Figure 4 of **Appendix B**. The eight sightings were scattered throughout the WL survey area with no particular concentration and all of them were sighted far away from the HKLR alignment.

Encounter rates of CWD deduced from the survey effort and on-effort sighting data made under favourable conditions (Beaufort 3 or below) are shown in **Table 2.2** and **Table 2.3**.

Table 2.2: Dolphin encounter rates per set in WL survey area during the reporting period

Survey Area	Survey Set	Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)	Encounter rate (ANI) (no. of dolphins from all on-effort sightings per 100 km of survey effort)
		Primary Lines Only	Primary Lines Only
West Lantau (WL)	Set 1: May 6th, 2020	4.6	36.9
	Set 2: May 20th, 2020	13.7	36.4

Table 2.3: Overall dolphin encounter rates on primary lines only as well as both primary and secondary lines in WL survey area during the reporting period

Survey Area	Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)		Encounter rate (ANI) (no. of dolphins from all on-effort sightings per 100 km of survey effort)	
	Primary Lines Only	Both Primary and Secondary Lines	Primary Lines Only	Both Primary and Secondary Lines
West Lantau (WL)	9.2	12.0	36.7	51.1

The average group size of CWDs was 4.3 dolphins per group. Five of the eight dolphin sightings were consisted of small groups with 1-4 animals per group, while there were also two medium-sized groups with five and eight animals respectively, and another large group of 11 animals sighted during the reporting period.

2.4.2 Photo-identification Work

A total of 29 different individual CWDs were identified 32 times during surveys in this reporting period, with details presented in **Appendix B**. Out of the 29 individuals, three individuals (i.e. WL123, WL131 and WL273) were re-sighted twice and the rest of them were re-sighted only once during the reporting period. Notably, three individuals (i.e. WL98, WL273 and WL291) were sighted with their young calves during this reporting period.

3 Landscape Establishment Monitoring

3.1 Monitoring Requirements

According to the requirement stated in the EM&A Manual, landscape establishment monitoring should be carried out every two months for checking of the planting works during the 1-year establishment period. Measures to mitigate landscape and visual impacts should be checked to ensure compliance with the intended aims of the measures. The monitoring was conducted by other parties for Contract No. HY/2011/09.

3.2 Monitoring Location

The monitoring areas locate along South Perimeter Road and Chek Lap Kok South Road, near Scenic Road and a small section of Airport Road and Kwo Lo Wan Road. Locations of the monitoring areas are shown in the Drawing no. HKLR9/MMH/DDA/AI/LS/00100 of **Appendix D**.

3.3 Monitoring Results

Landscape establishment monitoring covering May and June 2020 was conducted on 11 and 22 May 2020. The observations made during this reporting period are as follows:

Viaduct between P112 and P114

- The groundcovers (*Catharanthus roseus* and *Lantana montevidensis*) were observed to be in poor health or dead. The contractor was reminded to review the health condition of all groundcovers and re-planted if necessary.
- Weeds and unwanted plants were observed. The Contractor was reminded to remove them and replant the approved species for groundcovers according to the approved plan.

Based on the observations, the contractor was reminded to review the health conditions of the plants, remove weeds and replant the approved species to meet the aim of the mitigation measures proposed during EIA stage, i.e. provide proper planting maintenance on the new planting areas to enhance the aesthetic degree.

The landscape establishment monitoring checklist, monitoring photos and location of trees selected for monitoring are provided in **Appendix D**.

4 Conclusions

Post-construction EM&A works including the monitoring of CWD and landscape establishment were conducted in accordance with the EM&A Manual during the reporting period.

In this month of post-construction monitoring of CWD in WL waters, vessel surveys were conducted on 6 and 20 May 2020 covering all transect lines in WL survey area twice. A total of 66.55 km of survey effort was collected, with eight groups of 34 CWDs were sighted. All marine-based construction activities have been completed and as a result, no adverse impact on CWD was observed from the HZMB HKLR works.

Bi-monthly landscape establishment monitoring was conducted on 11 and 22 May 2020. Two observations were made regarding groundcovers found in poor health condition and weeds found in planter areas. The contractor was reminded to review the health conditions of the plants as well as to remove weeds and replant the approved species for groundcover accordingly to ensure healthy establishment of target species.

Figures

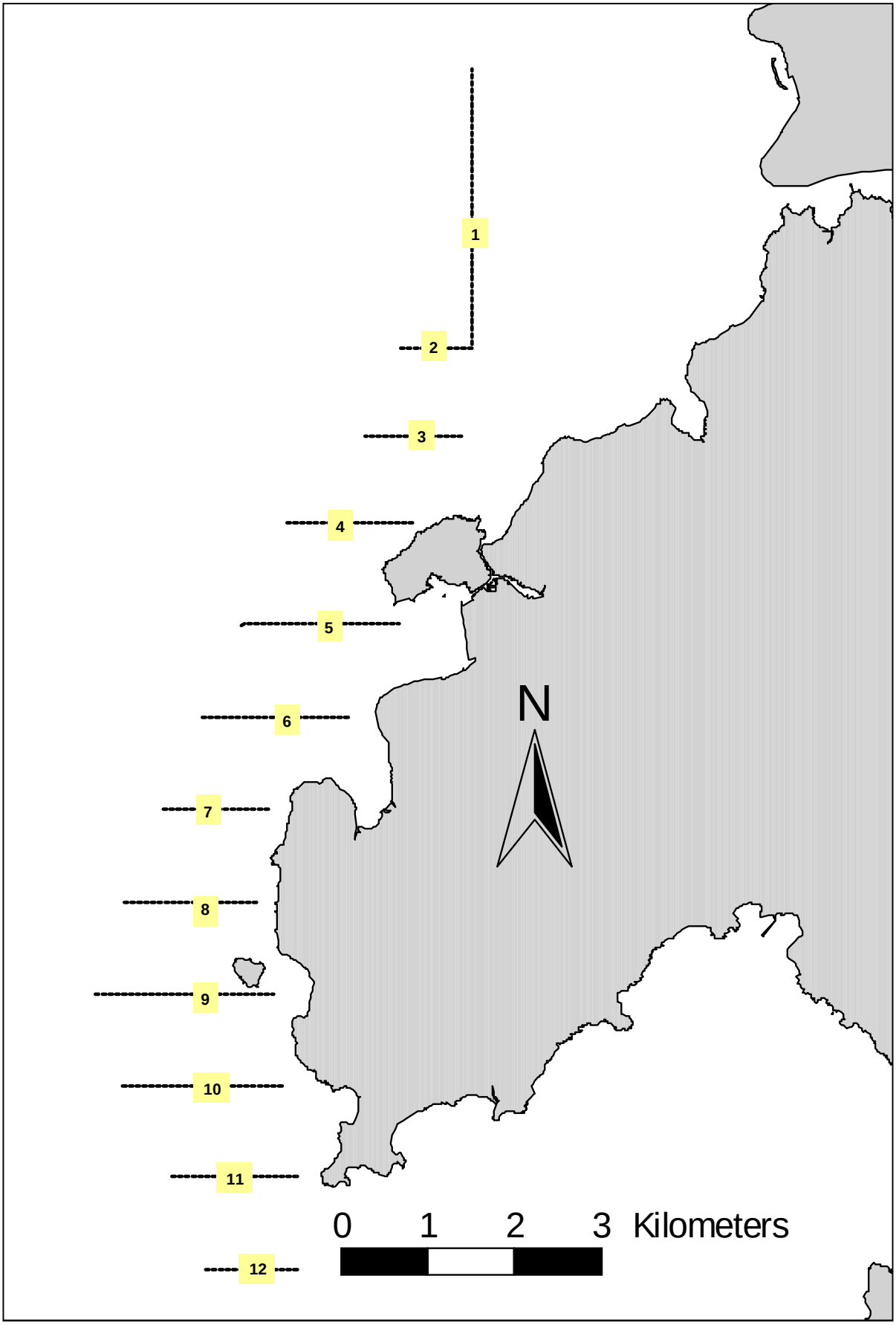
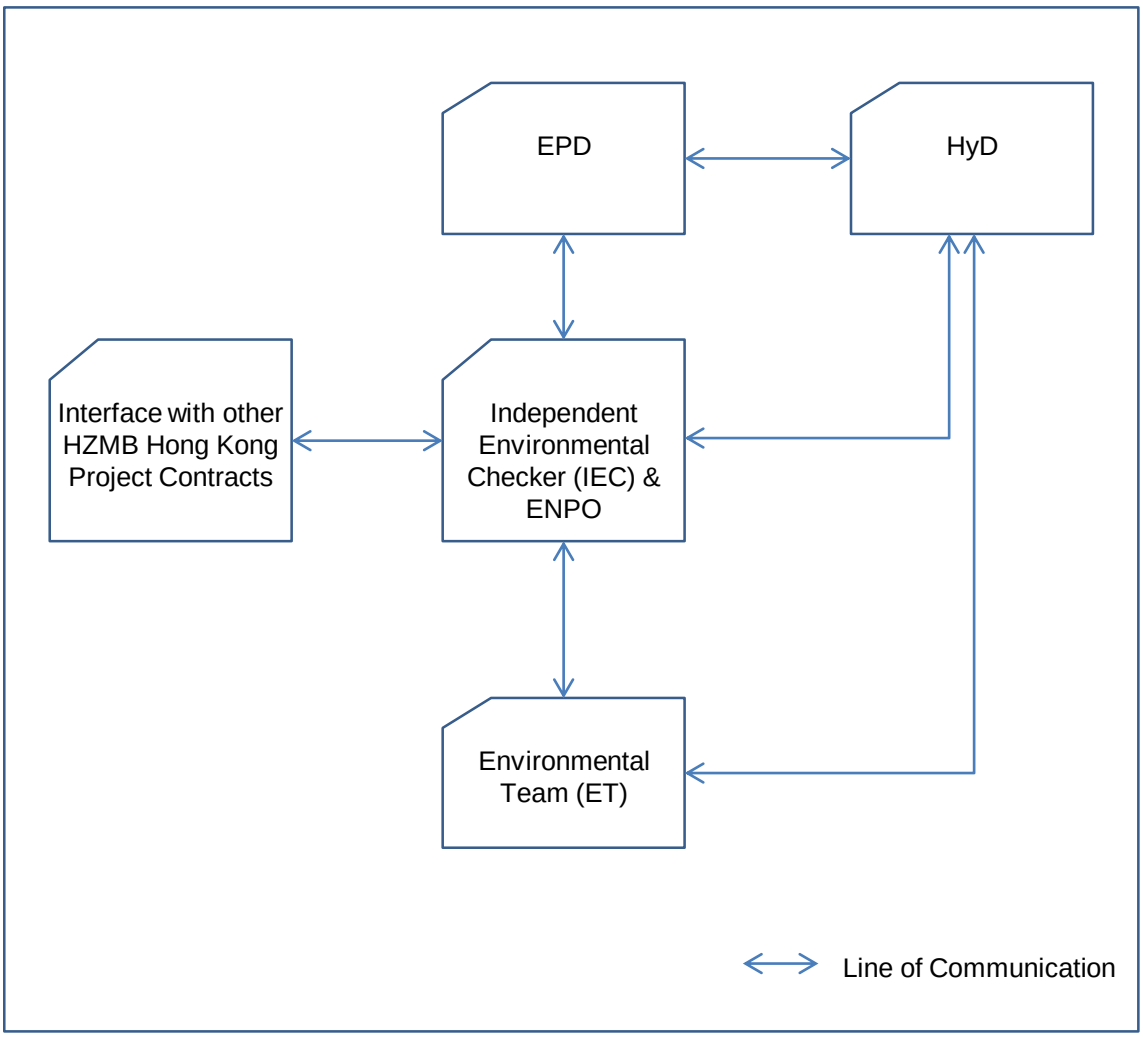


Figure 1. Transect Line Layout in West Lantau Survey Area

Appendix A Project Organisation for Environmental Works

Project Organisation for Environmental Works



Appendix B Chinese White Dolphin Monitoring Results

AGREEMENT NO. HMWSD 1/2019 (EP)
Post-Construction Monitoring of Chinese White Dolphin (Line-transect Vessel Surveys) for the Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road at West Lantau Waters - Investigation

Monthly Progress Report (May 2020)

Submitted by
Samuel K.Y. Hung, Ph.D.
Hong Kong Cetacean Research Project

29 May 2020

1. Introduction

1.1. The Hong Kong-Zhuhai-Macao Bridge (HZMB) Hong Kong Link Road (HKLR) is a designated project under the Environmental Impact Assessment Ordinance (EIAO). The Environmental Impact Assessment (EIA) Report and Environmental Monitoring and Audit (EM&A) Manual (EIA Register No.: AEIAR-144/2009) for the project were approved by the Director of Environmental Protection in October 2009 and the Environmental Permit No. EP-352/2009 (EP) was issued in November 2009. The EP has been subject to several variations and the current one is EP No. EP-352/2009/D.

1.2. The HZMB-HKLR was constructed under two works contracts namely Contract No. HY/2011/03 (HZMB HKLR – Section between Scenic Hill and Hong Kong Boundary Crossing Facilities (HKBCF)) and Contract No. HY/2011/09 (HZMB HKLR – Section between HKSAR Boundary and Scenic Hill). In accordance with the EP, the Contractors of Contract No. HY/2011/03 and Contract No. HY/2011/09 have separately employed their own Environmental Team (ET) and ET Leader to conduct construction phase monitoring of Chinese White Dolphin (CWD) in the North Lantau (NL) and West Lantau (WL) waters following the requirements specified in the EM&A Manual and the relevant contract specifications of the two contracts.

1.3. In accordance with Section 10.3 of the EM&A Manual, an ecological monitoring and audit programme is needed which will monitor potential impacts through construction and operation activities, and will verify the assessments which were made in the EIA report.

In particular, the programme should include dolphin monitoring at NL and WL waters to be set up in order to verify the predictions of impacts and to ensure that there are no unforeseen impacts on the dolphin population during construction phase. Such dolphin monitoring should cover the pre-construction phase, the entire period of construction phase and after the completion of construction works (i.e. post-construction phase).

1.4. The main objective of the current assignment commissioned by the Highways Department is to conduct Post-Construction Monitoring of CWD in WL waters in compliance with the requirements stipulated in the EM&A Manual and the EP for the HZMB HKLR. The post-construction monitoring should be conducted for two years upon the completion of all marine-based construction activities.

1.5. The marine-based construction activities for the Contract No. HY/2011/09 was completed in October 2018. Subsequently, 10 months of post-construction dolphin monitoring had been carried out by another contractor between late October 2018 and the end of August 2019, while the remaining 14 months of post-construction dolphin monitoring will be completed under this assignment, from 1 September 2019 to 31 October 2020.

1.6. In August 2019, Mott MacDonald Hong Kong Limited (MMHK) has been appointed as the Consultant responsible for the 14 months of post-construction monitoring of CWD in WL waters for HZMB HKLR. Subsequently, the Hong Kong Cetacean Research Project (HKCRP) has been appointed by MMHK to undertake the dolphin monitoring tasks to conduct systematic line-transect vessel surveys and the analysis of such survey data. The present report summarizes the results of post-construction monitoring survey findings during the monitoring month of May 2020.

2. Monitoring Methodology

2.1.1. According to the requirement of the updated EM&A manual, the dolphin monitoring programme should cover all transect lines in WL survey area (see Figure 1) twice per month throughout the entire post-construction period. The co-ordinates of all transect lines are shown in Table 1.

Table 1. Co-ordinates of transect lines in WL survey area

Line No.		Easting	Northing		Line No.		Easting	Northing
1	Start Point	803750	818500		7	Start Point	800200	810450
1	End Point	803750	815500		7	End Point	801400	810450

2	Start Point	803750	815500		8	Start Point	801300	809450
2	End Point	802940	815500		8	End Point	799750	809450
3	Start Point	802550	814500		9	Start Point	799400	808450
3	End Point	803700	814500		9	End Point	801430	808450
4	Start Point	803120	813600		10	Start Point	801500	807450
4	End Point	801640	813600		10	End Point	799600	807450
5	Start Point	801100	812450		11	Start Point	800300	806500
5	End Point	802900	812450		11	End Point	801750	806500
6	Start Point	802400	811500		12	Start Point	801760	805450
6	End Point	800660	811500		12	End Point	800700	805450

2.1.2. It should be emphasized that the following monitoring protocol is consistent and completely compatible with the baseline and construction phase dolphin monitoring methodology, which was also designed and adopted by the HKCRP team for the HZMB monitoring since 2011.

2.1.3. The HKCRP survey team used standard line-transect methods (Buckland et al. 2001) to conduct the systematic vessel surveys, and followed the same technique of data collection that has been adopted over the past two decades of marine mammal monitoring surveys in Hong Kong developed by HKCRP (see Hung 2018, 2019). For each monitoring vessel survey, a 15-m inboard vessel with an open upper deck (about 4.5 m above water surface) was used to make observations from the flying bridge area.

2.1.4. Two experienced observers (a data recorder and a primary observer) made up the on-effort survey team, and the survey vessel transited through different transect lines at a constant speed of 13-15 km per hour. The data recorder searched with unaided eyes and fill out the datasheets, while the primary observer searched for Chinese White Dolphins continuously through 7 x 50 *Fujinon* marine binoculars. Both observers searched the sea ahead of the vessel, between 270^{o} and 90^{o} (in relation to the bow, which is defined as 0^{o}). One to two additional experienced observers were available on the boat to work in shift (i.e. rotate every 30 minutes) in order to minimize fatigue of the survey team members. All observers are experienced in small cetacean survey techniques and identifying local cetacean species.

2.1.5. During on-effort survey periods, the survey team recorded effort data including time, position (latitude and longitude), weather conditions (Beaufort sea state and visibility), and distance traveled in each series (a continuous period of search effort) with the assistance of a handheld GPS (*Garmin eTrex*). Data including time, position and vessel

speed were automatically and continuously logged by a handheld GPS throughout the entire survey for subsequent review.

2.1.6. When dolphins were sighted, the survey team would end the survey effort, and immediately record the initial sighting distance and angle of the dolphin group from the survey vessel, as well as the sighting time and position. Then the research vessel would then be diverted from its course to approach the animals for species identification, group size estimation, assessment of group composition, and behavioural observations. The perpendicular distance (PSD) of the dolphin group to the transect line were later calculated from the initial sighting distance and angle.

2.1.7. Survey effort being conducted along the parallel transect lines that were perpendicular to the coastlines (as indicated in Figure 1) was labeled as “primary” survey effort, while the survey effort being conducted along the connecting lines between parallel lines was labeled as “secondary” survey effort. According to HKCRP long-term dolphin monitoring data, encounter rates of Chinese White Dolphins deduced from effort and sighting data collected along primary and secondary lines have been similar in survey areas around Lantau Island. Therefore, both primary and secondary survey effort would be presented as on-effort survey effort.

2.1.8. Encounter rates of Chinese White Dolphins (number of on-effort sightings per 100 km of survey effort) were calculated in WL survey area in relation to the amount of survey effort conducted during each month of monitoring survey. Only data collected under Beaufort 3 or below condition would be used for encounter rate analysis. Dolphin encounter rates were calculated using primary survey effort alone, as well as the combined survey effort from both primary and secondary lines.

2.2. Photo-identification Work

2.2.1. When a group of Chinese White Dolphins were sighted during the line-transect survey, the survey team would then end effort and approach the group slowly from the side and behind to take photographs of them. Every attempt was made to photograph every dolphin in the group, and even photograph both sides of the dolphins, since the colouration and markings on both sides may not be symmetrical.

2.2.2. One to two professional digital cameras (*Canon* EOS 7D Mark II model), each equipped with long telephoto lenses (100-400 mm zoom), were available on board for researchers to take sharp, close-up photographs of dolphins as they surface. The images were shot at the highest available resolution and stored on Compact Flash memory cards for downloading onto a computer.

2.2.3. All digital images taken in the field were first examined, and those containing potentially identifiable individuals were sorted out. These photographs would then be examined in greater detail, and were carefully compared to the existing Chinese White Dolphin photo-identification catalogue maintained by HKCRP since 1995.

2.2.4. Chinese White Dolphins were identified by their natural markings, such as nicks, cuts, scars and deformities on their dorsal fin and body, and their unique spotting patterns were also used as secondary identifying features (Jefferson 2000).

2.2.5. All photographs of each individual were then compiled and arranged in chronological order, with data including the date and location first identified (initial sighting), re-sightings, associated dolphins, distinctive features, and age classes entered into a computer database.

3. Monitoring Results

3.1. Vessel-based Line-transect Survey

3.1.1. During the monitoring month of May 2020, two complete sets of systematic line-transect vessel surveys were conducted on the 6th and 20th, to cover all transect lines in WL survey area twice. The survey routes of each survey day are presented in Figures 2-3.

3.1.2. From these surveys, a total of 66.55 km of survey effort was collected, with 100% of total survey effort being conducted under favourable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility (Appendix I). The total survey effort conducted on primary lines (i.e. the horizontal lines perpendicular to the coastlines) and secondary lines (i.e. the lines connecting the primary lines) were 43.63 km and 22.92 km respectively.

3.1.3. During the monitoring surveys conducted in May 2020, eight groups of 34 Chinese White Dolphins were sighted. All eight dolphin groups were sighted during on-effort search, with half of these sightings being made on primary lines (Appendix II). None of these dolphin groups was associated with any operating fishing vessel during the monitoring month.

3.1.4. Distribution of the dolphin sightings made during May's surveys is shown in Figure 4. The eight dolphin groups were scattered throughout the WL survey area with no particular concentration, and all of them were sighted far away from the HKLR09 alignment.

3.1.5. During the May's surveys, encounter rates of Chinese White Dolphins deduced from the survey effort and on-effort sighting data made under favourable conditions (Beaufort 3 or below) are shown in Tables 2 & 3.

Table 2. Dolphin encounter rates (sightings per 100 km of survey effort) per set during May's surveys in West Lantau (WL)

		Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)	**Encounter rate (ANI)** (no. of dolphins from all on-effort sightings per 100 km of survey effort)
		Primary Lines Only	**Primary Lines Only**
West Lantau	Set 1: May 6th	4.6	36.9
	Set 2: May 20th	13.7	36.4

Table 3. Overall dolphin encounter rates (sightings per 100 km of survey effort) in May's surveys on primary lines only as well as both primary lines and secondary lines in West Lantau (WL)

	Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)		**Encounter rate (ANI)** (no. of dolphins from all on-effort sightings per 100 km of survey effort)	
	Primary Lines Only	**Both Primary and Secondary Lines**	**Primary Lines Only**	**Both Primary and Secondary Lines**
West Lantau	9.2	12.0	36.7	51.1

3.1.6. The average group size of Chinese White Dolphins during May's surveys was 4.3 individuals per group. Five of the eight dolphin sightings were consisted of small groups with 1-4 animals per group, while there were also two medium-sized groups with five and eight animals respectively, and another large group of 11 animals sighted during the monitoring month (Appendix II).

3.2. Photo-identification Work

3.2.1. In May's survey, a total of 29 different individual Chinese White Dolphins were identified 32 times (Appendix III and IV). Besides three animals (i.e. WL123, WL131 and WL273) being re-sighted twice, the rest of them were re-sighted only once during this monitoring month.

3.2.2. Notably, three individuals (i.e. WL98, WL273 and WL291) were sighted with their young calves during this month's monitoring surveys.

3.3. Conclusion

3.3.1. In this month of post-construction dolphin monitoring in WL waters, marine construction activities have been completed and as a result, no adverse impact on Chinese White Dolphins from the HZMB works has been observed.

4. References

- Buckland, S. T., Anderson, D. R., Burnham, K. P., Laake, J. L., Borchers, D. L., and Thomas, L. 2001. Introduction to distance sampling: estimating abundance of biological populations. Oxford University Press, London.

- Hung, S. K. 2018. Monitoring of Marine Mammals in Hong Kong waters: final report (2017-18). An unpublished report submitted to the Agriculture, Fisheries and Conservation Department, 174 pp.

- Hung, S. K. 2019. Monitoring of Marine Mammals in Hong Kong waters: final report (2018-19). An unpublished report submitted to the Agriculture, Fisheries and Conservation Department, 140 pp.

- Jefferson, T. A. 2000. Population biology of the Indo-Pacific hump-backed dolphin in Hong Kong waters. Wildlife Monographs 144: 1-65.

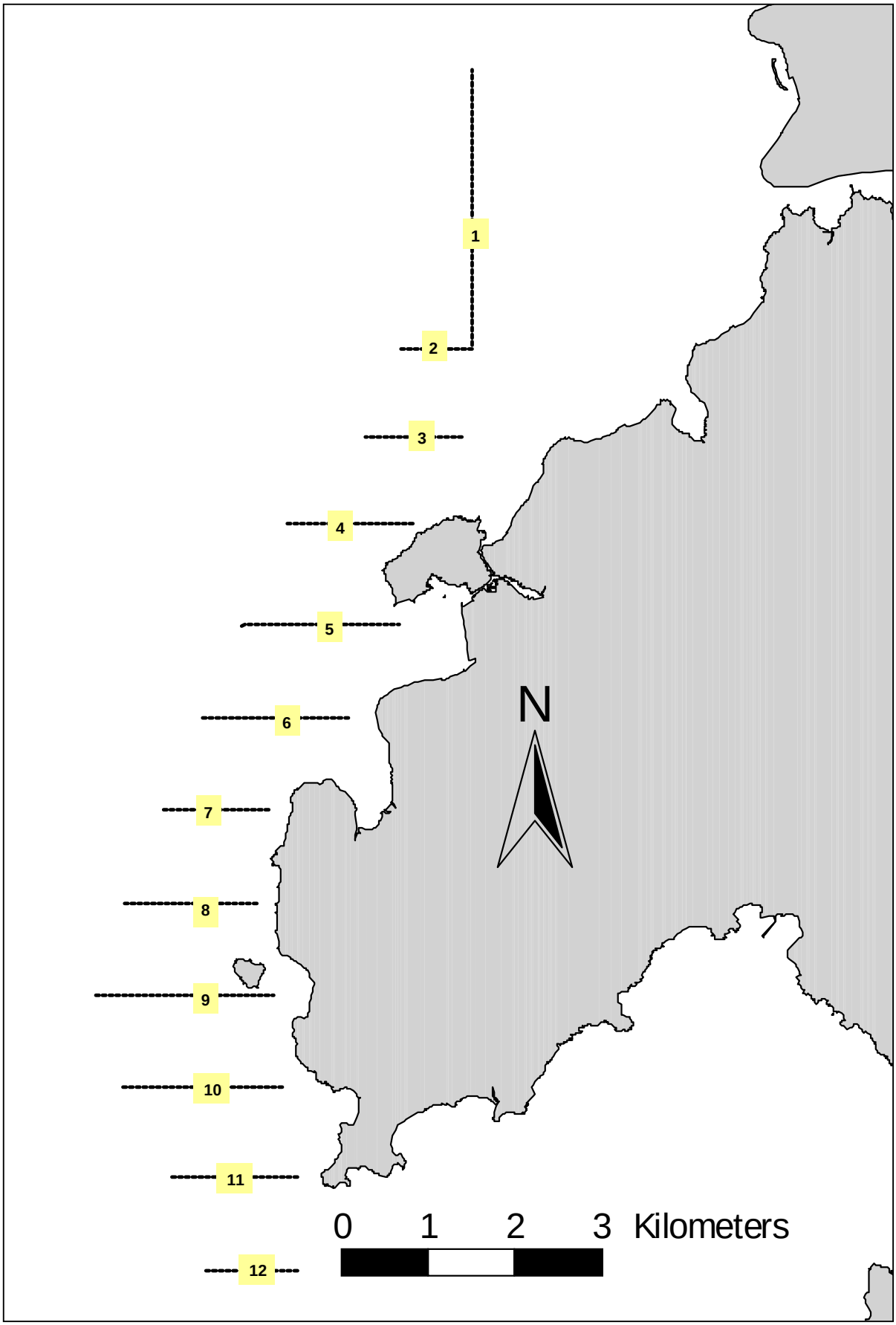


Figure 1. Transect Line Layout in West Lantau Survey Areas

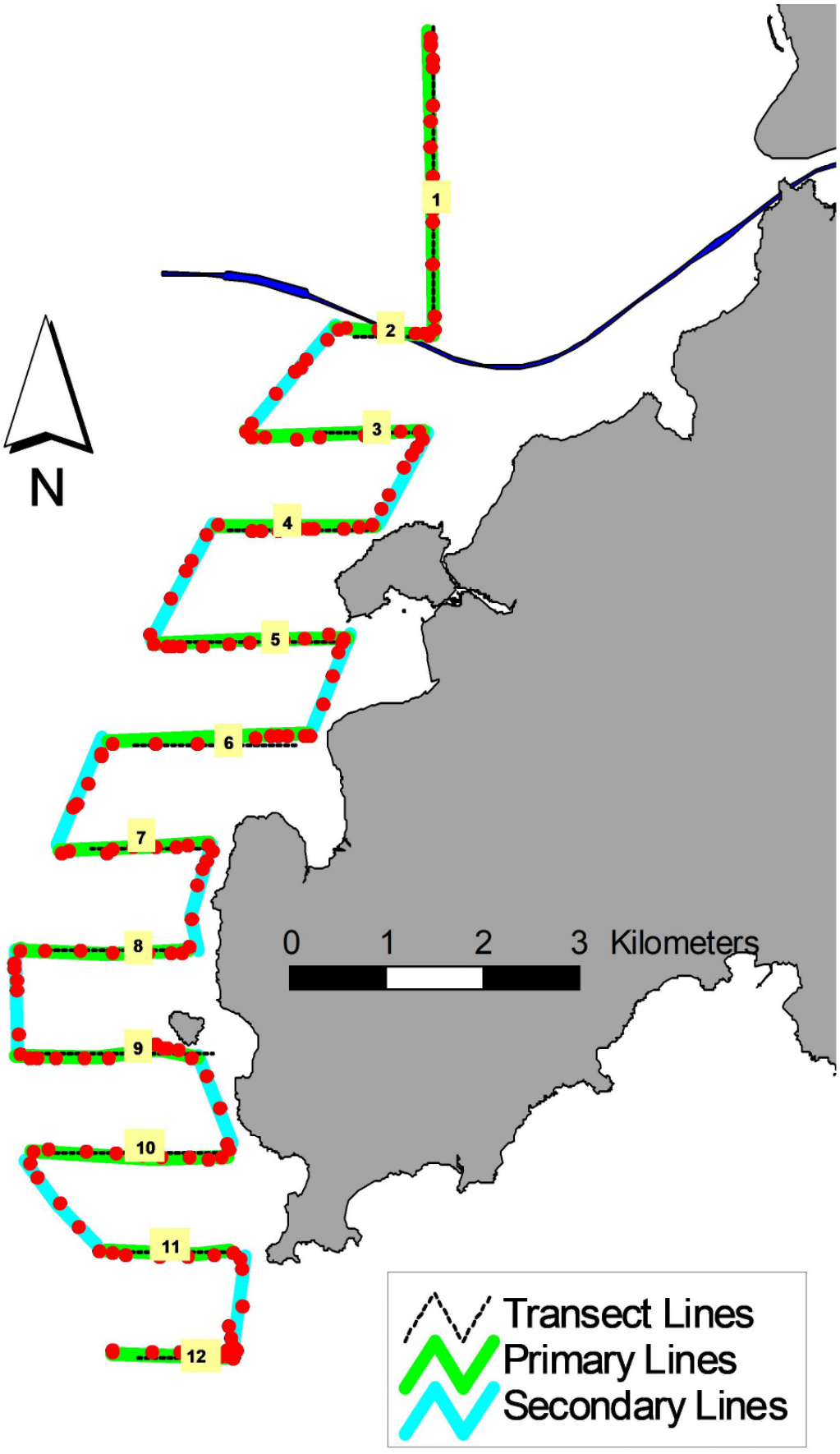


Figure 2. Survey Route on May 6th, 2020 (note: red dots represent the tracked positions of survey boat logged continuously by GPS throughout the course of the survey)

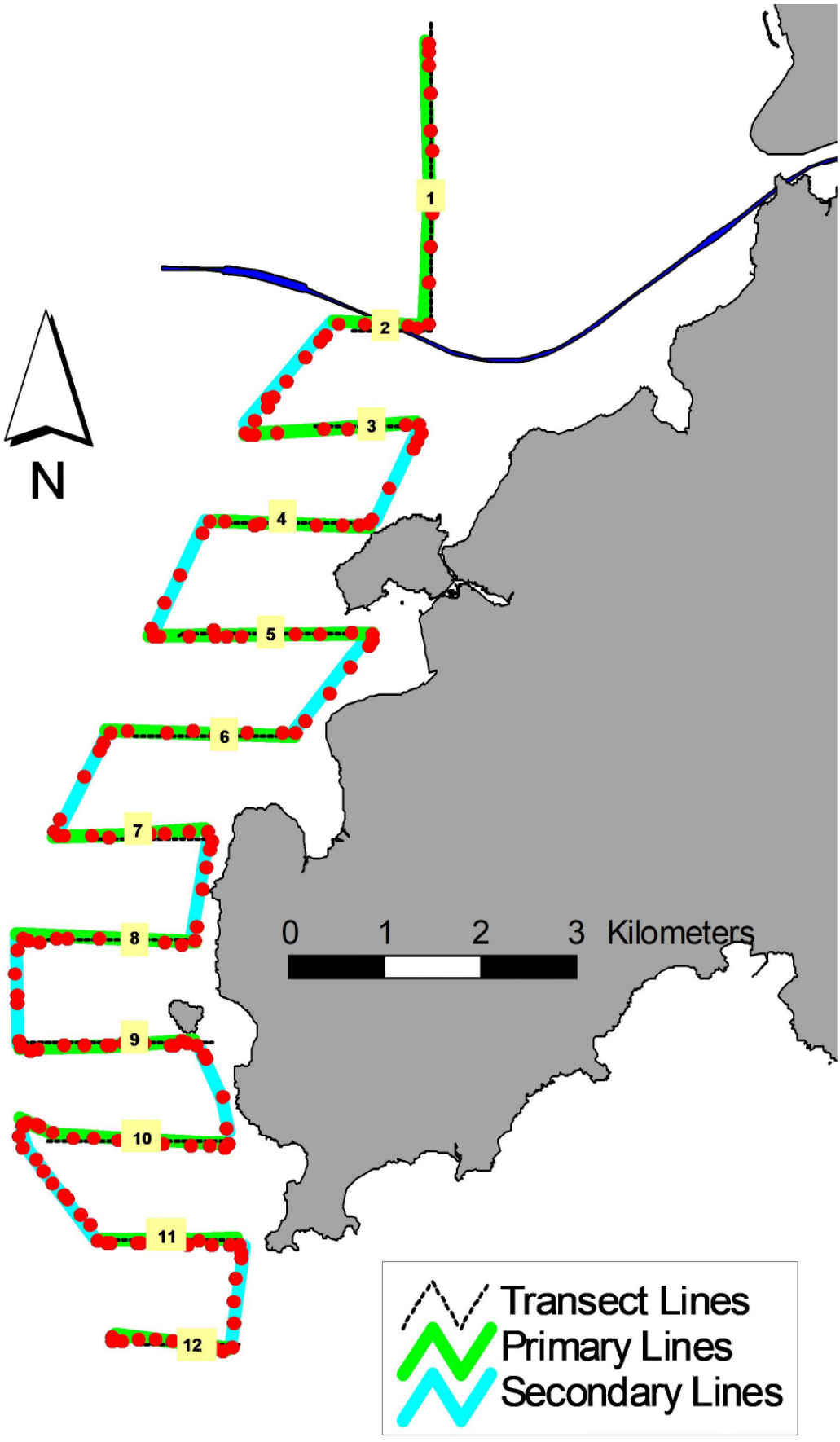


Figure 3. Survey Route on May 20th, 2020 (note: red dots represent the tracked positions of survey boat logged continuously by GPS throughout the course of the survey)

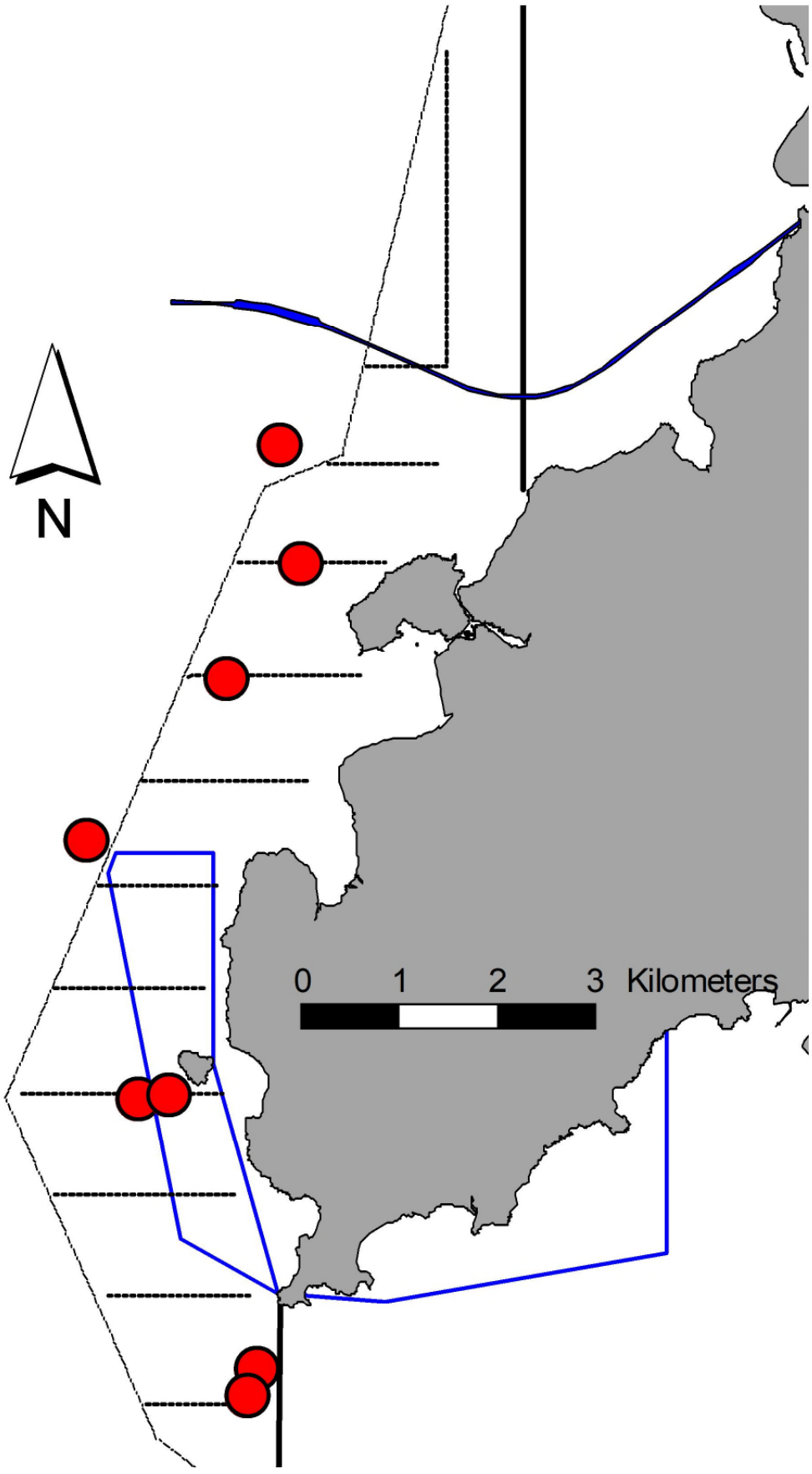


Figure 4. Distribution of Chinese White Dolphin sightings during the monitoring surveys conducted in May 2020

(note: blue line indicates boundary of the designated Southwest Lantau Marine Park)

Appendix I. Survey Effort Database for HZMB Post-construction Monitoring in West Lantau Waters (May 2020)

(Abbreviations: BEAU = Beaufort Sea State; P = Primary Line Effort; S = Secondary Line Effort)

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
6-May-20	W LANTAU	2	11.91	SPRING	STANDARD36826	HYD-HZMB	P
6-May-20	W LANTAU	3	9.77	SPRING	STANDARD36826	HYD-HZMB	P
6-May-20	W LANTAU	2	4.76	SPRING	STANDARD36826	HYD-HZMB	S
6-May-20	W LANTAU	3	5.83	SPRING	STANDARD36826	HYD-HZMB	S
20-May-20	W LANTAU	1	0.80	SPRING	STANDARD36826	HYD-HZMB	P
20-May-20	W LANTAU	2	6.35	SPRING	STANDARD36826	HYD-HZMB	P
20-May-20	W LANTAU	3	14.80	SPRING	STANDARD36826	HYD-HZMB	P
20-May-20	W LANTAU	2	5.45	SPRING	STANDARD36826	HYD-HZMB	S
20-May-20	W LANTAU	3	6.88	SPRING	STANDARD36826	HYD-HZMB	S

Appendix II. Chinese White Dolphin Sighting Database for HZMB Post-construction Monitoring in West Lantau Waters (May 2020)

(Abberviations: STG# = Sighting Number; HRD SZ = Dolphin Herd Size; BEAU = Beaufort Sea State; PSD = Perpendicular Distance; ND = Not Determined; BOAT ASSOC. = Fishing Boat Association; P/S: Sighting Made on Primary/Secondary Lines)

DATE	STG #	TIME	HRD SZ	AREA	BEAU	PSD	EFFORT	TYPE	NORTHING	EASTING	SEASON	BOAT ASSOC.	P/S
6-May-20	1	1132	11	W LANTAU	3	541	ON	HYD-HZMB	810873	800064	SPRING	NONE	S
6-May-20	2	1244	8	W LANTAU	3	261	ON	HYD-HZMB	808369	800594	SPRING	NONE	P
6-May-20	3	1323	1	W LANTAU	3	242	ON	HYD-HZMB	805775	801795	SPRING	NONE	S
6-May-20	4	1335	2	W LANTAU	2	208	ON	HYD-HZMB	805521	801702	SPRING	NONE	S
20-May-20	1	1038	4	W LANTAU	3	195	ON	HYD-HZMB	814700	802032	SPRING	NONE	S
20-May-20	2	1109	1	W LANTAU	1	223	ON	HYD-HZMB	813537	802256	SPRING	NONE	P
20-May-20	3	1140	5	W LANTAU	2	177	ON	HYD-HZMB	812431	801501	SPRING	NONE	P
20-May-20	4	1256	2	W LANTAU	3	22	ON	HYD-HZMB	808413	800914	SPRING	NONE	P

Appendix III. Individual dolphins identified during HZMB post-construction monitoring in West Lantau waters (May 2020)

ID#	DATE	STG#	AREA
CH108	06/05/20	2	W LANTAU
CH112	20/05/20	1	W LANTAU
CH141	06/05/20	1	W LANTAU
CH240	20/05/20	3	W LANTAU
NL259	20/05/20	2	W LANTAU
SL40	06/05/20	1	W LANTAU
SL59	06/05/20	1	W LANTAU
SL68	06/05/20	1	W LANTAU
WL42	06/05/20	1	W LANTAU
WL46	06/05/20	1	W LANTAU
WL79	20/05/20	3	W LANTAU
WL94	06/05/20	2	W LANTAU
WL98	06/05/20	1	W LANTAU
WL118	06/05/20	2	W LANTAU
WL123	06/05/20	2	W LANTAU
	06/05/20	4	W LANTAU
WL131	06/05/20	2	W LANTAU
	06/05/20	4	W LANTAU
WL142	06/05/20	1	W LANTAU
WL145	20/05/20	1	W LANTAU
WL152	06/05/20	1	W LANTAU
WL167	20/05/20	3	W LANTAU
WL210	06/05/20	1	W LANTAU
WL243	06/05/20	3	W LANTAU
WL251	06/05/20	1	W LANTAU
WL254	06/05/20	2	W LANTAU
WL273	06/05/20	2	W LANTAU
	20/05/20	4	W LANTAU
WL286	06/05/20	2	W LANTAU
WL291	20/05/20	1	W LANTAU
WL295	20/05/20	3	W LANTAU
WL305	06/05/20	2	W LANTAU

Appendix IV. Photographs of Identified Individual Dolphins from May 2020

Appendix IV. (cont'd)

Appendix IV. (cont'd)

Appendix IV. (cont'd)

Appendix C Monitoring Schedule

Agreement No. HMWSD 1/2019 (EP) Post-Construction Monitoring of Chinese White Dolphin (Line-transect Vessel Surveys) for the Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road at West Lantau Waters – Investigation

2020 MAY

Monitoring Schedule

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
26	27	28	29	30	01	02
03	04	05	06 Post-construction phase CWD monitoring (vessel survey)	07	08	09
10	11 Bi-monthly landscape establishment monitoring (part)(for HKLR Contract No.HY/2011/09 by other parties)	12	13	14	15	16
17	18	19	20 Post-construction phase CWD monitoring (vessel survey)	21	22 Bi-monthly landscape establishment monitoring (part)(for HKLR Contract No.HY/2011/09 by other parties)	23
24	25	26	27	28	29	30
31						

Agreement No. HMWSD 1/2019 (EP) Post-Construction Monitoring of Chinese White Dolphin (Line-transect Vessel Surveys) for the Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road at West Lantau Waters – Investigation

2020 JUNE

Monitoring Schedule

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
31	01	02 Post-construction phase CWD monitoring (vessel survey)	03	04	05	06
07	08	09	10	11	12	13
14	15	16	17	18	19	20
21	22 Post-construction phase CWD monitoring (vessel survey)	23	24	25	26	27
28	29	30	01	02	03	04

Appendix D Landscape Establishment Monitoring Checklist

WELLAB LIMITED
Rm 1701, Technology Park,
18 On Lai Street, Shatin, N.T., Hong Kong
Tel.: (852) 2898 7388
Fax: (852) 2898 7076

E-MAIL

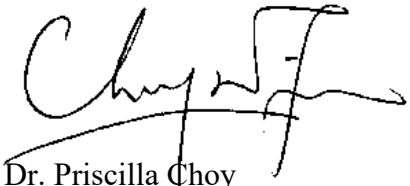
TO :	Distribution List	DATE	17 June 2020
FROM	Dr. Priscilla Choy	SHEET 1 OF	1 + 24
REF. NO.	WL/MA12014/Corres/Out/DCVJV_it200617audit200511&22_v1		
SUBJECT	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill **Site Audit for Landscape & Visual Mitigation Measures during Establishment Period on 11 and 22 May 2020**		

Dear Sir,

We have conducted the Site Audit for the above contract on 11 and 22 May 2020. Please find attached the completed checklist for your information and action.

Should you require any further information, please feel free to contact our Ms. Ivy Tam at 2151 2090 or the undersigned at 2151 2089.

Yours faithfully,
WELLAB LIMITED



Dr. Priscilla Choy
Environmental Team Leader

Encl.

Distribution List (via E-mail):

DCVJV	(Attn.: Mr. Sing Chu)	chungsing.chu@dcvjv.com
	(Attn.: Mr. WK Poon)	waikwong.poon@chechk.com
ARUP	(Attn.: Mr. Dennis Yu)	Dennis.Yu@hklr.hy09.net
ENPO/IEC	(Attn.: Mr. Manson Yeung)	iec.hlr@ramboll.com

Contract HY/2011/09

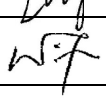
Hong Kong-Zhuhai-Macao Bridge

Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill

Site Inspection Record Summary

Checklist Reference Number	200511&522
Date	11 May 2020 (Monday) and 22 May 2020 (Friday)
Time	11 May 2020 (15:20 – 16:30) and 22 May 2020 (9:50 – 10:15)

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Landscape and Visual	
	<u>Viaduct between P112 and P114</u>	
200522-O01	• The groundcovers (*Catharanthus roseus and Lantana montevidensis)* were observed to be in poor health or dead. The Contractor was reminded to review the health condition of all groundcovers and re-planted if necessary.	C5.2a
200522-O02	• Weeds and unwanted plants were observed. The Contractor was reminded to remove them and replant the approved species for groundcovers according to the approved plan.	C5.1 & 5.5
	B. Others	
	Follow-up on previous audit session (ref no. 200320), follow up action is needed to be reviewed for items 200320-O01 and 200320-O02 which are renamed as 200522-O01, and 200522-O02 respectively.	

	Name	Signature	Date
Recorded by	Ivy Tam		22 May 2020
Checked by	Dr. Priscilla Choy		22 May 2020

Environmental Monitoring and Audit
Landscape and Visual Audit Checklist (Establishment Works)
Contract No. HY/2011/09
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill

Audit Ref. No. 200511Lv

Contract	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill	**Env. Team** **SO Rep.** **ENPO / IEC**	Wellab Limited ARUP Ramboll Hong Kong Ltd
Inspected By	ET Auditor: ✓ CTO / SIOW / IOW / Engineer: / ENPO / IEC: /	**Inspection Date** **Time Period**	11 and 22 May 2020 11 May 2020 (14:20 - 16:30) 22 May 2020 (9:30 - 10:15)

Part A Weather

Condition ☐ Sunny ☐ Fine ☐ Overcast ☑ Drizzle ☐ Rain ☐ Storm ☐ Hazy

Temperature 29-33 °C

Humidity ☐ High (RH>90%) ☑ Moderate (90%>RH>50%) ☐ Low (RH<50%)

Wind ☐ Calm ☑ Light ☐ Breeze ☐ Strong

Part B Area of Inspection

Portion A / Portion C / Kwo Lo Wan Road / Airport Road / Viaduct between P112 and P114

Part C Landscape & Visual	N/A or not observed	Yes	No	Follow-up	N/C	Remarks
1. Portion A (11 May 2020)						
1.1 Are the planting works complied with the approved Landscape and Visual Plan? (e.g. size, location and plant species)	☐	☑	☐	☐	☐	
1.2a Are the plants' health conditions satisfactory?	☐	☑	☐	☐	☐	
1.2b If not, are replacement planting carried out immediately?	☑	☐	☐	☐	☐	
1.3 Are all plants properly trimmed regularly to maintain/enhance the aesthetic value?	☐	☑	☐	☐	☐	
1.4 Are loose/unfirmed plants as a result of wind rock or other causes avoided?	☐	☑	☐	☐	☐	
1.5 Are all grassed and planted area kept free from weeds/unwanted plants?	☐	☑	☐	☐	☐	
1.6 Is compaction of the soil avoided for the plants?	☐	☑	☐	☐	☐	
1.7 Are litter/ unwanted material removed within the planting area?	☐	☑	☐	☐	☐	
1.8 Is mulch that disturbed by replacement planting, weeding or watering made good?	☐	☑	☐	☐	☐	
1.9 Are wounds/mechanical injuries avoided on tree trunk?	☐	☑	☐	☐	☐	
1.10 Are leaning of trees avoided?	☐	☑	☐	☐	☐	
1.11 Are dead/detached branches avoided?	☐	☑	☐	☐	☐	
1.12 Are decay/cavity avoided on tree trunks?	☐	☑	☐	☐	☐	
1.13 Are all trees kept free from pest, disease or fungal infection?	☐	☑	☐	☐	☐	
1.14 Are trees were topped or pruned (if any) properly?	☑	☐	☐	☐	☐	
1.15 Are there enough area for growth and development of tree roots?	☐	☑	☐	☐	☐	
1.16a Is exposure of tree roots avoided?	☐	☑	☐	☐	☐	
1.16b If not, were broken off or rotting of roots avoided?	☑	☑	☐	☐	☐	

Environmental Monitoring and Audit
Landscape and Visual Audit Checklist (Establishment Works)
Contract No. HY/2011/09
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill

		N/A or not observed	Yes	No	Follow-up	N/C	Remarks
2.	**Portion C** (11 May 2020)						
2.1	Are the planting works complied with the approved Landscape and Visual Plan? (e.g. size, location and plant species)	☐	☑	☐	☐	☐	
2.2a	Are the plants' health conditions satisfactory?	☐	☑	☐	☐	☐	
2.2b	If not, are replacement planting carried out immediately?	☑	☑	☐	☐	☐	
2.3	Are all plants properly trimmed regularly to maintain/enhance the aesthetic value?	☐	☑	☐	☐	☐	
2.4	Are loose/unfirmed plants as a result of wind rock or other causes avoided?	☐	☑	☐	☐	☐	
2.5	Are all grassed and planted area kept free from weeds/unwanted plants?	☐	☑	☐	☐	☐	
2.6	Is compaction of the soil avoided for the plants?	☐	☑	☐	☐	☐	
2.7	Are litter/ unwanted material removed within the planting area?	☐	☑	☐	☐	☐	
2.8	Is mulch that disturbed by replacement planting, weeding or watering made good?	☐	☑	☐	☐	☐	
2.9	Are wounds/mechanical injuries avoided on tree trunk?	☐	☑	☐	☐	☐	
2.10	Are leaning of trees avoided?	☐	☑	☐	☐	☐	
2.11	Are dead/detached branches avoided?	☐	☑	☐	☐	☐	
2.12	Are decay/cavity avoided on tree trunks?	☐	☑	☐	☐	☐	
2.13	Are all trees kept free from pest, disease or fungal infection?	☐	☑	☐	☐	☐	
2.14	Are trees were topped or pruned (if any) properly?	☑	☐	☐	☐	☐	
2.15	Are there enough area for growth and development of tree roots?	☐	☑	☐	☐	☐	
2.16a	Is exposure of tree roots avoided?	☐	☑	☐	☐	☐	
2.16b	If not, were broken off or rotting of roots avoided?	☑	☑	☐	☐	☐	
3.	**Kwo Lo Wan Road** (11 May 2020)						
3.1	Are the planting works complied with the approved Landscape and Visual Plan? (e.g. size, location and plant species)	☐	☑	☐	☐	☐	
3.2a	Are the plants' health conditions satisfactory?	☐	☑	☐	☐	☐	
3.2b	If not, are replacement planting carried out immediately?	☑	☐	☐	☐	☐	
3.3	Are all plants properly trimmed regularly to maintain/enhance the aesthetic value?	☐	☑	☐	☐	☐	
3.4	Are loose/unfirmed plants as a result of wind rock or other causes avoided?	☐	☑	☐	☐	☐	
3.5	Are all grassed and planted area kept free from weeds/unwanted plants?	☐	☑	☐	☐	☐	
3.6	Is compaction of the soil avoided for the plants?	☐	☑	☐	☐	☐	
3.7	Are litter/ unwanted material removed within the planting area?	☐	☑	☐	☐	☐	
3.8	Is mulch that disturbed by replacement planting, weeding or watering made good?	☑	☐	☐	☐	☐	
3.9	Are wounds/mechanical injuries avoided on tree trunk?	☐	☑	☐	☐	☐	
3.10	Are leaning of trees avoided?	☐	☑	☐	☐	☐	
3.11	Are dead/detached branches avoided?	☐	☑	☐	☐	☐	
3.12	Are decay/cavity avoided on tree trunks?	☐	☑	☐	☐	☐	
3.13	Are all trees kept free from pest, disease or fungal infection?	☐	☑	☐	☐	☐	
3.14	Are trees were topped or pruned (if any) properly?	☑	☐	☐	☐	☐	
3.15	Are there enough area for growth and development of tree roots?	☐	☑	☐	☐	☐	
3.16a	Is exposure of tree roots avoided?	☐	☑	☐	☐	☐	
3.16b	If not, were broken off or rotting of roots avoided?	☑	☐	☐	☐	☐	

Environmental Monitoring and Audit
Landscape and Visual Audit Checklist (Establishment Works)
Contract No. HY/2011/09
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill

		N/A or not observed	Yes	No	Follow-up	N/C	Remarks
4.	**Airport Road** (11 May 2020)						
4.1	Are the planting works complied with the approved Landscape and Visual Plan? (e.g. size, location and plant species)	☐	☑	☐	☐	☐	
4.2a	Are the plants' health conditions satisfactory?	☐	☑	☐	☐	☐	
4.2b	If not, are replacement planting carried out immediately?	☑	☐	☐	☐	☐	
4.3	Are all plants properly trimmed regularly to maintain/enhance the aesthetic value?	☐	☑	☐	☐	☐	
4.4	Are loose/unfirmed plants as a result of wind rock or other causes avoided?	☐	☑	☐	☐	☐	
4.5	Are all grassed and planted area kept free from weeds/unwanted plants?	☐	☑	☐	☐	☐	
4.6	Is compaction of the soil avoided for the plants?	☐	☑	☐	☐	☐	
4.7	Are litter/ unwanted material removed within the planting area?	☐	☑	☐	☐	☐	
4.8	Is mulch that disturbed by replacement planting, weeding or watering made good?	☑	☐	☐	☐	☐	
4.9	Are wounds/mechanical injuries avoided on tree trunk?	☐	☑	☐	☐	☐	
4.10	Are leaning of trees avoided?	☐	☑	☐	☐	☐	
4.11	Are dead/detached branches avoided?	☐	☑	☐	☐	☐	
4.12	Are decay/cavity avoided on tree trunks?	☐	☑	☐	☐	☐	
4.13	Are all trees kept free from pest, disease or fungal infection?	☐	☑	☐	☐	☐	
4.14	Are trees were topped or pruned (if any) properly?	☑	☐	☐	☐	☐	
4.15	Are there enough area for growth and development of tree roots?	☐	☑	☐	☐	☐	
4.16a	Is exposure of tree roots avoided?	☐	☑	☐	☐	☐	
4.16b	If not, were broken off or rotting of roots avoided?	☑	☐	☐	☐	☐	
5.	**Viaduct between P112 and P114** (22 May 2020)						
5.1	Are the planting works complied with the approved Landscape and Visual Plan? (e.g. size, location and plant species)	☐	☐	☑	☐	☐	(2)
5.2a	Are the plants' health conditions satisfactory?	☐	☐	☑	☐	☐	(1)
5.2b	If not, are replacement planting carried out immediately?	☑	☐	☐	☐	☐	
5.3	Are all plants properly trimmed regularly to maintain/enhance the aesthetic value?	☑	☐	☐	☐	☐	
5.4	Are loose/unfirmed plants as a result of wind rock or other causes avoided?	☐	☑	☐	☐	☐	
5.5	Are all grassed and planted area kept free from weeds/unwanted plants?	☐	☐	☑	☐	☐	(2)
5.6	Is compaction of the soil avoided for the plants?	☐	☑	☐	☐	☐	
5.7	Are litter/ unwanted material removed within the planting area?	☐	☑	☐	☐	☐	
5.8	Is mulch that disturbed by replacement planting, weeding or watering made good?	☑	☐	☐	☐	☐	

Environmental Monitoring and Audit
Landscape and Visual Audit Checklist (Establishment Works)
Contract No. HY/2011/09
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill

Part D Follow-up for the Previous Site Audit on Date: 20 Mar 20 (Ref. No. 200320)

		N/A or not observed	Yes	No	Follow-up	N/C	Remarks
1.	Is the situation in item 001 improved/rectified?	☐	☐	☐	☑	☐	(1)
2.	Is the situation in item 002 improved/rectified?	☐	☐	☐	☑	☐	(2)
3.	Is the situation in item 003 improved/rectified?	☐	☑	☐	☐	☐	Photo 5 & 6
4.	Is the situation in item 004 improved/rectified?	☐	☑	☐	☐	☐	Photo 17
5.	Is the situation in item 005 improved/rectified?	☐	☑	☐	☐	☐	Photo 3 and 7
6.	Is the situation in item _____ improved/rectified?	☐	☐	☐	☐	☐	
7.	Is the situation in item _____ improved/rectified?	☐	☐	☐	☐	☐	
8.	Is the situation in item _____ improved/rectified?	☐	☐	☐	☐	☐	

Remarks/Observations

Observations:

Viaduct between P112 and P114:

(1) The ground covers (Catharanthus roseus and Lantana montevidensis) were observed to be in poor health or dead. The Contractor was reminded to review the health condition of all ground covers and re-planted if necessary (Photos 20-23)

(2) Weeds and unwanted plants were observed. The Contractor was reminded to remove them and replant the approved species for groundcovers according to the approved plan (Photos 18-23)

Signatures:

ET Auditor	CTO / SIOW / IOW / Enginner	Contractor's Representative
(Name: [signature])	(Name: /)	(Name. /)
(Date: 11 May 2020 / 22 May 2020)	(Date: /)	(Date: /)

IEC/ENPO Auditor

(Name. Manson Ip Leung)
(Date: 21 May 2020)

809000 E
809500 E
810000 E
810500 E
811000 E
811500
812000

819000 N
818500 N
818000 N
817500 N
817000 N

ZONE 1
ZONE 2
ZONE 3

HKLR9/MMH/DDA/AI/LS/00101
HKLR9/MMH/DDA/AI/LS/00102
HKLR9/MMH/DDA/AI/LS/00103
HKLR9/MMH/DDA/AI/LS/00104
HKLR9/MMH/DDA/AI/LS/00105
HKLR9/MMH/DDA/AI/LS/00106
HKLR9/MMH/DDA/AI/LS/00107
HKLR9/MMH/DDA/AI/LS/00108
HKLR9/MMH/DDA/AI/LS/00109
HKLR9/MMH/DDA/AI/LS/00110

Portion A
Portion C
Kwo Lo Wan Road
Airport Road

0 50 100 150 200 250 m
1 : 5 000 SCALE BAR

LEGEND:
- SITE BOUNDARY
- PROPOSED VIADUCT
- ZONING ACCORDING TO HONG KONG INTERNATIONAL AIRPORT APPROVED PLANT SPECIES LIST (REVISION 3: JUNE 2007) (REFER TO ER PART 4 APPENDIX 4B)

Rev.	Description	Design	Check	Date
A	FOR APPROVAL	MMH	JV	09/08/13

Main Contractor
Dragages - China Harbour - VSL Joint Venture 實嘉-中國港灣-威勝利聯營

Contractor's Designer
Mott MacDonald
YWL Engineering

Consultant
ARUP 奧雅納工程顧問 Ove Arup & Partners Hong Kong Limited

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

Drawing Title
SOFT LANDSCAPE LAYOUT PLAN - KEY PLAN

Drawing no.			Rev.
HKLR9/MMH/DDA/AI/LS/00100			A
Design: PK	Drawn: MING	Approved: HTC	Status: FOR SUBMISSION
Scale: 1:5000 (IN A1)		Approved: 09AUG13	
Job No.: HKLR9		Sheet No.: 1 OF 1	
File name: HKLR9_MMH_DDA_AI_LS_00100.dgn			

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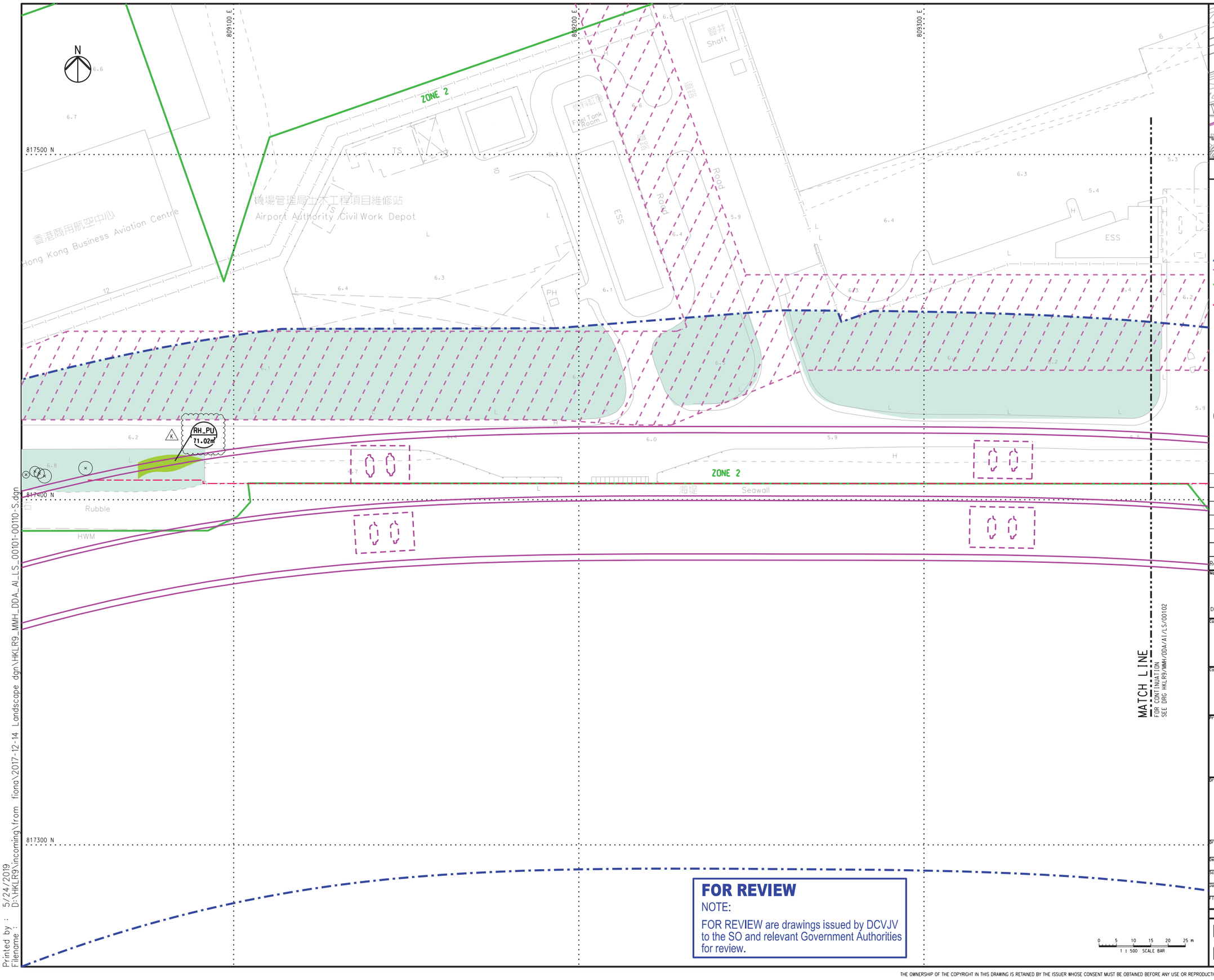

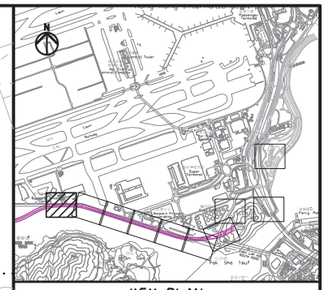

KEY PLAN
SCALE 1:35000

NOTES:

1. SUFFICIENT SOIL DEPTH IS CONFIRMED IN ALL PROPOSED COMPENSATORY PLANTING AREAS.
2. PLEASE REFER TO DRAWING NO. HKLR9/MMH/DDA/A1/LS/00481 FOR THE PROPOSED PLANTING SCHEDULE.
3. HYDROSEEDING TO BE PROVIDED AT BARE GROUND WITHIN LANDSCAPE AREA.

LEGEND:

- SITE BOUNDARY
- PROPOSED VIADUCT
- ZONING ACCORDING TO HONG KONG INTERNATIONAL AIRPORT APPROVED PLANT SPECIES LIST (REVISION 3: JUNE 2007) (REFER TO ER PART 4 APPENDIX 4B)
- LOT BOUNDARY
- EXISTING LANDSCAPE PLANTING TO BE RETAINED
- UTILITIES RESERVE ZONE
- AAHK'S POTENTIAL SUPPORTING AREA FOR FUTURE AIRPORT PROJECTS
- PORTION OF MAINTENANCE AREA ON RESUMED LAND WITH NO PAVING AND NO PLANTING (FLAT PATHWAY)
- GOVERNMENT LAND WITH NO PAVING AND NO PLANTING (FLAT PATHWAY)
- ACCESS FOR MAINTENANCE (APPROX. 2.8m WIDTH, NO PAVING)
- TR_SP 100 — PLANT SPECIES / QUANTITY / AREA
- PROPOSED TREE
- RETAIN TREE

Rev.	Description	Design	Check	Date
K	REVISED AS CLOUDED	MMH	JV	24/05/19
J	REVISED AS CLOUDED	MMH	JV	20/12/18
H	REVISED AS CLOUDED	MMH	JV	14/11/18
G	REVISED AS CLOUDED	MMH	JV	21/08/18
F	REVISED AS CLOUDED	MMH	JV	12/07/18
E	UPDATED RETAIN TREE	MMH	JV	08/03/18

Main Contractor
Dragages - China Harbour - VSL Joint Venture 實嘉-中國港灣-威勝利聯營

Contractor's Designer
Mott MacDonald YWL Engineering

Consultant
ARUP 奧雅納工程顧問 Ove Arup & Partners Hong Kong Limited

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

Drawing Title
SOFT LANDSCAPE LAYOUT PLAN

Drawing no.			Rev.
HKLR9/MMH/DDA/A1/LS/00101			K
Design: PK	Drawn: MING	Approved: HTC	Status: FOR SUBMISSION
Scale: 1:500 (IN A1)		Approved: 10MAY16	
Job No.: HKLR9		Sheet No.: 1 OF 10	
File name: HKLR9_MMH_DDA_A1_LS_00101-00110-S.dgn			

路政署 HIGHWAYS DEPARTMENT

FOR REVIEW

NOTE:

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1 : 500 SCALE BAR

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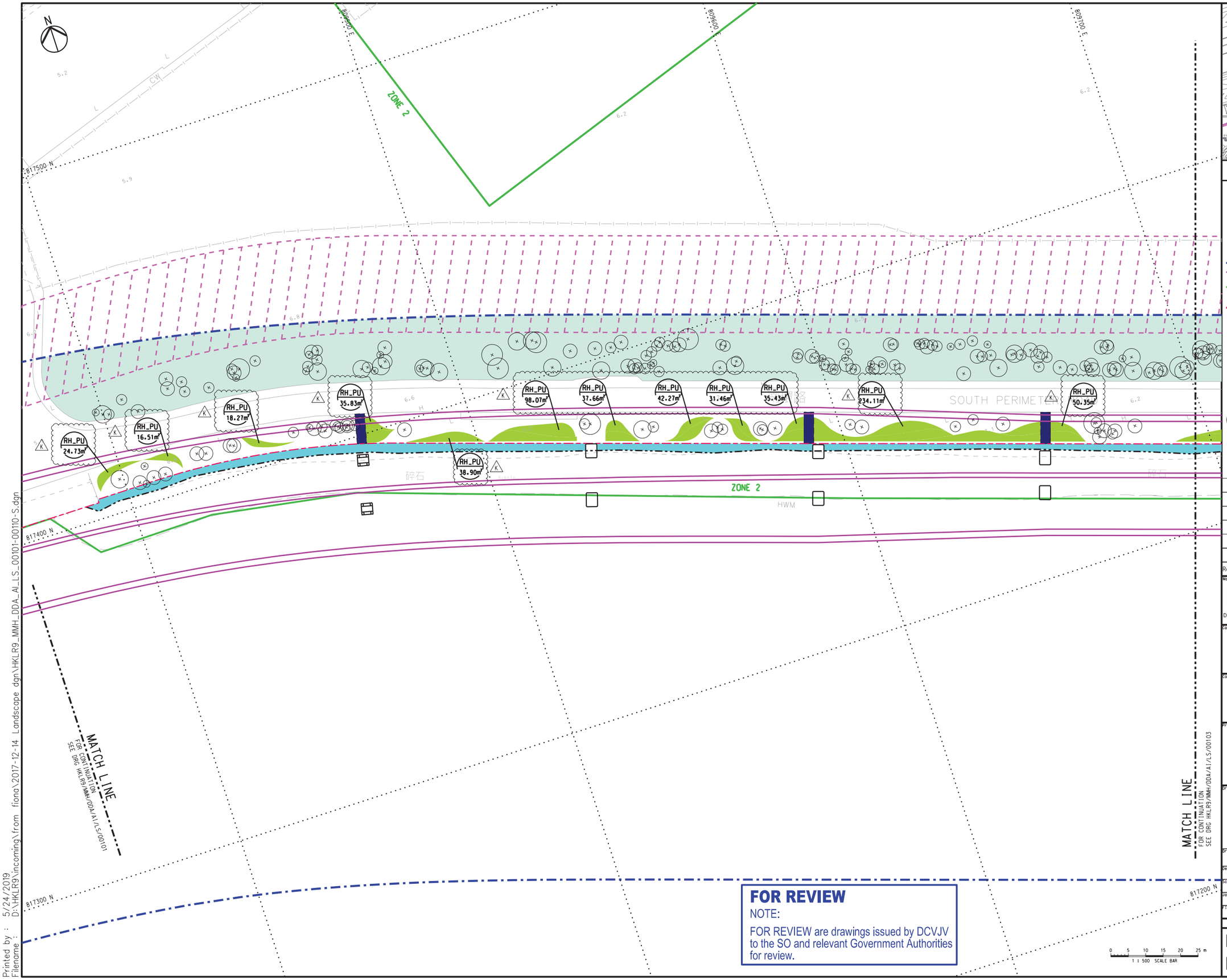

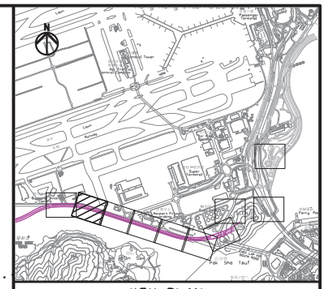

KEY PLAN
SCALE 1:35000

NOTES:

1. SUFFICIENT SOIL DEPTH IS CONFIRMED IN ALL PROPOSED COMPENSATORY PLANTING AREAS.
2. PLEASE REFER TO DRAWING NO. HKLR9/MMH/DDA/A1/LS/00481 FOR THE PROPOSED PLANTING SCHEDULE.
3. HYDROSEEDING TO BE PROVIDED AT BARE GROUND WITHIN LANDSCAPE AREA.

LEGEND:

- SITE BOUNDARY
- PROPOSED VIADUCT
- ZONING ACCORDING TO HONG KONG INTERNATIONAL AIRPORT APPROVED PLANT SPECIES LIST (REVISION 3: JUNE 2007) (REFER TO ER PART 4 APPENDIX 4B)
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- ACCESS FOR MAINTENANCE (APPROX. 2.8m WIDTH, NO PAVING)
- TR_SP 100 — PLANT SPECIES QUANTITY / AREA
- PROPOSED TREE
- RETAIN TREE

Rev.	Description	Design	Check	Date
K	REVISED AS CLOUDED	MMH	JV	24/05/19
J	REVISED AS CLOUDED	MMH	JV	20/12/18
H	REVISED AS CLOUDED	MMH	JV	14/11/18
G	REVISED AS CLOUDED	MMH	JV	21/08/18
F	REVISED AS CLOUDED	MMH	JV	12/07/18
E	UPDATED RETAIN TREE	MMH	JV	08/03/18

Main Contractor
Dragages - China Harbour - VSL Joint Venture 實基-中國港灣-威勝利聯營

Contractor's Designer
Mott MacDonald YWL Engineering

Consultant
ARUP 奧雅納工程顧問 Ove Arup & Partners Hong Kong Limited

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

Drawing Title
SOFT LANDSCAPE LAYOUT PLAN

Drawing no.			Rev.
HKLR9/MMH/DDA/A1/LS/00102			K
Design: PK	Drawn: MING	Approved: HTC	Status: FOR SUBMISSION
Scale: 1:500 (IN A1)		Approved: 10MAY16	
Job No.: HKLR9		Sheet No.: 2 OF 10	
File name: HKLR9_MMH_DDA_A1_LS_00101-00110-S.dgn			

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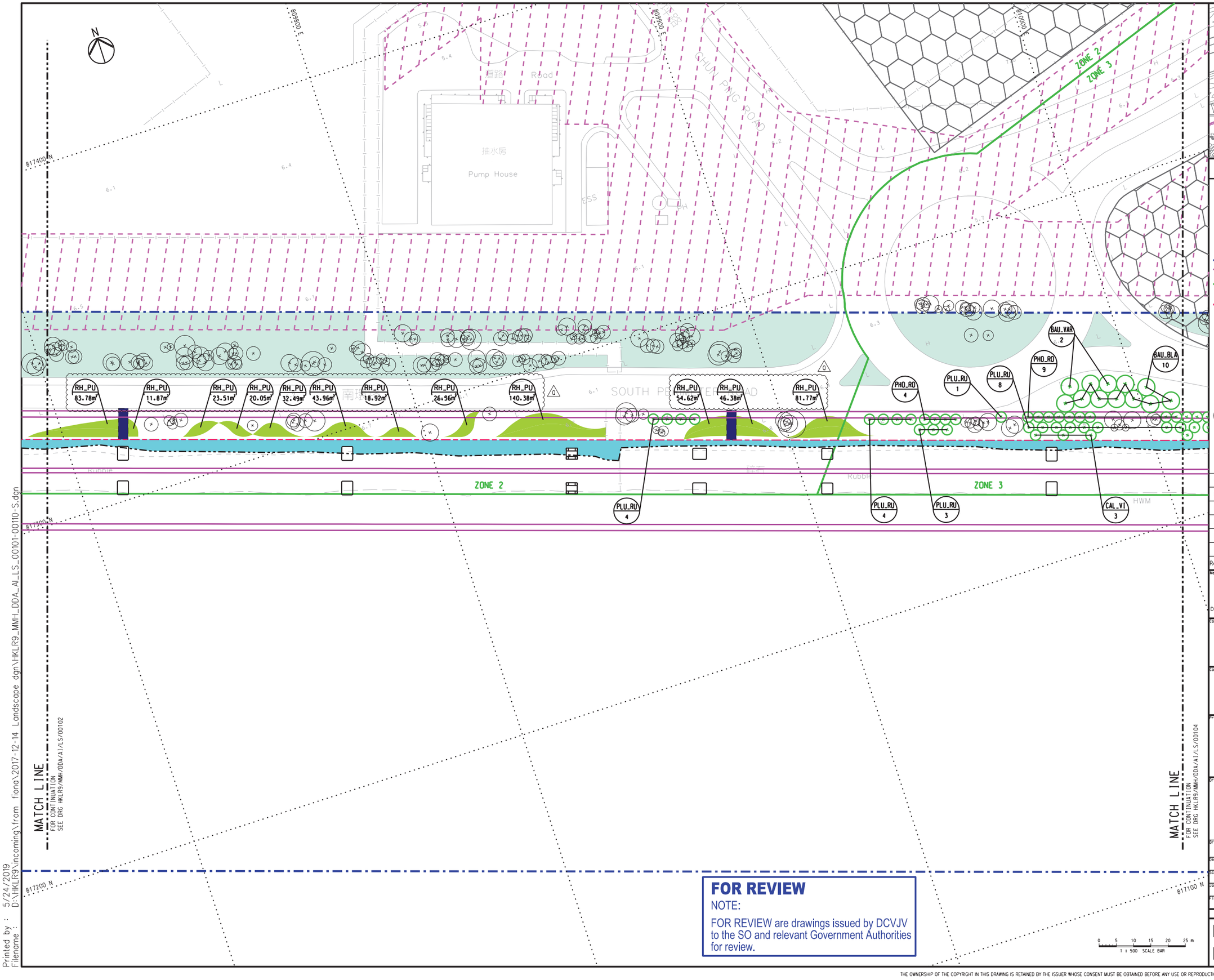

KEY PLAN
SCALE 1:35000

NOTES:

1. SUFFICIENT SOIL DEPTH IS CONFIRMED IN ALL PROPOSED COMPENSATORY PLANTING AREAS.
2. PLEASE REFER TO DRAWING NO. HKLR9/MMH/DDA/AI/LS/00481 FOR THE PROPOSED PLANTING SCHEDULE.
3. HYDROSEEDING TO BE PROVIDED AT BARE GROUND WITHIN LANDSCAPE AREA.

LEGEND:

- SITE BOUNDARY
- PROPOSED VIADUCT
- ZONING ACCORDING TO HONG KONG INTERNATIONAL AIRPORT APPROVED PLANT SPECIES LIST (REVISION 3: JUNE 2007) (REFER TO ER PART 4 APPENDIX 4B)
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- GOVERNMENT LAND WITH NO PAVING AND NO PLANTING (FLAT PATHWAY)
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- TR_SP 100 — PLANT SPECIES; QUANTITY / AREA △0
- PROPOSED TREE
- RETAIN TREE

Rev.	Description	Design	Check	Date
Q	REVISED AS CLOUDED	MMH	JV	24/05/19
P	REVISED AS CLOUDED	MMH	JV	06/05/19
N	REVISED AS CLOUDED	MMH	JV	01/03/19
M	REVISED AS CLOUDED	MMH	JV	28/02/19
L	REVISED AS CLOUDED	MMH	JV	20/12/18
K	REVISED AS CLOUDED	MMH	JV	14/11/18

Main Contractor
Dragages - China Harbour - VSL Joint Venture 實基-中國海灣-威勝利聯營

Contractor's Designer
Mott MacDonald
YWL Engineering

Consultant
ARUP 奧雅納工程顧問 Ove Arup & Partners Hong Kong Limited

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

Drawing Title
SOFT LANDSCAPE LAYOUT PLAN

Drawing no.			Rev.
HKLR9/MMH/DDA/AI/LS/00103			0
Design: PK	Drawn: MING	Approved: HTC	Status: FOR SUBMISSION
Scale: 1:500 (IN A1)		Approved: 10MAY16	
Job No.: HKLR9		Sheet No.: 3 OF 10	
File name: HKLR9_MMH_DDA_AI_LS_00101-00110-S.dgn			

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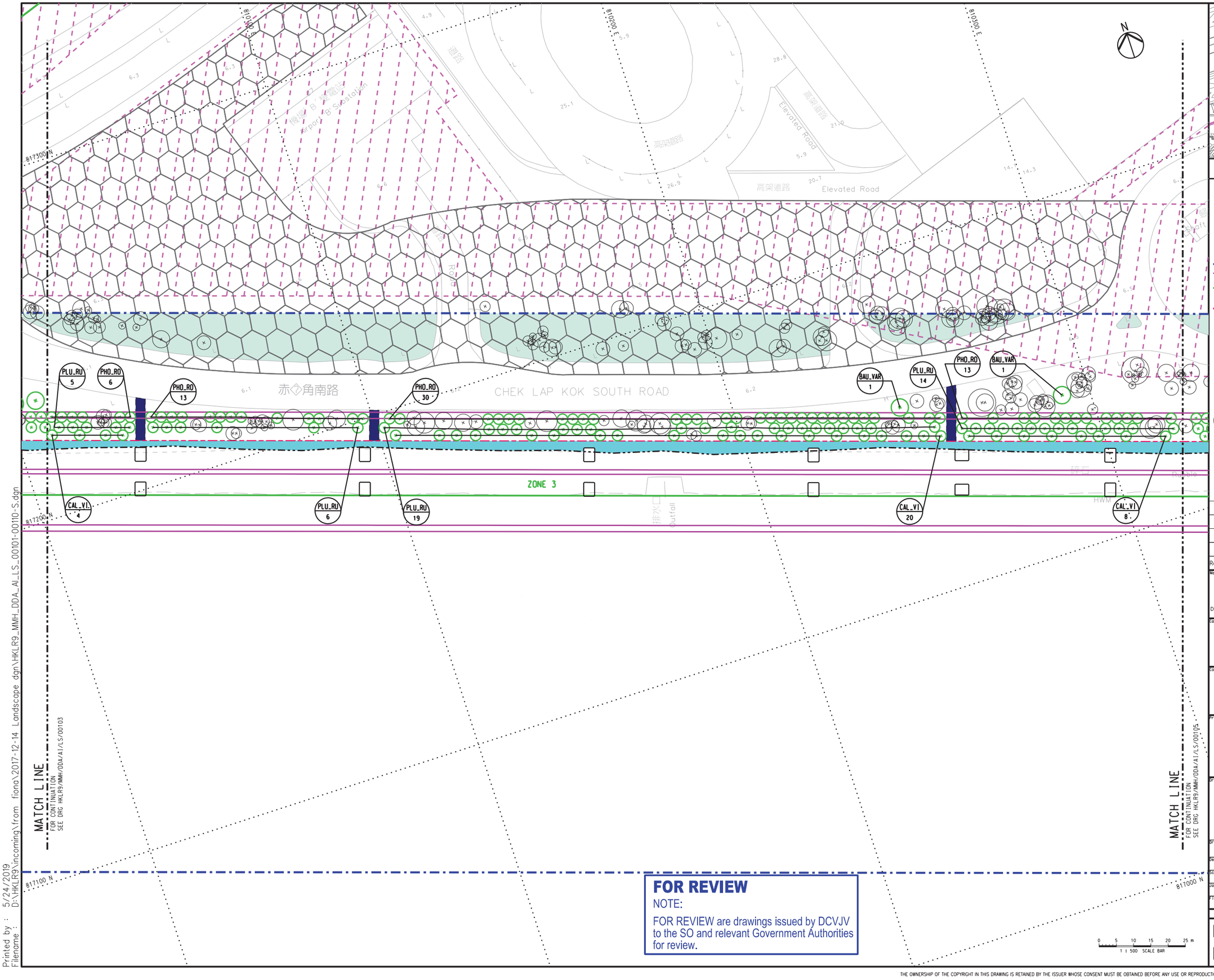

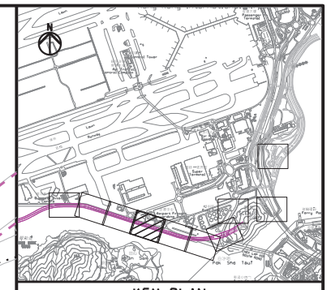

KEY PLAN
SCALE 1:35000

NOTES:

1. SUFFICIENT SOIL DEPTH IS CONFIRMED IN ALL PROPOSED COMPENSATORY PLANTING AREAS.
2. PLEASE REFER TO DRAWING NO. HKLR9/MMH/DDA/AI/LS/00481 FOR THE PROPOSED PLANTING SCHEDULE.
3. HYDROSEEDING TO BE PROVIDED AT BARE GROUND WITHIN LANDSCAPE AREA.

LEGEND:

- SITE BOUNDARY
- PROPOSED VIADUCT
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- TR_SP 100 — PLANT SPECIES (QUANTITY / AREA)
- PROPOSED TREE
- RETAIN TREE
- TRANSPLANT TREE

Rev.	Description	Design	Check	Date
Q	REVISED AS CLOUDED	MMH	JV	24/05/19
P	REVISED AS CLOUDED	MMH	JV	06/05/19
N	REVISED AS CLOUDED	MMH	JV	01/03/19
M	REVISED AS CLOUDED	MMH	JV	28/02/19

Main Contractor
Dragages - China Harbour - VSL Joint Venture 實基-中國海灣-威勝利聯營

Contractor's Designer
Mott MacDonald YWL Engineering

Consultant
ARUP 奧雅納工程顧問 Ove Arup & Partners Hong Kong Limited

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

Drawing Title
SOFT LANDSCAPE LAYOUT PLAN

Drawing no.	Rev.
HKLR9/MMH/DDA/AI/LS/00104	0

Design	Drawn	Approved	Status
PK	MING	HTC	FOR SUBMISSION

Scale	Approved
1:500 (IN A1)	10MAY16
Job No. HKLR9	Sheet No. 4 OF 10

File name HKLR9_MMH_DDA_AI_LS_00101-00110-S.dgn

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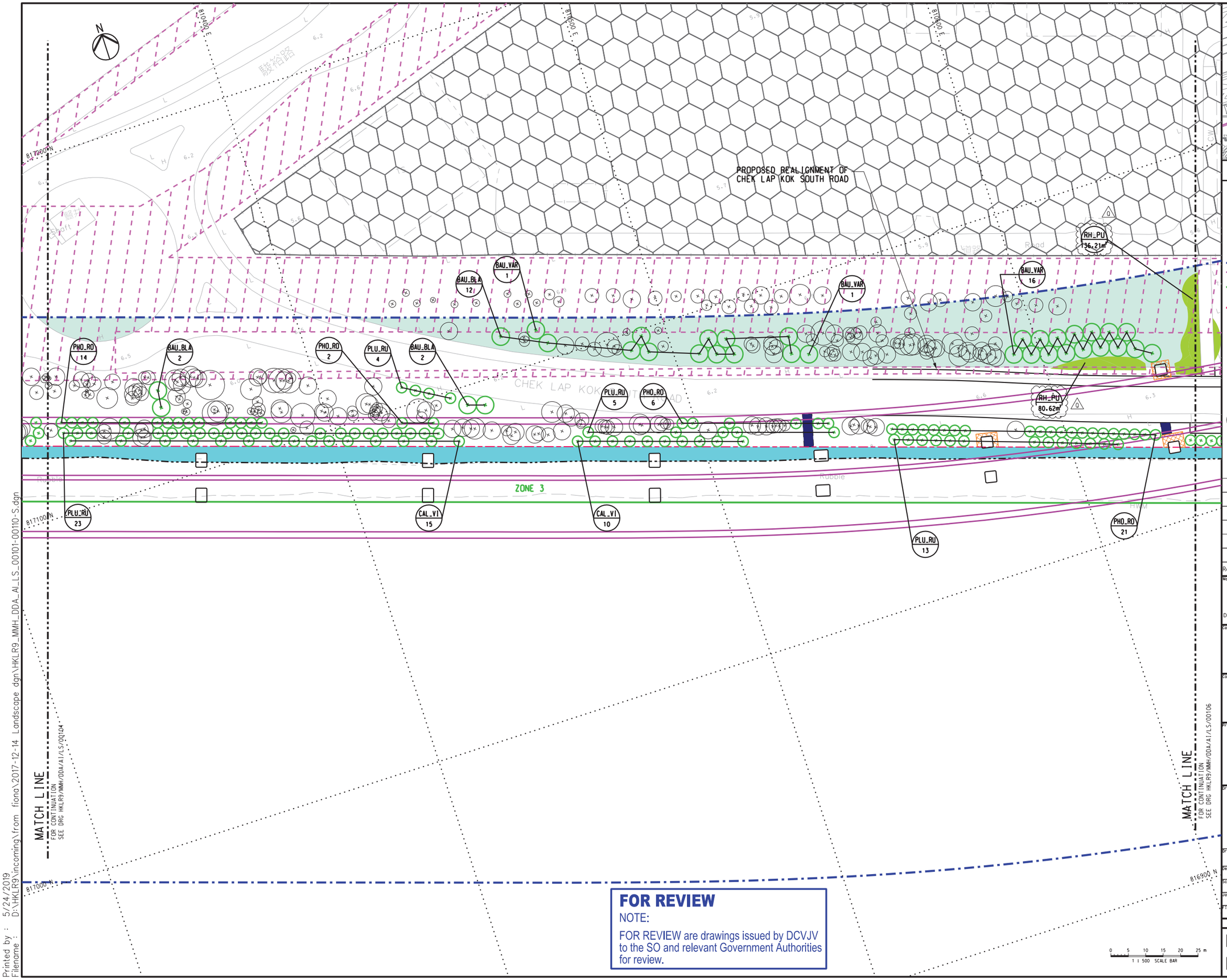

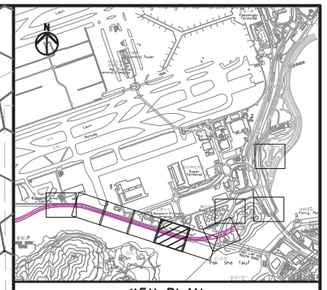

KEY PLAN
SCALE 1:35000

NOTES:

1. SUFFICIENT SOIL DEPTH IS CONFIRMED IN ALL PROPOSED COMPENSATORY PLANTING AREAS.
2. PLEASE REFER TO DRAWING NO. HKLR9/MMH/DDA/AI/LS/00481 FOR THE PROPOSED PLANTING SCHEDULE.
3. HYDROSEEDING TO BE PROVIDED AT BARE GROUND WITHIN LANDSCAPE AREA.

LEGEND:

- SITE BOUNDARY
- PROPOSED VIADUCT
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- ACCESS FOR MAINTENANCE (APPROX. 2.8m WIDTH, NO PAVING)
- TR_SP 100 — PLANT SPECIES, QUANTITY / AREA
- PROPOSED TREE
- RETAIN TREE

Rev.	Description	Design	Check	Date
Q	REVISED AS CLOUDED	MMH	JV	24/05/19
P	REVISED AS CLOUDED	MMH	JV	06/05/19
N	REVISED AS CLOUDED	MMH	JV	01/03/19
M	REVISED AS CLOUDED	MMH	JV	28/02/19
L	REVISED AS CLOUDED	MMH	JV	20/12/18
K	REVISED AS CLOUDED	MMH	JV	14/11/18

Main Contractor
Dragages - China Harbour - VSL Joint Venture 達基-中國海灣-威勝利聯營

Contractor's Designer
Mott MacDonald YWL Engineering

Consultant
ARUP 奧雅納工程顧問 Ove Arup & Partners Hong Kong Limited

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

Drawing Title
SOFT LANDSCAPE LAYOUT PLAN

Drawing no.	Rev.
HKLR9/MMH/DDA/AI/LS/00105	0

Design	Drawn	Approved	Status
PK	MING	HTC	FOR SUBMISSION

Scale	Approved
1:500 (IN A1)	10MAY16

Job No.	Sheet No.
HKLR9	5 OF 10

File name HKLR9_MMH_DDA_AI_LS_00101-00110-S.dgn

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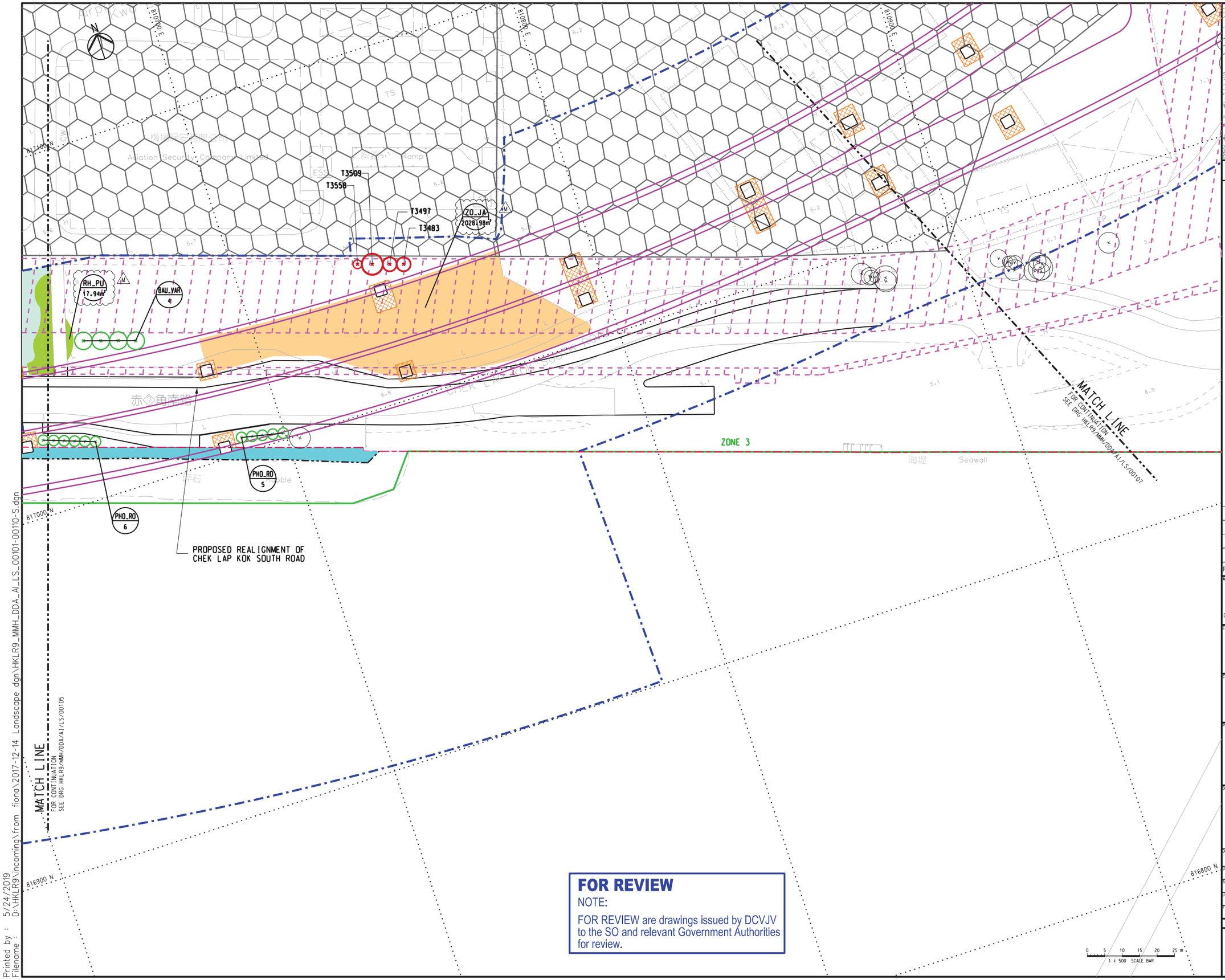

KEY PLAN
SCALE 1:35000

NOTES:

1. SUFFICIENT SOIL DEPTH IS CONFIRMED IN ALL PROPOSED COMPENSATORY PLANTING AREAS.
2. PLEASE REFER TO DRAWING NO. HKLR9/MMH/DDA/AI/LS/00481 FOR THE PROPOSED PLANTING SCHEDULE.
3. HYDROSEEDING TO BE PROVIDED AT BARE GROUND WITHIN LANDSCAPE AREA.

LEGEND:

- SITE BOUNDARY
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- TR_SP 100 — PLANT SPECIES; QUANTITY / AREA; M
- PROPOSED TREE
- RETAIN TREE
- TRANSPLANT TREE

Rev.	Description	Design	Check	Date
M	REVISED AS CLOUDED	MMH	JV	24/05/19
L	REVISED AS CLOUDED	MMH	JV	06/05/19
K	REVISED AS CLOUDED	MMH	JV	20/12/18
J	REVISED AS CLOUDED	MMH	JV	14/11/18

Main Contractor
Dragages - China Harbour - VSL Joint Venture 實嘉-中國港灣-威勝利聯營

Contractor's Designer
Mott MacDonald YWL Engineering

Consultant
ARUP 奧雅納工程顧問 Ove Arup & Partners Hong Kong Limited

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

Drawing Title
SOFT LANDSCAPE LAYOUT PLAN

Drawing no.			Rev.
HKLR9/MMH/DDA/AI/LS/00106			M
Design: PK	Drawn: MING	Approved: HTC	Status: FOR SUBMISSION
Scale: 1:500 (IN A1)		Approved: 10MAY16	
Job No.: HKLR9		Sheet No.: 6 OF 10	
File name: HKLR9_MMH_DDA_AI_LS_00101-00110-S.dgn			

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FOR REVIEW
NOTE:
FOR REVIEW are drawings issued by DCVJV to the SO and relevant Government Authorities for review.

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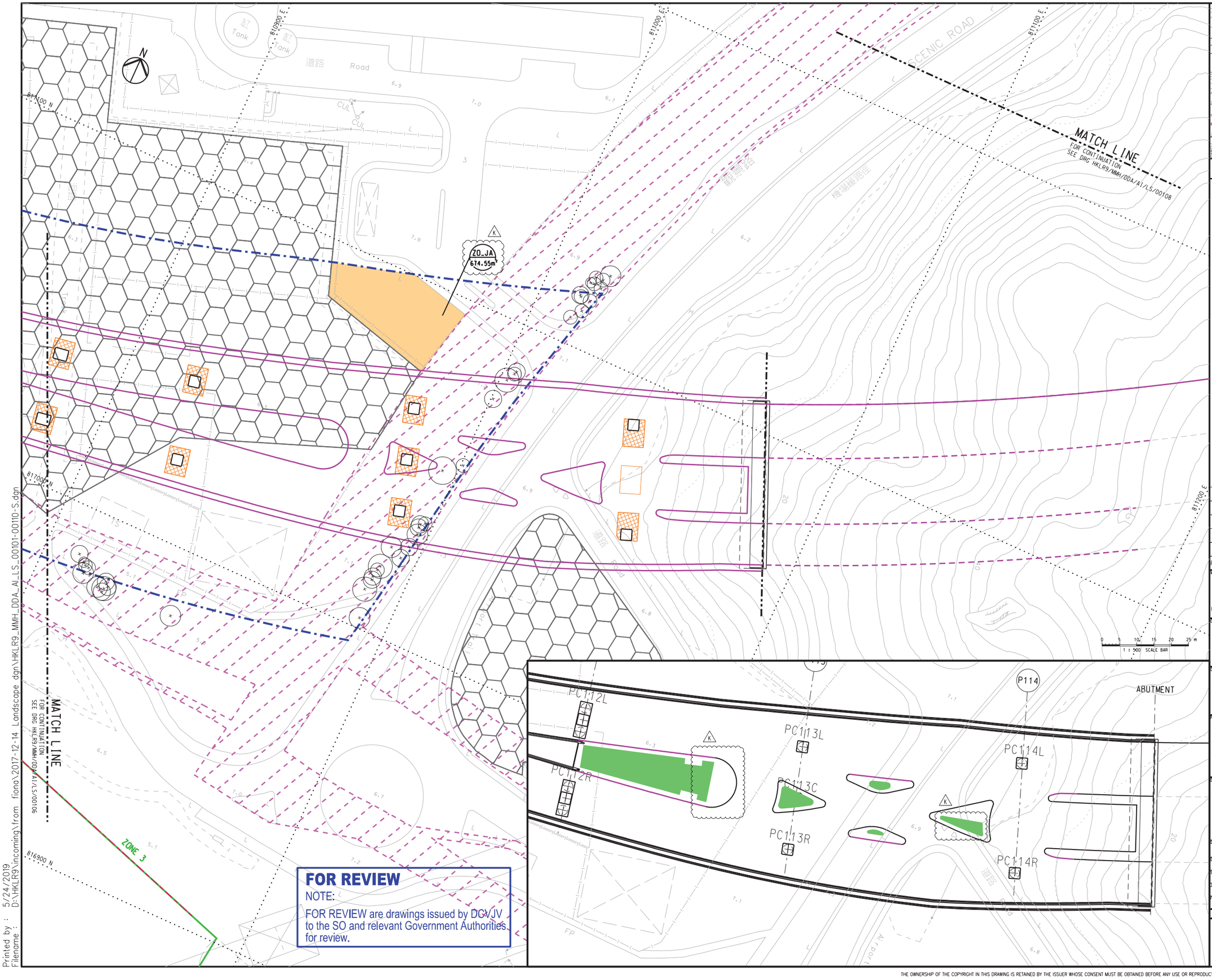
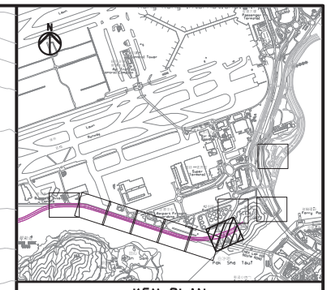
Filename : D:\HKLR9\incoming\from fiona\2017-12-14 Landscape dgn\HKLR9_MMH_DDA_AI_LS_00101-00110-S.dgn





KEY PLAN
SCALE 1:35000

NOTES:

1. SUFFICIENT SOIL DEPTH IS CONFIRMED IN ALL PROPOSED COMPENSATORY PLANTING AREAS.
2. PLEASE REFER TO DRAWING NO. HKLR9/MMH/DDA/AI/LS/00481 FOR THE PROPOSED PLANTING SCHEDULE.
3. HYDROSEEDING TO BE PROVIDED AT BARE GROUND WITHIN LANDSCAPE AREA.

LEGEND:

- SITE BOUNDARY
- PROPOSED VIADUCT
- ZONING ACCORDING TO HONG KONG INTERNATIONAL AIRPORT APPROVED PLANT SPECIES LIST (REVISION 3: JUNE 2007) (REFER TO ER PART 4 APPENDIX 4B)
- LOT BOUNDARY
- EXISTING LANDSCAPE PLANTING TO BE RETAINED
- UTILITIES RESERVE ZONE
- AAHK'S POTENTIAL SUPPORTING AREA FOR FUTURE AIRPORT PROJECTS
- PORTION OF MAINTENANCE AREA ON RESUMED LAND WITH NO PAVING AND NO PLANTING (FLAT PATHWAY)
- GOVERNMENT LAND WITH NO PAVING AND NO PLANTING (FLAT PATHWAY)
- ACCESS FOR MAINTENANCE (APPROX. 2.8m WIDTH, NO PAVING)
- GROUNDCOVER
- TR_SP 100 — PLANT SPECIES, QUANTITY / AREA, K
- PROPOSED TREE
- RETAIN TREE

Rev.	Description	Design	Check	Date
K	REVISED AS CLOUDED	MMH	JV	24/05/19
J	REVISED AS CLOUDED	MMH	JV	20/12/18
H	REVISED AS CLOUDED	MMH	JV	14/11/18
G	REVISED AS CLOUDED	MMH	JV	21/08/18
F	REVISED AS CLOUDED	MMH	JV	05/06/18

Main Contractor
Dragages - China Harbour - VSL Joint Venture 實基-中國港灣-威勝利聯營

Contractor's Designer
Mott MacDonald YWL Engineering

Consultant
ARUP 奧雅納工程顧問 Ove Arup & Partners Hong Kong Limited

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

Drawing Title
SOFT LANDSCAPE LAYOUT PLAN

Drawing no.			Rev.
HKLR9/MMH/DDA/AI/LS/00107			K
Design: PK	Drawn: MING	Approved: HTC	Status: FOR SUBMISSION
Scale: 1:500 (IN A1)		Approved: 01MAR17	
Job No.: HKLR9		Sheet No.: 7 OF 10	
File name: HKLR9_MMH_DDA_AI_LS_00101-00110-S.dgn			

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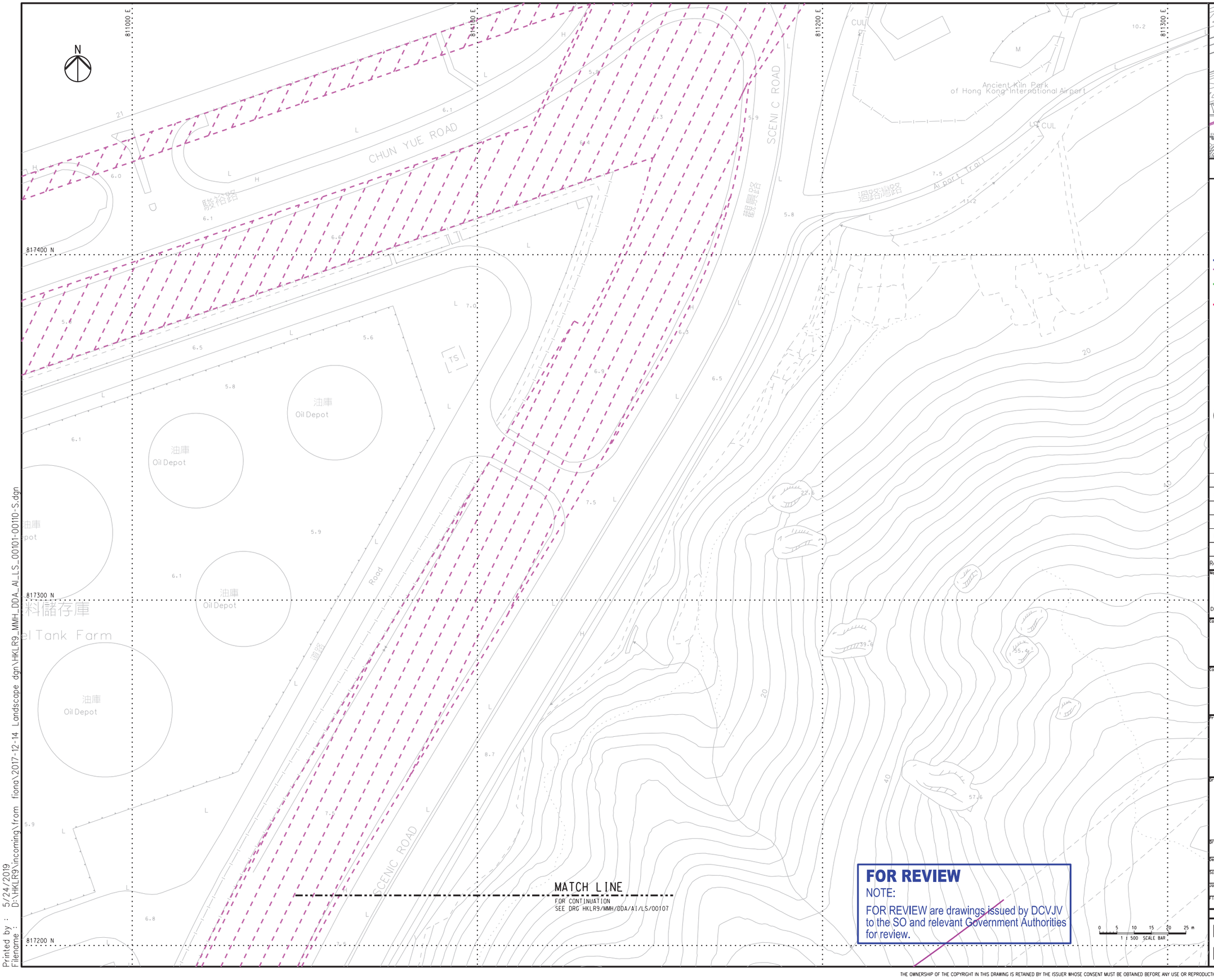

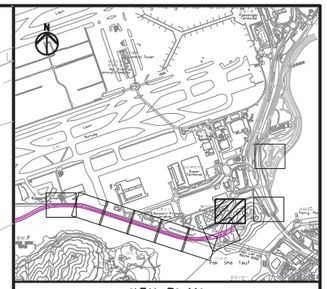

KEY PLAN
SCALE 1:35000

NOTES:

1. SUFFICIENT SOIL DEPTH IS CONFIRMED IN ALL PROPOSED COMPENSATORY PLANTING AREAS.
2. PLEASE REFER TO DRAWING NO. HKLR9/MMH/DDA/AI/LS/00481 FOR THE PROPOSED PLANTING SCHEDULE.
3. HYDROSEEDING TO BE PROVIDED AT BARE GROUND WITHIN LANDSCAPE AREA.

LEGEND:

- SITE BOUNDARY
- PROPOSED VIADUCT
- ZONING ACCORDING TO HONG KONG INTERNATIONAL AIRPORT APPROVED PLANT SPECIES LIST (REVISION 3: JUNE 2007) (REFER TO ER PART 4 APPENDIX 4B)
- LOT BOUNDARY
- EXISTING LANDSCAPE PLANTING TO BE RETAINED
- UTILITIES RESERVE ZONE
- AAHK'S POTENTIAL SUPPORTING AREA FOR FUTURE AIRPORT PROJECTS
- PORTION OF MAINTENANCE AREA ON RESUMED LAND WITH NO PAVING AND NO PLANTING (FLAT PATHWAY)
- GOVERNMENT LAND WITH NO PAVING AND NO PLANTING (FLAT PATHWAY)
- ACCESS FOR MAINTENANCE (APPROX. 2.8m WIDTH, NO PAVING)
- TR_SP 100 — PLANT SPECIES / QUANTITY / AREA / H
- PROPOSED TREE
- RETAIN TREE

Rev.	Description	Design	Check	Date
H	REVISED AS CLOUDED	MMH	JV	24/05/19
G	REVISED AS CLOUDED	MMH	JV	20/12/18
F	REVISED AS CLOUDED	MMH	JV	21/08/18
E	REVISED AS CLOUDED	MMH	JV	12/07/18
D	REVISED AS CLOUDED	MMH	JV	05/06/18
C	FOR APPROVAL	MMH	JV	10/05/16

Main Contractor
Dragages - China Harbour - VSL Joint Venture 實基-中國海灣-威勝利聯營

Contractor's Designer
Mott MacDonald YWL Engineering

Consultant
ARUP 奧雅納工程顧問 Ove Arup & Partners Hong Kong Limited

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

Drawing Title
SOFT LANDSCAPE LAYOUT PLAN

Drawing no.			Rev.
HKLR9/MMH/DDA/AI/LS/00108			H
Design: PK	Drawn: MING	Approved: HTC	Status: FOR SUBMISSION
Scale: 1:500 (IN A1)		Approved: 10MAY16	
Job No.: HKLR9		Sheet No.: 8 OF 10	
File name: HKLR9_MMH_DDA_AI_LS_00101-00110-S.dgn			

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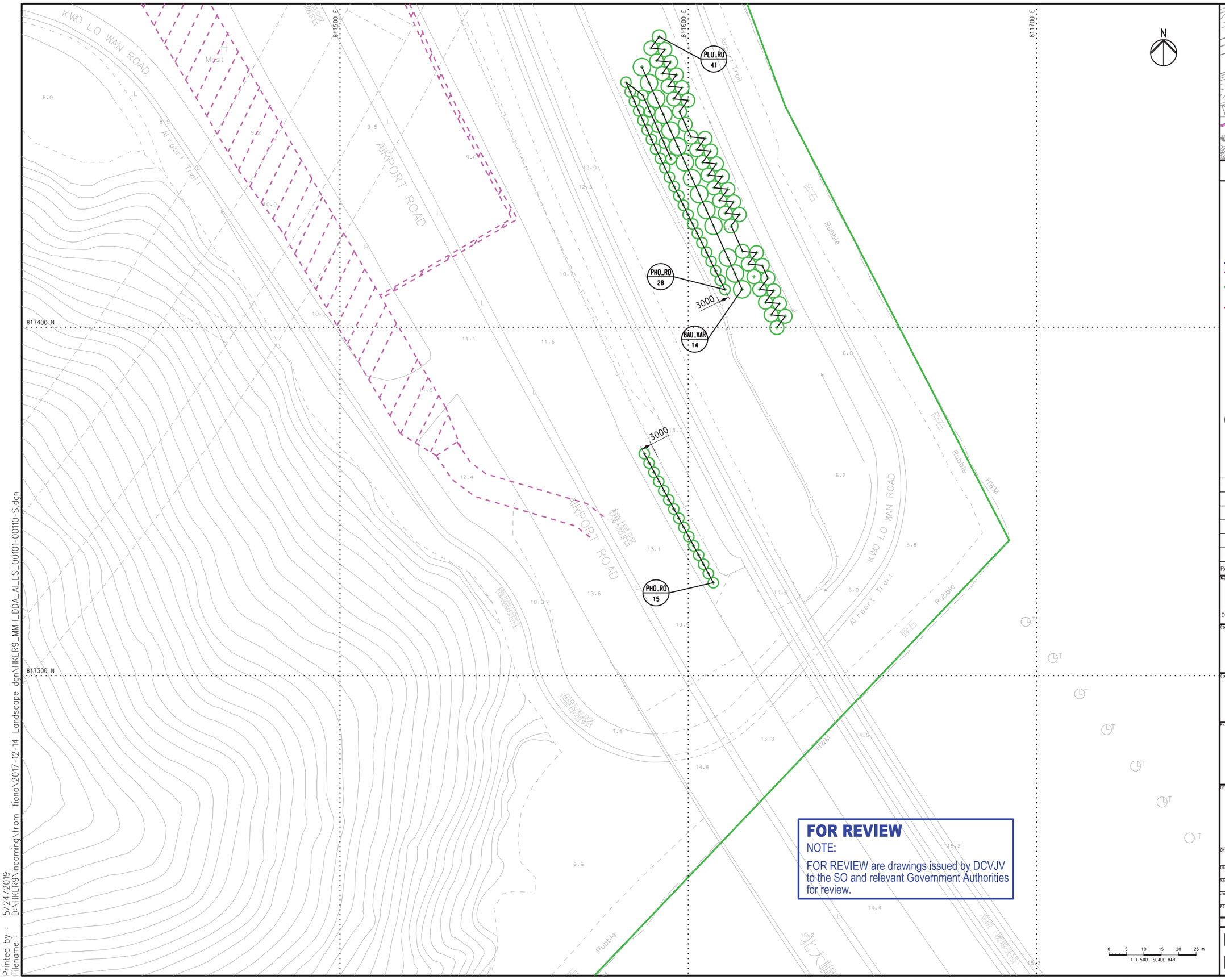
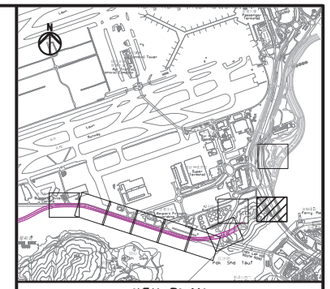
Filename : D:\HKLR9\incoming\from fiona\2017-12-14 Landscape dgn\HKLR9_MMH_DDA_AI_LS_00101-00110-S.dgn





KEY PLAN
SCALE 1:35000

NOTES:

1. SUFFICIENT SOIL DEPTH IS CONFIRMED IN ALL PROPOSED COMPENSATORY PLANTING AREAS.
2. PLEASE REFER TO DRAWING NO. HKLR9/MMH/DDA/A1/LS/00481 FOR THE PROPOSED PLANTING SCHEDULE.
3. HYDROSEEDING TO BE PROVIDED AT BARE GROUND WITHIN LANDSCAPE AREA.

LEGEND:

- SITE BOUNDARY
- PROPOSED VIADUCT
- ZONING ACCORDING TO HONG KONG INTERNATIONAL AIRPORT APPROVED PLANT SPECIES LIST (REVISION 3: JUNE 2007) (REFER TO ER PART 4 APPENDIX 4B)
- LOT BOUNDARY
- EXISTING LANDSCAPE PLANTING TO BE RETAINED
- UTILITIES RESERVE ZONE
- AAHK'S POTENTIAL SUPPORTING AREA FOR FUTURE AIRPORT PROJECTS
- PORTION OF MAINTENANCE AREA ON RESUMED LAND WITH NO PAVING AND NO PLANTING (FLAT PATHWAY)
- GOVERNMENT LAND WITH NO PAVING AND NO PLANTING (FLAT PATHWAY)
- ACCESS FOR MAINTENANCE (APPROX. 2.8m WIDTH, NO PAVING)
- TR_SP 100 — PLANT SPECIES (QUANTITY / AREA) J
- PROPOSED TREE
- RETAIN TREE

Rev.	Description	Design	Check	Date
J	REVISED AS CLOUDED	MMH	JV	24/05/19
H	REVISED AS CLOUDED	MMH	JV	06/05/19
G	REVISED AS CLOUDED	MMH	JV	20/12/18
F	REVISED AS CLOUDED	MMH	JV	30/11/18
E	REVISED AS CLOUDED	MMH	JV	21/08/18
D	REVISED AS CLOUDED	MMH	JV	05/06/18

Main Contractor
Dragages - China Harbour - VSL Joint Venture 實基-中國港灣-威勝利聯營

Contractor's Designer
Mott MacDonald YWL Engineering

Consultant
ARUP 奧雅納工程顧問 Ove Arup & Partners Hong Kong Limited

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

Drawing Title
SOFT LANDSCAPE LAYOUT PLAN

Drawing no.			Rev.
HKLR9/MMH/DDA/A1/LS/00109			J
Design: PK	Drawn: MING	Approved: HTC	Status: FOR SUBMISSION
Scale: 1:500 (IN A1)		Approved: 10MAY16	
Job No.: HKLR9		Sheet No.: 9 OF 10	
File name: HKLR9_MMH_DDA_A1_LS_00101-00110-S.dgn			

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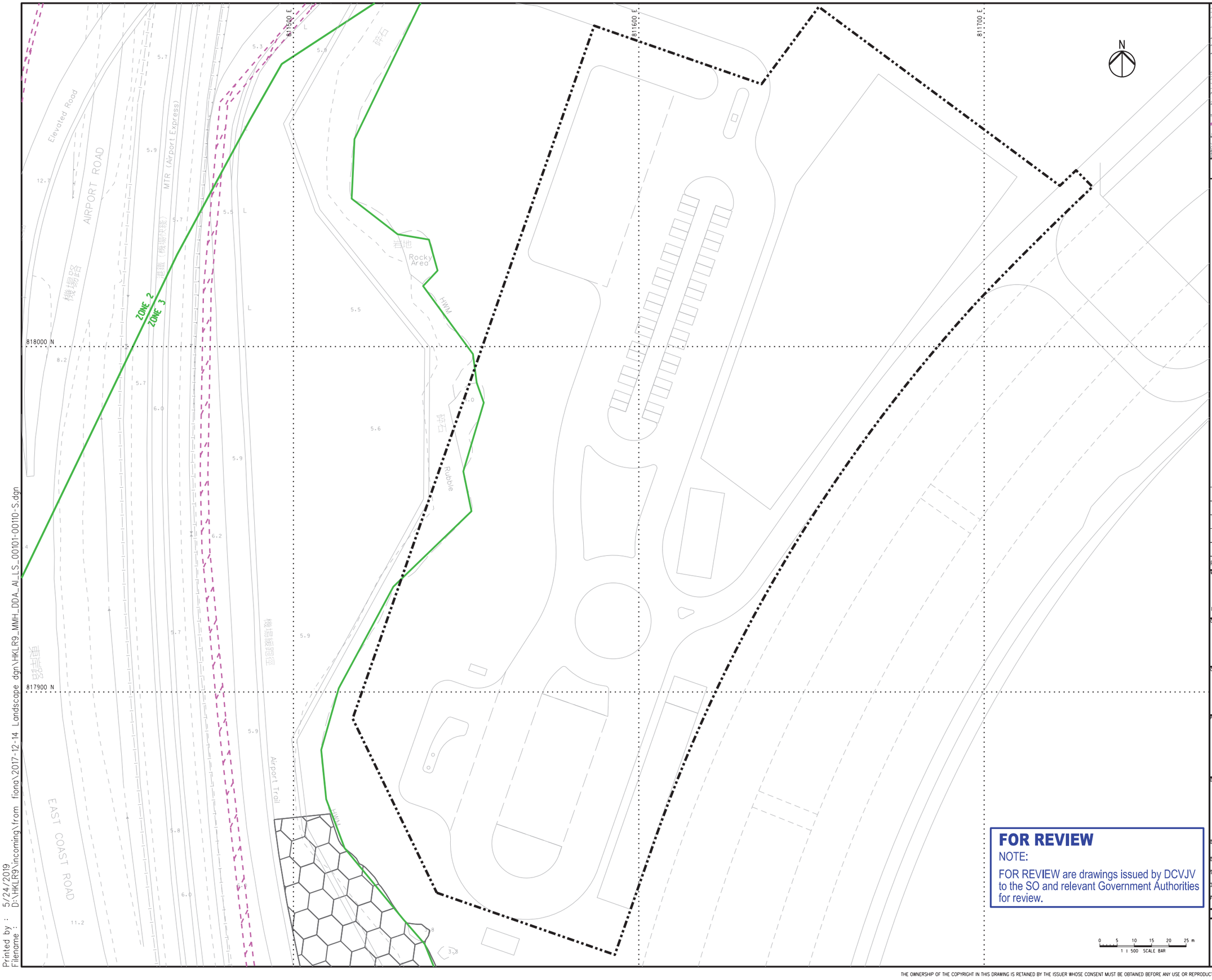
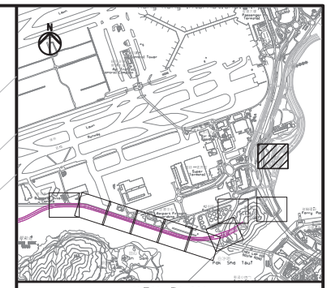
Printed by : 5/24/2019
Filename : D:\HKLR9\incoming\from fiona\2017-12-14 Landscape dgn\HKLR9_MMH_DDA_AL_LS_00101-00110-S.dgn





KEY PLAN
SCALE 1:35000

NOTES:

1. SUFFICIENT SOIL DEPTH IS CONFIRMED IN ALL PROPOSED COMPENSATORY PLANTING AREAS.
2. PLEASE REFER TO DRAWING NO. HKLR9/MMH/DDA/AI/LS/00481 FOR THE PROPOSED PLANTING SCHEDULE.
3. HYDROSEEDING TO BE PROVIDED AT BARE GROUND WITHIN LANDSCAPE AREA.

LEGEND:

- SITE BOUNDARY
- PROPOSED VIADUCT
- ZONING ACCORDING TO HONG KONG INTERNATIONAL AIRPORT APPROVED PLANT SPECIES LIST (REVISION 3: JUNE 2007) (REFER TO ER PART 4 APPENDIX 4B)
- LOT BOUNDARY
- BOUNDARY OF HIGHWAY OPERATION AND MAINTENANCE AREA
- EXISTING LANDSCAPE PLANTING TO BE RETAINED
- UTILITIES RESERVE ZONE
- AAHK'S POTENTIAL SUPPORTING AREA FOR FUTURE AIRPORT PROJECTS
- MAINTENANCE ACCESS
- PLANT SPECIES (TR_SP / 100) QUANTITY / AREA (E)
- PROPOSED TREE
- RETAIN TREE

FOR REVIEW

NOTE:

FOR REVIEW are drawings issued by DCVJV to the SO and relevant Government Authorities for review.

0 5 10 15 20 25 m
1 : 500 SCALE BAR

Rev.	Description	Design	Check	Date
E	REVISED AS CLOUDED	MMH	JV	24/05/19
D	REVISED AS CLOUDED	MMH	JV	21/08/18
C	FOR APPROVAL	MMH	JV	10/05/16
B	FOR APPROVAL	MMH	JV	24/01/14
A	FOR APPROVAL	MMH	JV	09/08/13

Main Contractor
Dragages - China Harbour - VSL Joint Venture 實基-中國港灣-威勝利聯營

Contractor's Designer
Mott MacDonald YWL Engineering

Consultant
ARUP 奧雅納工程顧問 Ove Arup & Partners Hong Kong Limited

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

Drawing Title
SOFT LANDSCAPE LAYOUT PLAN

Drawing no.			Rev.
HKLR9/MMH/DDA/AI/LS/00110			E
Design: PK	Drawn: MING	Approved: HTC	Status: FOR SUBMISSION
Scale: 1:500 (IN A1)		Approved: 10MAY16	
Job No.: HKLR9		Sheet No.: 10 OF 10	
File name: HKLR9_MMH_DDA_AI_LS_00101-00110-S.dgn			

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Printed by : 5/24/2019
Filename : D:\HKLR9\incoming\from fiona\2017-12-14 Landscape dgn\HKLR9_MMH_DDA_AI_LS_00101-00110-S.dgn

Photographic Records for Landscape / Planting works on 11 May 2020

Location: Portion A

Photo 1  Description: General view of planted shrubs (*Rhododendron pulchrum*)	Photo 2  Description: General view of planted shrubs (*Rhododendron pulchrum*)
Photo 3  Description: General view of planted shrubs (*Rhododendron pulchrum*)	Photo 4  Description: General view of planted trees (*Plumeria rubra*)

Photographic Records for Landscape / Planting works on 11 May 2020

Location: Portion A

Photo 5  Description: General view of planted trees (*Plumeria rubra , Callistemon viminalis* and *Phoenix roebelenii*)	Photo 6  Description: General view of planted trees (*Bauhinia variegata and Bauhinia blakeana)*
Photo 7  Description: General view of planted trees (*Phoenix roebelenii*)	Photo 8  Description: General view of planted trees (*Plumeria rubra* and *Phoenix roebelenii*)

Photographic Records for Landscape / Planting works on 11 May 2020

Location: Portion A

Photo 9  Description: General view of planted trees (*Plumeria rubra* and *Phoenix roebelenii*)	

Photographic Records for Landscape / Planting works on 11 May 2020

Location: Portion C

Photo 10  Description: General view of planted trees (*Bauhinia variegata and Bauhinia blakeana*)	Photo 11  Description: Description: General view of planted trees (*Bauhinia variegata*)
Photo 12  Description: General view of planted trees (*Bauhinia variegata and Rhododendron pulchrum*)	Photo 13  Description: General view of *Zoysia japonica*

Photographic Records for Landscape / Planting works on 11 May 2020

Location: Kwo Lo Wan Road

Photo 14  Description: General view of planted trees (*Plumeria rubra*)	Photo 15  Description: General view of planted trees (*Bauhinia variegata* and *Plumeria rubra*)
Photo 16  Description: General view of planted trees (*Phoenix roebelenii*)	

Photographic Records for Landscape / Planting works on 11 May 2020

Location: Airport Road

Photo 17  Description: General view of planted trees (*Phoenix roebelenii*)	

Photographic Records for Landscape / Planting works on 22 May 2020

Location: Viaduct between P112 – P114

Photo 18  Description: Weeds and unwanted were observed.	Photo 19  Description: Weeds and unwanted were observed.
Photo 20  Description: Weeds and unwanted were observed and *Catharanthus roseus* are also in poor health condition or dead.	Photo 21  Description: Weeds and unwanted were observed and *Lantana montevidensis* are also in poor health condition or dead.

Photographic Records for Landscape / Planting works on 20 March 2020

Location: Viaduct between P112 – P114

Photo 22  Description: Weeds and unwanted were observed and *Nephrolepis auriculata, Catharanthus roseus and Lantana montevidensis* are also in poor health condition or dead.	Photo 23  Description: Weeds and unwanted were observed and *Nephrolepis auriculata, Catharanthus roseus and Lantana montevidensis* are also in poor health condition or dead.