MTR Corporation Limited

South Island Line (East)

Ecological Planting & Landscape Plan

May 2014

Prepared by:

Ida YU
Qualified Ecologist

LO Sai Cheung
Qualified Ecologist

Date:

19 MAY 2014

MTR Corporation Limited

South Island Line (East)

Ecological Planting & Landscape Plan

May 2014

Verified by:

Thomas Chan

Independent Environmental Checker

Date:

19 May 2014

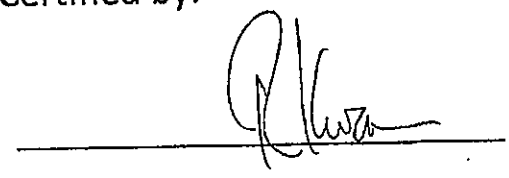
MTR Corporation Limited

South Island Line (East)

Ecological Planting & Landscape Plan

May 2014

Certified by:



Richard Kwan
Environmental Team Leader

Date: 19 May, 2014

South Island Line (East)

Ecological Planting & Landscape Plan

MTR Corporation Limited

May 2014

South Island Line (East)

Ecological Planting & Landscape Plan

List of Contents Page

Chapters

1 INTRODUCTION

The SIL(E) Environmental Permit (EP) Condition 2.13(a) specifies that the Permit Holder / Qualified Ecologist shall deposit with EPD an Ecological Planting and Landscape Plan showing the compensatory planting at the lower course of Wong Chuk Hang (WCH) nullah, habitat compensation / enhancement works at the nullah side and a 3-year post-planting care and maintenance plan.

An Ecological Planting and Landscape Plan (EPLP) was prepared in accordance with the requirements of the above mentioned EP Condition. The general objective of this plan is to mitigate and compensate ecological impacts to ardeid roosting sites resulting from the construction at WCH nullah. The Final EPLP (MTR 2011) was approved by the Environmental Protection Department (EPD) on 12 December 2011. According to the approved EPLP, habitat enhancement involving woodland planting on slopes and compensatory plantation for the ardeid night roost were proposed on slopes on the south side of WCH Nullah and along the lower course of the WCH Nullah respectively.

The SIL(E) works at Wong Chuk Hang Nullah has commenced in late 2011 and the designed and programmed engineering works have been undertaking since then. However, the latter engineering works and ground investigation revealed that some of the slopes to the south of WCH Nullah are either too steep (slope gradient > 35 degrees) or rock slopes (as shown in **Appendix A**) which are impractical and not suitable to be vegetated with woodland mix (i.e. woodland planting of whips and shrubs). Therefore, the proposed soft landscape design for the habitat enhancement of woodland planting on the slopes was reviewed in accordance with the latest engineering design and with regard to the latest site constraints and slope safety concern. In addition, replacement of a small number of proposed heavy standard trees (for compensatory planting), and native species of whips and shrubs for woodland planting on slopes (for habitat enhancement) is required due to their unavailability in the nursery shock or with no satisfactory nursery stock.

According to SIL(E) Environmental Permit (EP) Condition 2.32, a separate Landscape and Visual plan will be provided for the viaduct section along reinstated WCH nullah. The Plan shall include the design details, locations, implementation programme, maintenance and management schedules and drawings of the landscape and visual mitigation measures recommended in the approved EIA Report.

2 OBJECTIVES OF THE REVISED EPLP

The objectives of this revised EPLP are to update the changes in the soft landscape design of the landscape elements in the habitat enhancement and compensatory areas, and management and maintenance matrix of the EPLP and the landscape area along WCH Nullah.

3 REVIEW ON THE APPROVED EPLP

As noted for the changes as stated in Sections 1 and 2 above, the following text and figures were revised:

- Text in Sections 2 and 3 of the original approved EPLP (these sections are changed to Sections 4 and 5 in this current reviewed EPLP)
- Figures 1a and 1b Ecological Planting and Landscape Plan along Wong Chuk Hang Nullah (the Figures are updated to Figures 1a-1e in this current reviewed EPLP, and Figure 1 is an index plan indicating the ecological planting and landscape areas shown in Figures 1a – 1e with reference to the mitigation measures implemented along Wong Chuk Hang Nullah to reduce the impact on ardeid)
- Figure 2a and 2b Management and Maintenance Matrix of the Ecological Planting and Landscape Area along Wong Chuk Hang Nullah (the Figures are updated to Appendix B in this current reviewed EPLP)
- Additional Appendix A to show the site condition and engineering constraints on the slopes to the south of WCH Nullah

4 COMPENSATORY PLANTING & HABITAT ENHANCEMENT

The degraded woodland area beside WCH Nullah was used by ardeid as a night roosting site. As mentioned in the EIA, six ardeid species including Little Egret, Great Egret, Cattle Egret, Chinese Pond Heron, Grey Heron and Black-crowned Night Heron were recorded at the site but it was primarily used by Little Egret for night roosting.

The habitat quality of the degraded woodland along WCH Nullah is not high for its isolated location, fragmented profile and large interface with urbanized environments. These slopes along the nullah are relics of isolated hills after the urbanisation of the region. Dominant plants are common native plant species which includes *Celtis timorensis, Microcos paniculata, Cratoxylum cochinchinense, Sterculia lanceolata.*

The current design is to retain most of these woodland trees at the existing roosting site. It is noted that some of the trees on slope subject to slope works might be unstable and felling of these trees might be required for safety concern. The proposed new planting along the nullah side is designed to complement the existing degraded woodland and consists of native woodland tree and shrub mix on the slopes. Though only a very small portion of the night roost area would be cleared for the construction of viaduct, the compensatory plantation for the ardeid night roost has been proposed at the lower course of the WCH Nullah, approximately 200m to the west of the existing night roost. In addition, after reviewing the existing site condition and slope stability on these wooded slopes, the current design also remain particular portions of existing vegetation (approximately 0.2 ha) to be undisturbed on these slopes, so as to reduce the impact and disturbance of the existing wooded habitat, as well as maintain the landscape and greening elements on these steep slopes, as much as practical.

4.1 Design Considerations

The design of the habitat enhancement and compensatory planting is dependent on the following factors:

Existing features of habitats –
Habitat will be designed to reinstate temporarily affected habitat, provide compensatory planting area for mitigating the loss of ardeid night roost and enhance the ecological value of existing habitats at the site.

Habitat requirement of avifauna –
Habitat design will be guided by the known habitat requirement of avifauna.

Site Constraints –
The size, shape and location of habitat enhancement and compensatory planting will follow the mitigation measures proposed in the approved EIA.

Engineering constraints –
The geological, soil and local condition of slope will be taken into account during the development of habitat enhancement and compensatory planting. According to the latest engineering works and ground investigation findings, some of the slopes to the south of WCH Nullah are either too steep (slope gradient > 35 degrees) or rock slopes (as shown in **Appendix A**) which are impractical and not suitable to be vegetated with woodland mix.

4.2 Selection of Flora Species

Native trees are important elements of the Hong Kong ecosystem. Compared with exotic species, native trees have significantly higher ecological value in providing food and shelter for local wildlife. Native species are anticipated to require less care than non-native plants and will be suited to provide appropriate habitat for native wildlife.

A mixture of plants are selected to provide more diverse habitat and a prolonged and varied leaf fall to meet the energy and pupation needs of aquatic insects. It will help avoid trouble with pests that attack specific plants. Deciduous plants are also selected as the leaf litter is important for trapping nitrogen. For example, *Liquidambar formosana* and *Bauhinia* spp. provide lots of leaf litter for detritivore such as Forest Cockroach (*Opisthoplatia orientalis*) and herbivory Grasshopper (*Acrididae spp.*) which are the one of food sources of Cattle Egret and Chinese Pond Heron.

The proposed planting will avoid monoculture plantation which may provide ineffective soil and water protection, poor in nutrient recycling and enrichment, low in biodiversity and susceptible to pest attack. Species will be selected for multiple uses such as erosion control, attraction of fauna and aesthetics including seasonal foliage color, flowers, fruits and branching habit. It is also important that the species selected for the replanting is hardy and commercially available.

Potentially invasive species are not recommended including species listed by the Invasive Species Specialist Group (ISSG) of IUCN (i.e. "One Hundred of the World's Worst Invasive Alien Species" identified by ISSG of IUCN).

Leucaena leucocephala is recommended not to be used in habitat planting and for ecological or landscaping purpose. *Leucaena leucocephala* is an infamous invasive plant species that could cause adverse ecological impact on local vegetation and ecological value of the affected habitat by outcompete the native plant species. Thus this species has been excluded by replacing with other native tree species that are beneficial to the local ecology such as *Celtis sinensis.*

The proposed compensatory planting for the loss of ardeid roosting site is designed with reference to the plant composition of the existing ardeid roosting site and the plant species often used by ardeid for roosting. *Celtis sinensis* and *Ficus microcarpa* are the major plant species used by ardeid as nesting habitat in egretry as observed by the Hong Kong Bird Watching Society (HKBWS) though none of this plant species in the WCH night roosting site was used for nesting. In addition, *Ficus variegata, Ficus hispida, Macaranga tanarius* var. *tomentosa* and *Mallotus paniculatus* are the tree species identified in or adjacent to the existing ardeid roosting site. Planting of these species or species of similar ecological characteristics can restore and enhance the ecological function of existing roosting site and the neighborhood area.

Plant species used for the replanting have been based on those recorded in existing woodlands within the project area as well as make reference to those tree species currently utilized by ardeid. As some of the degraded woodland areas currently are intensively covered by self-seeded invasive weedy plants especially those *Leucaena leucocephala* in some areas along WCH Nullah, the replacement of these undesirable plants by species native to natural woodland and shrubland in Hong Kong could enhance the ecological value of originally degraded habitat. On the other hand, particular portions of the existing vegetation (including herbaceous vegetation, shrubs and trees) on the slopes, and existing trees and vegetation maintained in the Tree Protection Zone to the south of WCH Nullah will be retained so as to preserve *in-situ* ecosystem to be incorporated into the new compensatory planting and habitat enhancement areas.

4.3 Habitat Enhancement by Nullah Side

Woodland planting is proposed on slopes on the south side of WCH Nullah. These slope areas will be planted using smaller plant stock comprising a mix of whip trees and shrubs. Primarily native species will be selected. The whip tree and shrub spacing recommended is approximately 1m to 1.5m apart. This spacing will result in a dense buffer at maturity, assuming that all plants survive. Approximately 4,000 whip trees and shrubs will be planted on slope and the nearby ground area, together with hydroseeding (i.e. an application of grass seed in combination with a thin layer of mulch, fertilizer and soil binding agent sprayed onto an existing soil surface) within these woodland mix areas. This updated EPLP have taken into account the reference from Section 6.7.5 of the Approved EIA Report in regards to the compensatory planting principles, where slopes having a gradient more than 30 degree, hydroseeding will be applied instead. As mentioned in Section 4.1, the

lastest engineering works and ground investigation works revealed that some of the slopes to the south of WCH Nullah are either too steep (slope gradient > 35 degrees) or rock slopes which are impractical and not suitable to be vegetated with woodland mix (i.e. woodland planting of whips and shrubs).

Existing vegetation on the slope has been remained as far as practical, covering about 0.2 ha along the habitat enhancement area by nullah side. Due to the existing site constraints, about 0.26 ha of area will be treated with erosion control matting and vegetated with hydromulching (i.e. an application of a mulch/ soil of fibrous organic material sprayed onto a non-soiled slope surface) on the rock slopes. Grass will be hydromulched, and groundcover and ferns will be pit planted for enhancing the greening and naturalness elements on these rock slopes, as well as improving the environmental condition on some of these hard slope surface cover. In overall, the proposed landscape treatment along the nullah side and on the slope will cover an area of about 0.9 ha, which have remained unchanged, include 0.2 ha of existing vegetation, 0.44 ha of woodland mix and additional 0.26 ha of hydromulching area with erosion control mat.

In addition, it is proposed to plant approximately 100 trees and palms comprising an appropriate combination of heavy standard trees and heavy / multi stem palms along the pedestrian link by the nullah side underneath the viaduct and Ap Lei Chau Bridge Road. Palms are proposed surrounding the viaduct columns to visually soften the vertical concrete base of the structure. Heavy standard trees will be planted with spacing approximately 3m to 4m apart, with grass hydroseeded in these planting areas, while palms will be planted approximately 2m to 3m apart along the pedestrian link.

The new planting will complement the retained trees and consist of native tree and shrub species to enhance the ecological function of the woodland along WCH Nullah, see **Figures 1 & 1a-1e.**

Table 4.1 below lists the suggested tree / palm / shrub species to be used which are based on planting consideration outlined in Section 4.2 above. This plant list is designed to enhance ecological and amenity values along the pedestrian link and the woodland mix on the slope by the nullah side. The list is also prepared in accordance with the plant composition requirement stipulated in the SIL(E) EP Condition 2.13(a)ii. Among this plant composition requirement, plant species that are unavailable in the nursery stock or with no satisfactory nursery stock are replaced by other native species share similar ecological characteristics.

Table 4.1
Proposed Tree / Palm / Shrub Species for Planting along the Nullah and on Slope

Species	Type	Location
Bischofia javanica (BIS. JAV.)*	Heavy Standard Tree	Nullah side
Bauhinia blakeana (BAU. BLA.)*	Heavy Standard Tree	Nullah side
Celtis sinensis (CEL. SIN.)*	Heavy Standard Tree	Nullah side

Cleistocalyx nervosum (CLE. NER.)*	Heavy Standard Tree	Nullah side
Ilex rotunda (ILE. ROT.)	Heavy Standard Tree	Nullah side
Liquidambar formosana (LIQ. FOR.) *	Heavy Standard Tree	Nullah side
Macaranga tanarius var. *tomentosa* (MAC. TAN.)*	Heavy Standard Tree	Nullah side
Mallotus paniculatus (MAL. PAN.)*	Heavy Standard Tree	Nullah side
Sapium discolor (SAP. DIS.)*	Heavy Standard Tree	Nullah side
Schima superba (SCH. SUP.)*	Heavy Standard Tree	Nullah side
Caryota ochlandra (CAR. OCH.)	Palm	Nullah side
Chrysalidocarpus lutescens (CHR. LUT.)	Palm	Nullah side
Roystonea regia (ROY. REG.)	Palm	Nullah side
*Aquilaria sinensis**	Whip	On Slope
*Bichofia javanica**	Whip	On Slope
*Castanopsis fissa**	Whip	On Slope
*Celtis sinensis**	Whip	On Slope
*Ficus microcarpa**	Whip	On Slope
Litsea glutinosa *	Whip	On Slope
Machilus breviflora *	Whip	On Slope
Mallotus paniculatus *	Whip	On Slope
*Polyspora axillaris**	Whip	On Slope
*Reevesia thyrsoidea**	Whip	On Slope
*Schefflera heptaphylla**	Whip	On Slope
*Sterculia lanceolata**	Whip	On Slope
*Ilex asprella**	Shrub	On Slope
Litsea rotundifolia var. *oblonglifolia**	Shrub	On Slope
Ligustrum sinensis	Shrub	On Slope
*Psychotria asiatica**	Shrub	On Slope
*Rhaphiolepis indica**	Shrub	On Slope
*Rhododendron simsii**	Shrub	On Slope
*Rhodomyrtus tomentosa**	Shrub	On Slope

Notes:

1. * Native species
2. The plant composition includes the proposed heavy standard trees to be planted in compensatory planting

4.4 Compensatory Planting

Compensatory plantation for the ardeid night roost has been proposed at the lower course of the WCH Nullah, approximately 200m to the west of the existing night roost, though only a very small portion of the night roost area would be cleared for the construction of viaduct. The tree species currently used for night roosting are mostly amenity species. Based on planting consideration outlined in Section 4.2, it is proposed to replant over 70 heavy standard trees, with spacing of approximately 3m to 4m apart, to fulfill as far as possible the function for ardeid

roosting and to enhance the ecological value of originally degraded woodland habitat, see **Figures 1 & 1a-1e** The compensation planting will commence upon completion of construction phase.

Table 4.2 below lists the suggested tree species to be used which are based on planting consideration outlined in Section 4.2 above. The plant list is designed with reference to the plant composition identified in or adjacent to the existing ardeid roosting site. The list is also prepared in accordance with the plant composition requirement stipulated in the SIL(E) EP Condition 2.13(a)i. Among this plant composition requirement, plant species (including heavy standard trees of *Cratoxylum cochinchinense*, *Ficus hispida* and *Ficus variegata*) that are unavailable in the nursery stock or with satisfactory nursery stock are replaced by other native species share similar ecological characteristics.

It should be noted that the list is not exhaustive or exclusive, and qualified ecologists / landscape designers shall be permitted to propose suitable alternative species that meet the functional requirements of the ecological planting and landscape plan for due consideration by the relevant authorities on individual merit.

Table 4.2
Proposed Tree Species for Compensatory Planting at lower course of the Nullah

Species	Type	Location
Bischofia javanica (BIS. JAV) *	Heavy Standard Tree	Lower course of Nullah side
Bauhinia blakeana (BAU. BLA.)*	Heavy Standard Tree	Lower course of Nullah side
Celtis sinensis (CEL. SIN.)*	Heavy Standard Tree	Lower course of Nullah side
Cleistocalyx nervosum (CLE. NER.)*	Heavy Standard Tree	Lower course of Nullah side
Ilex rotunda (ILE. ROT.)	Heavy Standard Tree	Lower course of Nullah side
Liquidambar formosana (LIQ. FOR.) *	Heavy Standard Tree	Lower course of Nullah side
Macaranga tanarius var. *tomentosa* (MAC. TAN.)*	Heavy Standard Tree	Lower course of Nullah side
Mallotus paniculatus (MAL. PAN.)*	Heavy Standard Tree	Lower course of Nullah side
Schima superba (SCH. SUP.)*	Heavy Standard Tree	Lower course of Nullah side

* Native species

5 IMPLEMENTATION & MAINTENANCE

The ecological planting and landscaping will be programmed to be undertaken at the earliest possible time upon completion of the construction of the concerned sections. A specialist landscape contractor with solid experience in landscape

enhancement and planting would be appointed to carry out the establishment works. The Qualified Ecologist will be responsible for supervising the planting works as set out in this plan. The progress and the completion of the planting works will also be checked against the requirements of this plan.

As shown in **Appendix B** it is agreed that LCSD and LandsD will be responsible for managing and maintaining the tree and palm planting by the nullah side in the habitat enhancement and compensatory plantation area (including planting around columns of the built viaduct). Irrigation of the planted vegetation will also be maintained by LCSD. As for the planting on slope, it will be managed and maintained by respective government authorities including ASD, LandsD or by private lot owner, apart from the site formation slope outside the Holy Spirit Seminary which will be managed and maintained by MTRCL. The concerned areas will handover to respective parties following the completion of the construction works. MTR will conduct regular monitoring during the 3-year post-planting period, in case any founding of improvement works shall be carried out on those planting in addition to normal maintenance, MTR will take up the works, and agreement shall be made prior to handover to the private lot owner.

5.1 Post Planting Monitoring & Maintenance

The success of the compensatory planting will be monitored by the Qualified Ecologist for three years after completion of the planting works at the compensatory planting area for ardeid roosting site, which is the same in the SIL EP diagonal-stripped red Figure 7 & Figure 1 & 1a-1e of the revised EPLP. The post-planting monitoring will be carried out on monthly basis and the monitoring parameters will include the overall survival rate of the planted vegetation, percentage of the planted vegetation cover and any invasive species in the compensatory plantation. A monthly monitoring on the ardeid species along the Wong Chuk Hang Nullah will be carried out. The survey will record the species, numbers and locations of the roost. The timing of this ardeid monitoring on using the compensatory plantation shall be commenced approximately one hour before sunset and continue for 20 minutes after sunset, or until nightfall, which comes sooner. Suitable adjustment can be identified to refine the planting design where required. Findings from the vegetation monitoring will be separated at the lower course of Wong Chuk Hang Nullah (i.e. the compensatory plantation) and along the nullah side (i.e. the habitat enhancement area).

The Qualified Ecologist will identify any defective plants and the maintenance requirements on site to ensure the establishment and survival of plants which may be necessary. Maintenance by a suitably contractor should include watering during dry periods and during the first two months after planting. In addition to the regular watering requirement, the key maintenance works to be carried out, all as agreed with and instructed by the Qualified Ecologist, will follow the contingency plan as below. The remedial actions taken if any will be reported in the subsequent quarterly compensatory planting monitoring report to EPD.

Table 3.1
Contingency Plan for Remedial Actions

TRIGGER	ACTION
Presence of damaged, diseased or dying plants or invasive weedy plants	– Qualified Ecologist to establish the need for weeding, pruning, securing stakes and ties, replacing dead plants and treatment of insect or fungal infestations. – As required, Contractor to take corrective measures.
Typhoon warning (No. 8 or above) or red or black rain storm event hoisted by the Hong Kong Observatory	– Qualified Ecologist to check the planting sites and the planted vegetation in the habitat enhancement area and compensatory planting along the Nullah after the cancellation of typhoon warning of No. 8 or above, or red or black rain storm event ceases. – As required, Contractor to firm up loosened plants. – As required, Contractor to take corrective measures if erosion of re-vegetated areas occur.

5.2 Reporting

The results and findings of the monitoring along with the follow up action identified and undertaken, if any, will be recorded in quarterly compensatory planting monitoring report to EPD.

A final monitoring report will also be submitted upon the completion of the maintenance period which should include a summary record of the monitoring results (including the survival rate and percentage coverage of the planted vegetation, any invasive species in the compensatory plantation, and monitoring of ardeid species using the planted vegetation along the Wong Chuk Hang Nullah), and a summary record of the monitoring and maintenance works undertaken. The monitoring results and records will be reviewed for the effectiveness of the planting measures in enhancing the ecological and amenity values of the areas along the Wong Chuk Hang Nullah. The effectiveness of the planting measures will be assessed based on the health condition and survival rate of the planted vegetation. Assessment on the effectiveness of the compensatory planting in attracting the ardeid could not be adjusted at this early stage of planting design as the relocation of the ardeid roosting sites is unpredictable. This could be influenced by factors such as the type, frequency and intensity of any anthropogenic disturbance, and preference by ardeid in selecting other vegetated area along the Nullah. The attractiveness of the compensatory plantation to the ardeid will be assessed throughout the post-planting monitoring period, and the evaluation and recommendation will be presented in the final monitoring report.

6 REFERENCES

Captain, LC. Wong, Vicky, W.Y.Lam and Gary, W.J.Ades. Eds. 2009. Ecology of the Birds of the Hong Kong. Kadoorie Farm and Botanic Garden, HKSAR.

David Dudgeon and Richard Corlett. Eds 2004. The Ecology and Biodiversity of Hong Kong. Friend of The CountryPark, HKSAR.

C.T.Shek. Eds 2006. A Field Guide to the Terrestrial Mammals of Hong Kong, Friend of the Country Park, HKSAR.

HKBWS Ltd. Eds 2010. A Photographic Guide to the Birds of Hong Kong (Revised Edition), Hong Kong Bird Watching Society, HKSAR.

MTR. 2011. South Island Line (East) Ecological Planting & Landscape Plan. December 2011. MTR Corporation Limited.

Appendix A
Site Photos showing the existing site constraints and rock slopes on the slopes to the south of Wong Chuk Hang Nullah

Plate 1. Existing rock slope near Viaduct Pier 12 and 13.

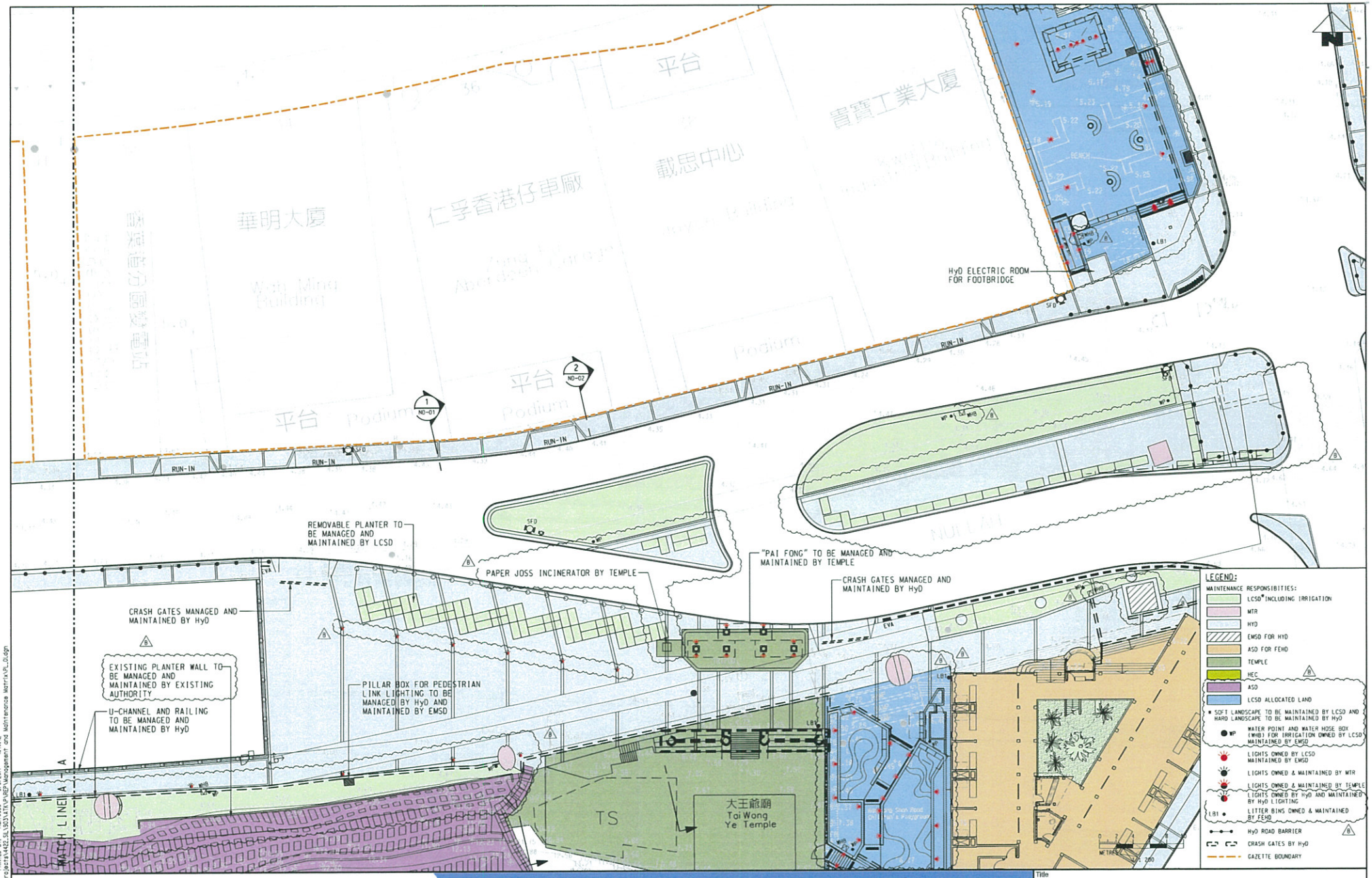
Plate 2. Existing rock slope and the retained, undisturbed vegetation on the slopes near Viaduct Pier 13.

Plate 3. Extensive areas of existing vegetation on slopes have been retained on the slopes which are not suitable for planting.

Plate 4. Extensive areas of existing vegetation on slopes have been retained on the slopes to the south of Wong Chuk Hang Nullah.

Appendix B
Management and Maintenance Matrix of the Ecological Planting and Landscape Area along Wong Chuk Hang Nullah

(a) Extract of "WCH Station To Pedestrian Link Bridge Area Management and Maintenance Matrix" – Sheet 1 (Figure No.: PL-01-B), 2 (Figure No.: PL-02-B), 3 (Figure No.: PL-03-B), 4 (Figure No.: PL-04-B) and 5 (Figure No.: PL-05-B).



MTR ATKINS Supported By PBA, Aedas, Urbis, DLS

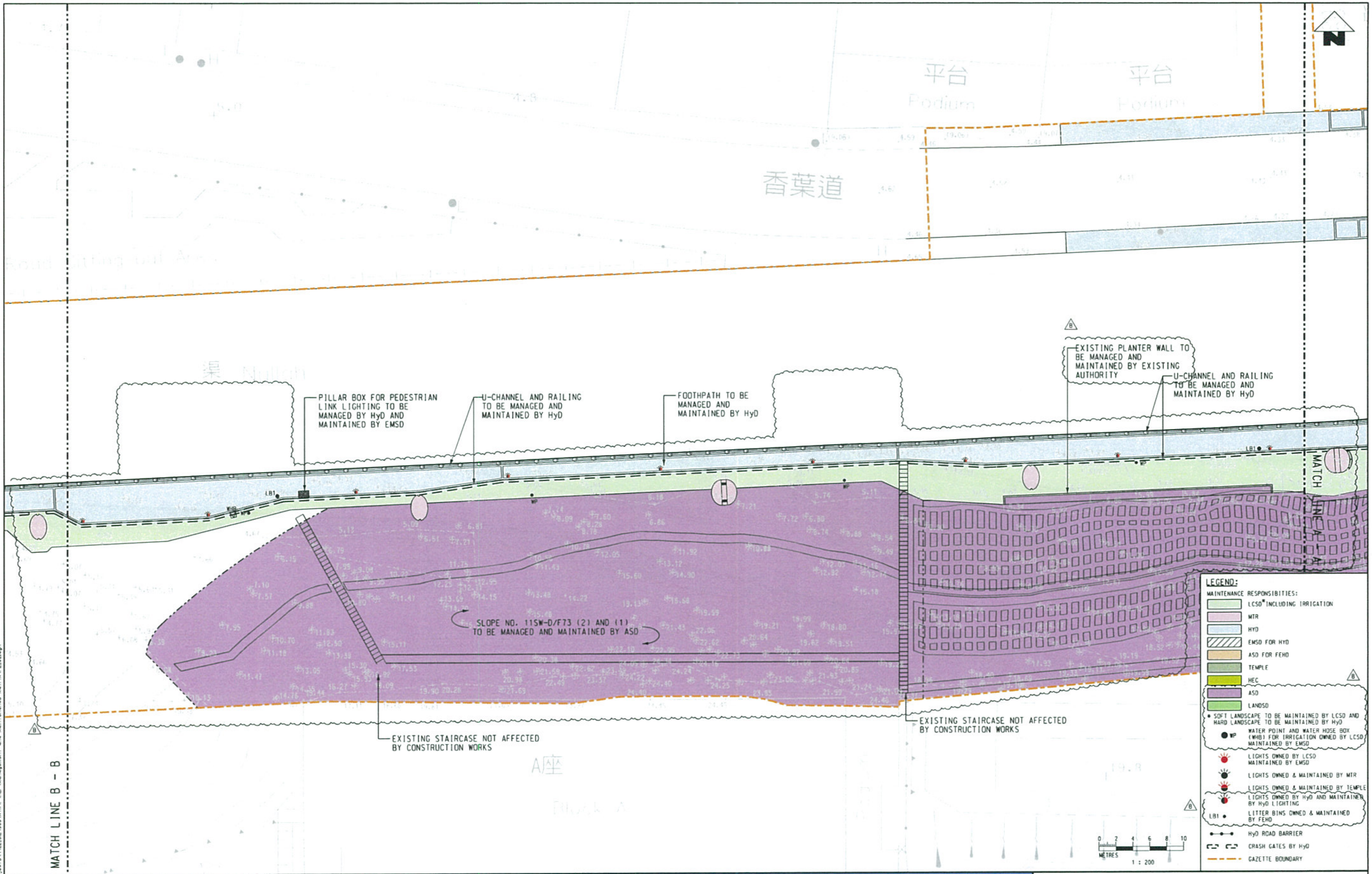
South Island Line (East)
Consultancy Agreement No. C903
WCH Station, OCP Station and Viaducts

ADMIRALTY · WONG CHUK HANG · SOUTH HORIZONS · LEI TUNG · OCEAN PARK

Title
WCH Station To Pedestrian Link Bridge Area Management and Maintenance Matrix Sheet 1

Scale at A1	Date	Figure No.
As Shown	Aug 2013	PL-01-B

PLOT DRV:
MODELNAME: Default
FILENAME: P:\CNWKA\CADD\Projects\4422_SIL903\ATK\PW\EP\Management and Maintenance Matrix\PL_01.dgn
P:\CNWKA\CADD\Standards\CADD\Microstation\pltcfg\pdf-colour.pltcfg
PRINTED BY: huh6930 3/3/2014



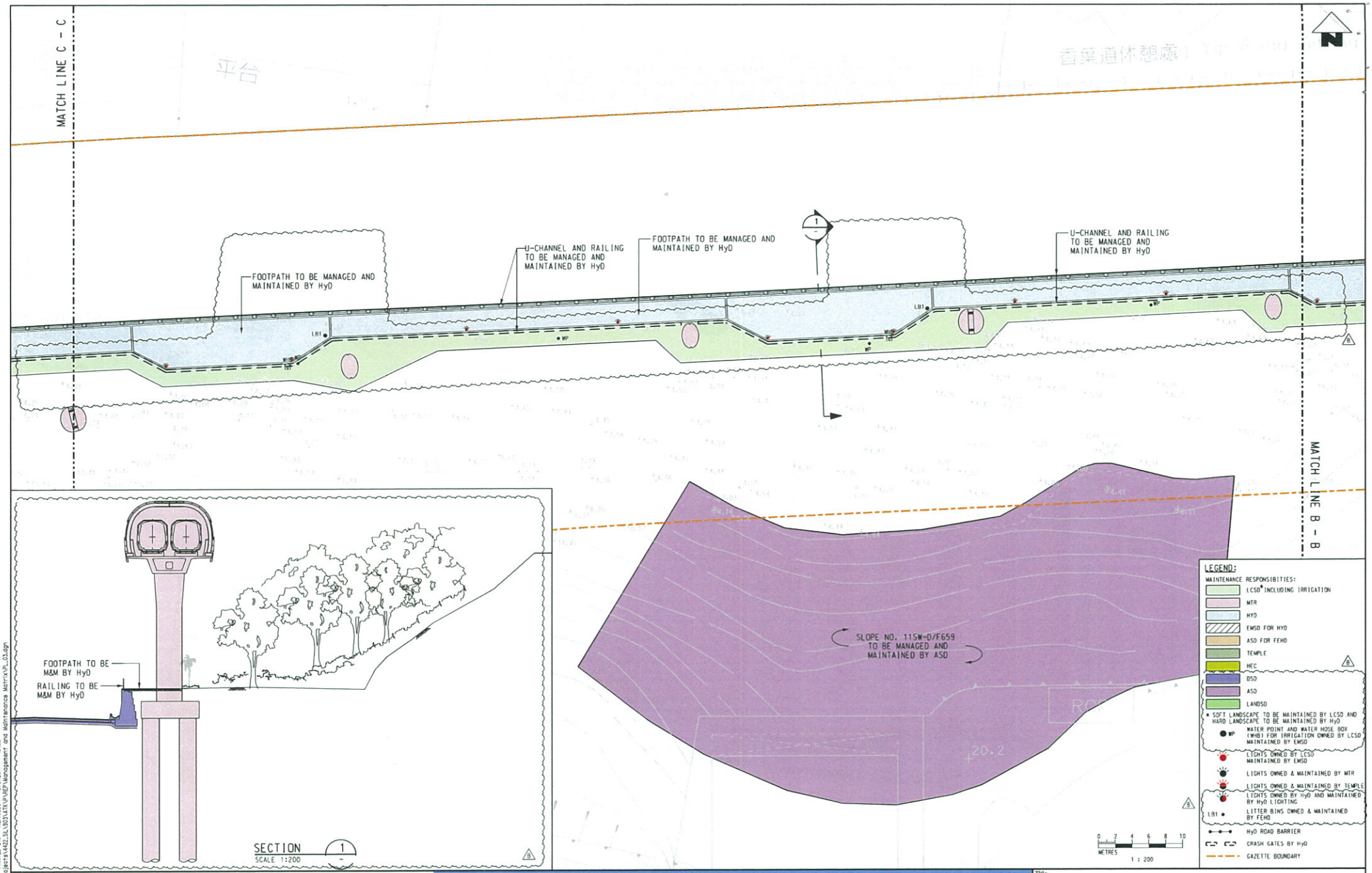
MTR ATKINS Supported By PBA, Aedas, Urbis, DLS

South Island Line (East)
Consultancy Agreement No. C903
WCH Station, OCP Station and Viaducts

Title: WCH Station To Pedestrian Link Bridge Area Management and Maintenance Matrix Sheet 2

Scale at A1	Date	Figure No.
As Shown	Aug 2013	PL-02-B

PLOT DRV: PI\CNHKA\CADD\Standards\CADD\Microstation\plotcfg\pdf-colour.pltcfg
MODELNAME: Default PRINTED BY: huH6930 3/7/2014
FILENAME: PI\CNHKA\CADD\Projects\4422_SIL\903\ATK\P\REP\Management and Maintenance Matrix\PL_02.dgn



P:\CNHK\CADD\Standards\CADDMicrostation\pltcfg\pdf-colour.pltcfg
PRINTED BY: hui16930 3/3/2014 14:08
P:\CNHK\CADD\Projects\1402_SIL\903\ATK\PUP\EP\Management and Maintenance Matrix\PL_03.dgn
PLOT DRV:
MODELNAME: Default
FILENAME:

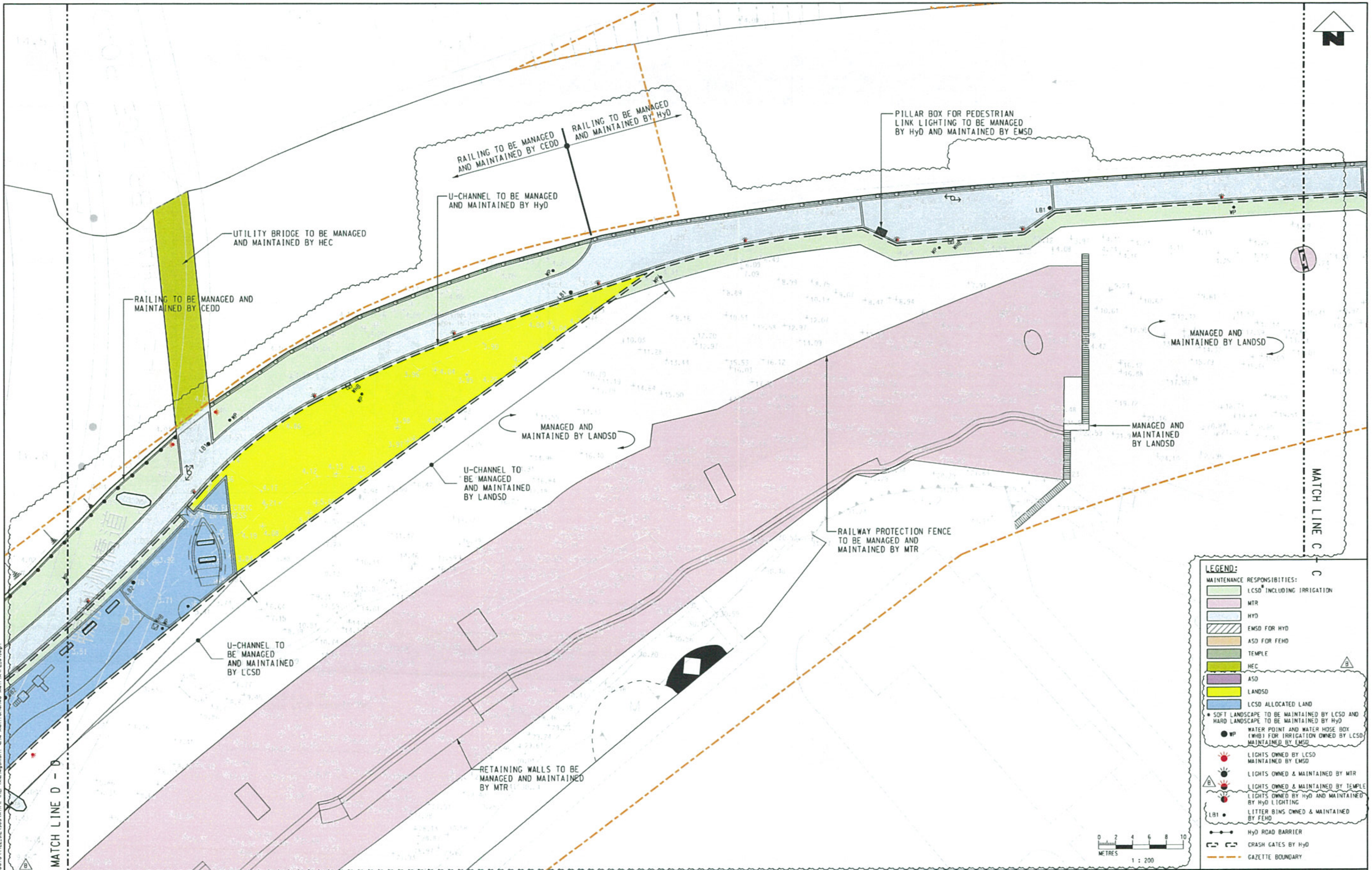
MTR ATKINS Supported By PBA, Aedas, Urbis, DLS

South Island Line (East)
Consultancy Agreement No. C903
WCH Station, OCP Station and Viaducts

ADMIRALTY
WONG CHUK HANG
SOUTH HORIZONS
LEI TUNG
OCEAN PARK

Title
WCH Station To Pedestrian Link Bridge Area Management and Maintenance Matrix Sheet 3

Scale at A1	Date	Figure No.
As Shown	Aug 2013	PL-03-B



MTR ATKINS

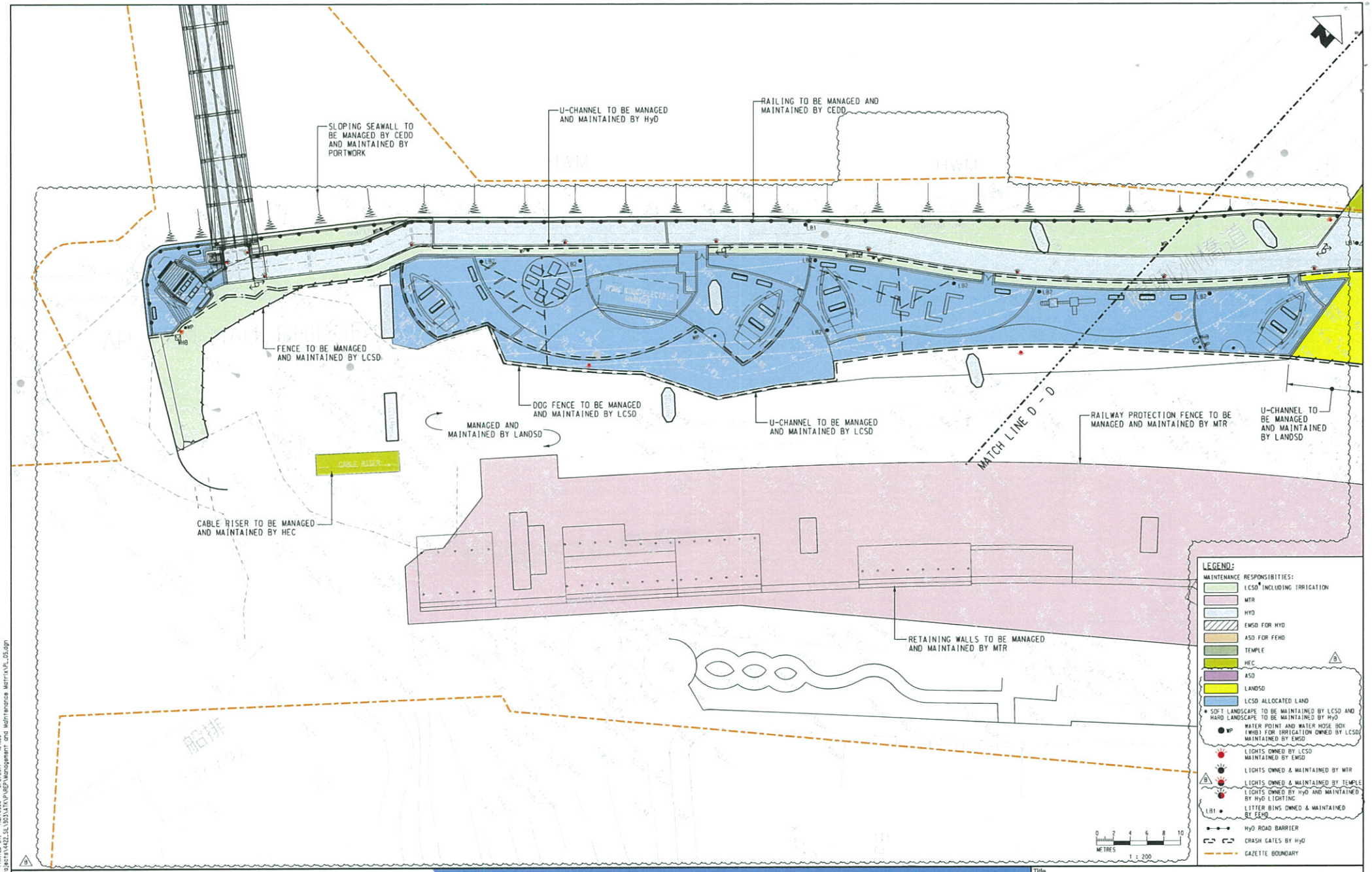
Supported By PBA, Aedas, Urbis, DLS

South Island Line (East)
Consultancy Agreement No. C903
WCH Station, OCP Station and Viaducts

ADMIRALTY, WONG CHUK HANG, OCEAN PARK, LEI TUNG, SOUTH HORIZONS

Title		
WCH Station To Pedestrian Link Bridge Area Management and Maintenance Matrix Sheet 4		
Scale at A1: As Shown	Date: Aug 2013	Figure No.: PL-04-B

PLOT DRV: P:\CNHKA\CADD\Standards\CADD\Microstation\pltcfg\pdf-colour.pltcfg
MODELNAME: Default PRINTED BY: hu46930 3/3/2014 16:36
FILENAME: P:\CNHKA\CADD\Projects\4422_SIL\903\ATK\P\REP\Management and Maintenance Matrix\PL_04.dgn



PLOT DRV: P:\CNHKA\CADD\Standards\CADD\Microstation\plotcfg\pdf-colour.plotcfg
MODELNAME: Default PRINTED BY: hui16330 3/3/2014
FILENAME: P:\CNHKA\CADD\Projects\1402.SL\903\ATK\PUBE\Management and Maintenance Matrix\PL_05.dgn

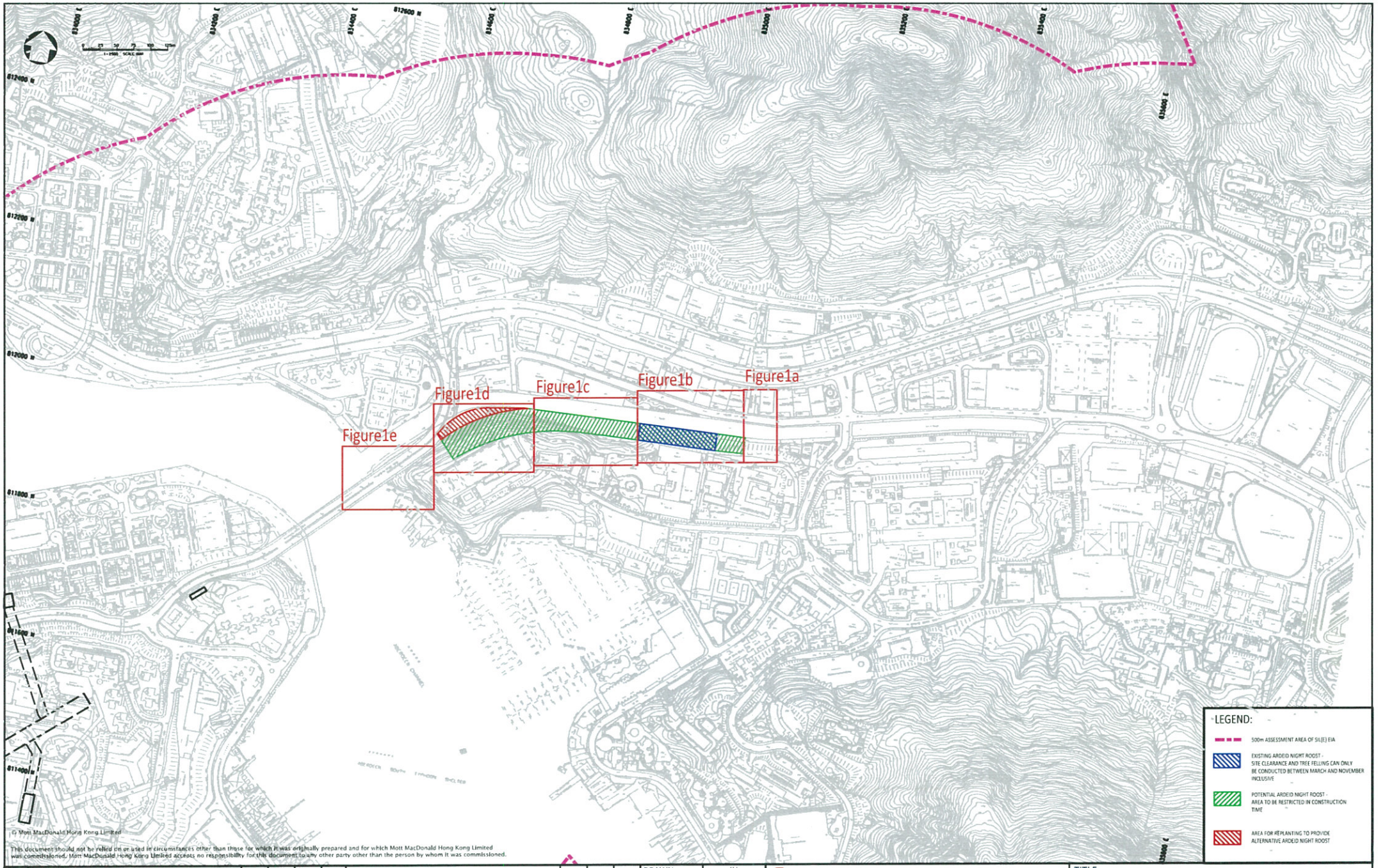
MTR ATKINS Supported By PBA, Aedas, Urbis, DLS

South Island Line (East)
Consultancy Agreement No. C903
WCH Station, OCP Station and Viaducts

ADMIRALTY WONG CHUK HANG SOUTH HORIZONS LEI TUNG OCEAN PARK

Title
WCH Station To Pedestrian Link Bridge Area Management and Maintenance Matrix Sheet 5

Scale at A1	Date	Figure No.
As Shown	Aug 2013	PL-05-B



REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	JH
DESIGNED	IY
CHECKED	IY
APPROVED	IY
DATE	12/MAY/2014

MTR

SOUTH ISLAND LINE (EAST)

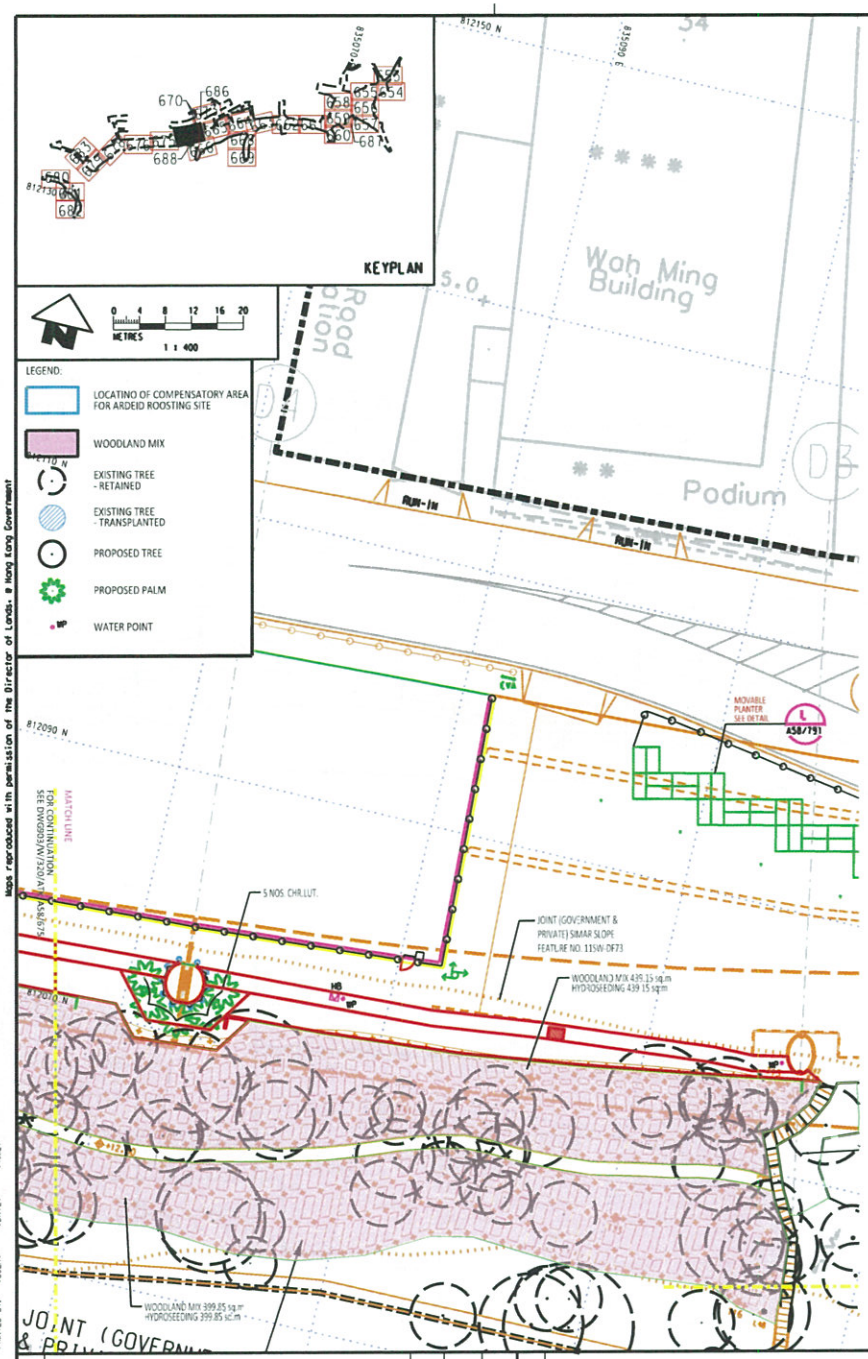
ORIGINATOR ecology arboriculture landscape aec

CADD REF. $FILE$

TITLE ECOLOGICAL PLANTING AND LANDSCAPE PLAN ALONG WONG CHUK HANG NULLAH

(Figure 1 was prepared based on Figure 4.15 of SIL(E) EIA report (Register No.: AEIAR-155/2010) and Figure 7 of EP-407/2010/D)

SCALE 1: 400(A3) | DRAWING NO. FIGURE 1 | REV. E



This area is not relevant to the Ecological Planting and Landscape Plan

DRAWN	JH
DESIGNED	IV
CHECKED	IV
APPROVED	IV
DATE	16/MAY/2014

MTR

SOUTH ISLAND LINE (EAST)

ecology arboriculture landscape aec

TITLE
ECOLOGICAL PLANTING AND LANDSCAPE PLAN ALONG WONG CHUK HANG NULLAH

SCALE 1 : 400 (A3)

DRAWING NO. Figure 1a

REV. E

PLOT DRV: $PLTDRV$
MODEL NAME: $MODEL$
FILENAME: $FILE$
PRINTED BY: $USER$
$DATE$
$TIME$

DRAWN	JH
DESIGNED	IY
CHECKED	IY
APPROVED	IY
DATE	16/MAY/2014

DO NOT SCALE DRAWINGS. ALL DIMENSIONS SHALL BE VERIFIED ON SITE.
© MTR CORPORATION LIMITED 2008 COPYRIGHT IN RESPECT OF THIS DRAWING / DOCUMENT IS OWNED BY THE MTR CORPORATION LIMITED OF HONG KONG. NO REPRODUCTION OF THE DRAWING / DOCUMENT OR ANY PART BY WHATEVER MEANS IS PERMITTED WITHOUT THE PRIOR WRITTEN CONSENT OF THE MTR CORPORATION LIMITED.

MTR

SOUTH ISLAND LINE (EAST)

ORIGINATOR: ecology arboriculture landscape aec

CHECKED BY: SFILESS

TITLE: ECOLOGICAL PLANTING AND LANDSCAPE PLAN ALONG WONG CHUK HANG NULLAH

SCALE: 1 : 400 (A3)

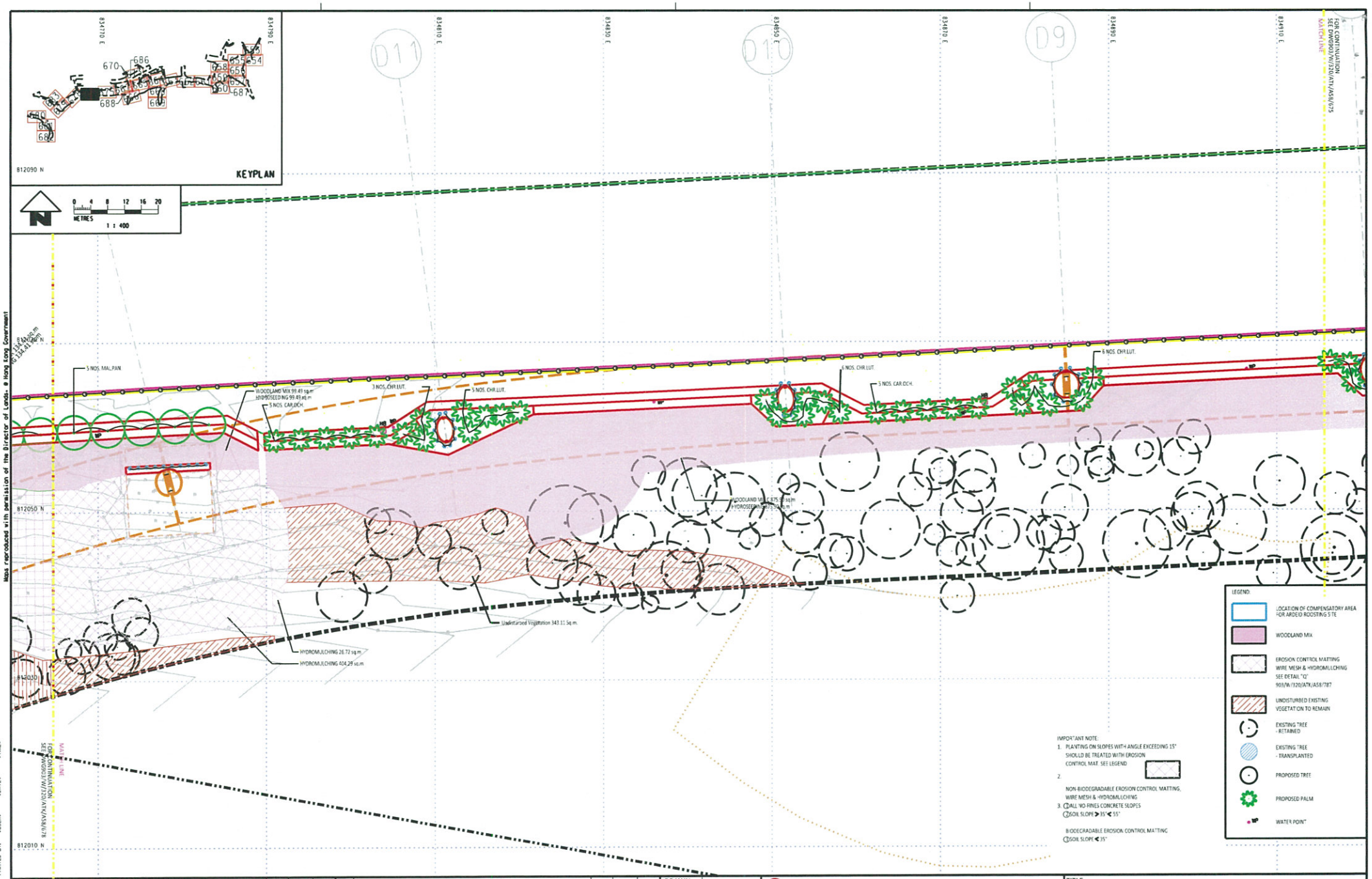
DRAWING NO.: Figure 1b

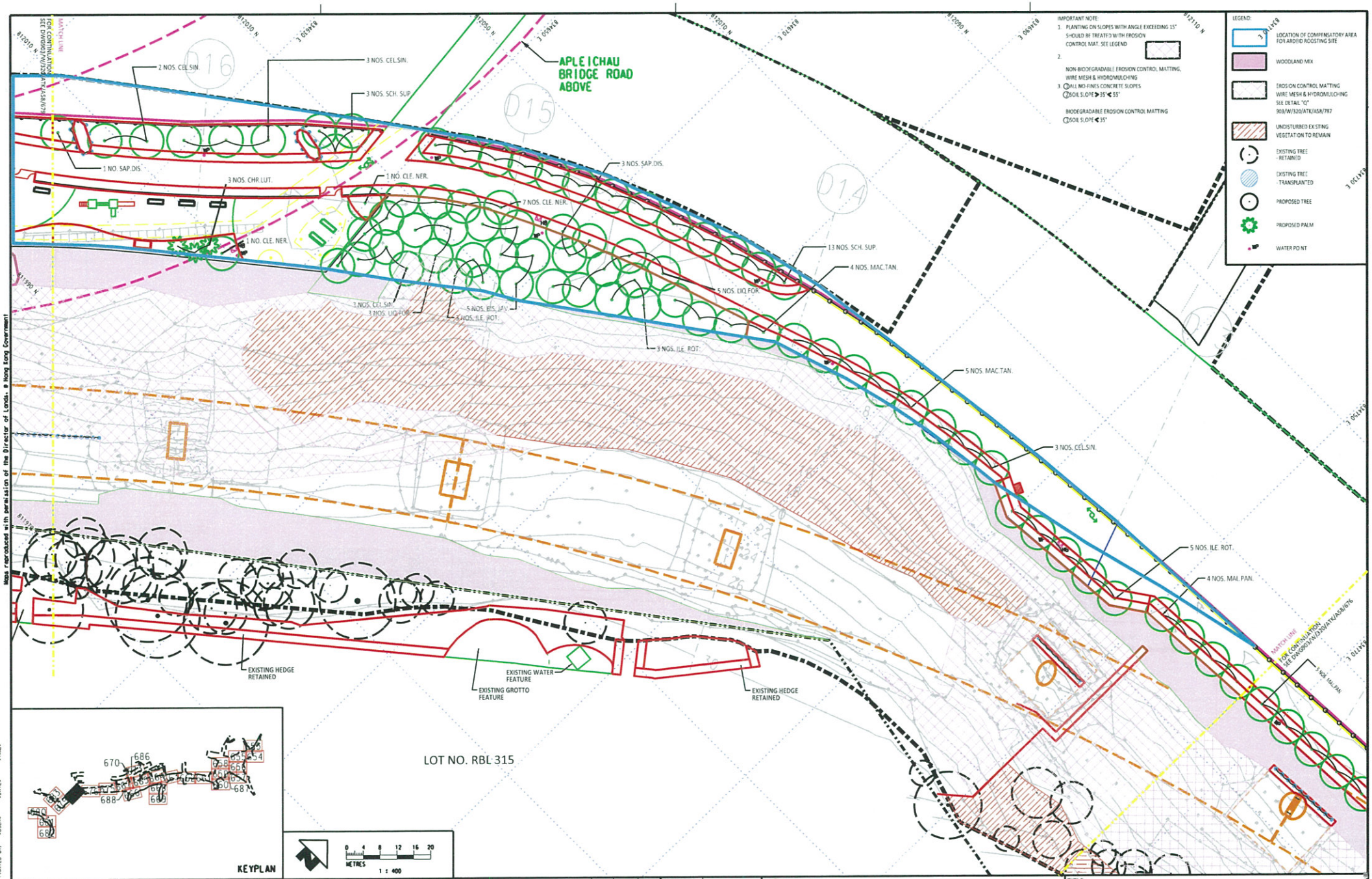
REV.: C

REV.	DESCRIPTION	BY	DATE	APPROVED
REV.	DESCRIPTION	BY	DATE	APPROVED

PLOT DRV: $PLTDRV$
MODELNAME: $MODEL$
FILENAME: $FILES

PRINTED BY: $USER$ $DATE$ $TIME$


KEYPLAN
0 4 8 12 16 20
METRES
1 : 400
834770 E
834810 E
834850 E
834890 E
834930 E
834970 E
834910 E
812090 N
812050 N
812030 N
812010 N
D11
D10
D9
FOR CONTINUATION SEE DW/0901/W/320/ATK/AS8/675
MATCH LINE
5 NOS. MAL.PAN
WOODLAND MIX 99.49 sq.m
HYDROSEEDING 99.49 sq.m
5 NOS. CAR.OCH.
3 NOS. CHR.LUT.
5 NOS. CHR.LUT.
6 NOS. CHR.LUT.
5 NOS. CAR.OCH.
6 NOS. CHR.LUT.
WOODLAND MIX 875.93 sq.m
HYDROSEEDING 875.93 sq.m
Undisturbed Vegetation 343.11 Sq.m.
HYDROMULCHING 26.72 sq.m
HYDROMULCHING 404.29 sq.m
Maps reproduced with permission of the Director of Lands. © Hong Kong Government
LEGEND:
LOCATION OF COMPENSATORY AREA FOR ARDEID ROOSTING SITE
WOODLAND MIX
EROSION CONTROL MATTING WIRE MESH & HYDROMULCHING SEE DETAIL "Q" 909/W/320/ATK/AS8/787
UNDISTURBED EXISTING VEGETATION TO REMAIN
EXISTING TREE - RETAINED
EXISTING TREE - TRANSPLANTED
PROPOSED TREE
PROPOSED PALM
WATER POINT
IMPORTANT NOTE:
1. PLANTING ON SLOPES WITH ANGLE EXCEEDING 15° SHOULD BE TREATED WITH EROSION CONTROL MAT. SEE LEGEND
2. NON-BIODEGRADABLE EROSION CONTROL MATTING, WIRE MESH & HYDROMULCHING
3. (A) ALL 'NO FINES CONCRETE SLOPES
(A) SOIL SLOPE ≥ 35° < 55°
BIODEGRADABLE EROSION CONTROL MATTING
(A) SOIL SLOPE < 35°
PLOT DRV: $PLOTDRV$
MODELNAME: $MODEL$
XLSAVE: XLS
PRINTED BY: $USER$
DATE$: $DATE$
TIME$: $TIME$
REV
DESCRIPTION
BY
DATE
APPROVED
DRAWN JH
DESIGNED IY
CHECKED IY
APPROVED IY
DATE 16/MAY/2014
DO NOT SCALE DRAWINGS. ALL DIMENSIONS SHALL BE VERIFIED ON SITE.
© MTR CORPORATION LIMITED 2008 COPYRIGHT IN RESPECT OF THIS DRAWING / DOCUMENT IS OWNED BY THE MTR CORPORATION LIMITED OF HONG KONG. NO REPRODUCTION OF THE DRAWING / DOCUMENT OR ANY PART OF WHATEVER NATURE IS PERMITTED WITHOUT THE PRIOR WRITTEN CONSENT OF THE MTR CORPORATION LIMITED.
MTR
SOUTH ISLAND LINE (EAST)
ORIGINATOR
ecology arboriculture landscape aec
CADD REF
$FILESS
TITLE
ECOLOGICAL PLANTING AND LANDSCAPE PLAN ALONG WONG CHUK HANG NULLAH
SCALE
1 : 400 (A3)
DRAWING NO.
Figure 1c
REV.
D1



REV	DESCRIPTION	BY	DATE	APPROVED
D3	CHANGES TO HSS PERMANMENT WORKS (ACP)	TO	19NOV13	LI
D2	REVISED DOG PARK ENTRANCE DOOR (ACP)	TO	01NOV13	LI
D1	DOG TOILET ADDED (ACP)	TO	18JUL13	LI
C	REVISED PLANT SPECIES & CONFORMING DESIGN CHANGES	TO	21FEB12	LI
B	REVISED DOG PARK LAYOUT; ADDITIONAL WP; HYDROSEEDING ADDED; PLANTING ADDED	TO	[illegible]	[illegible]
A	WORKING DRAWING	TO	[illegible]	[illegible]

DRAWN	JH
DESIGNED	IY
CHECKED	IY
APPROVED	IY
DATE	16/MAY/2014

MTR

SOUTH ISLAND LINE (EAST)

ORIGINATOR: ecology arboriculture landscape aec

ADD REF: $FILES$

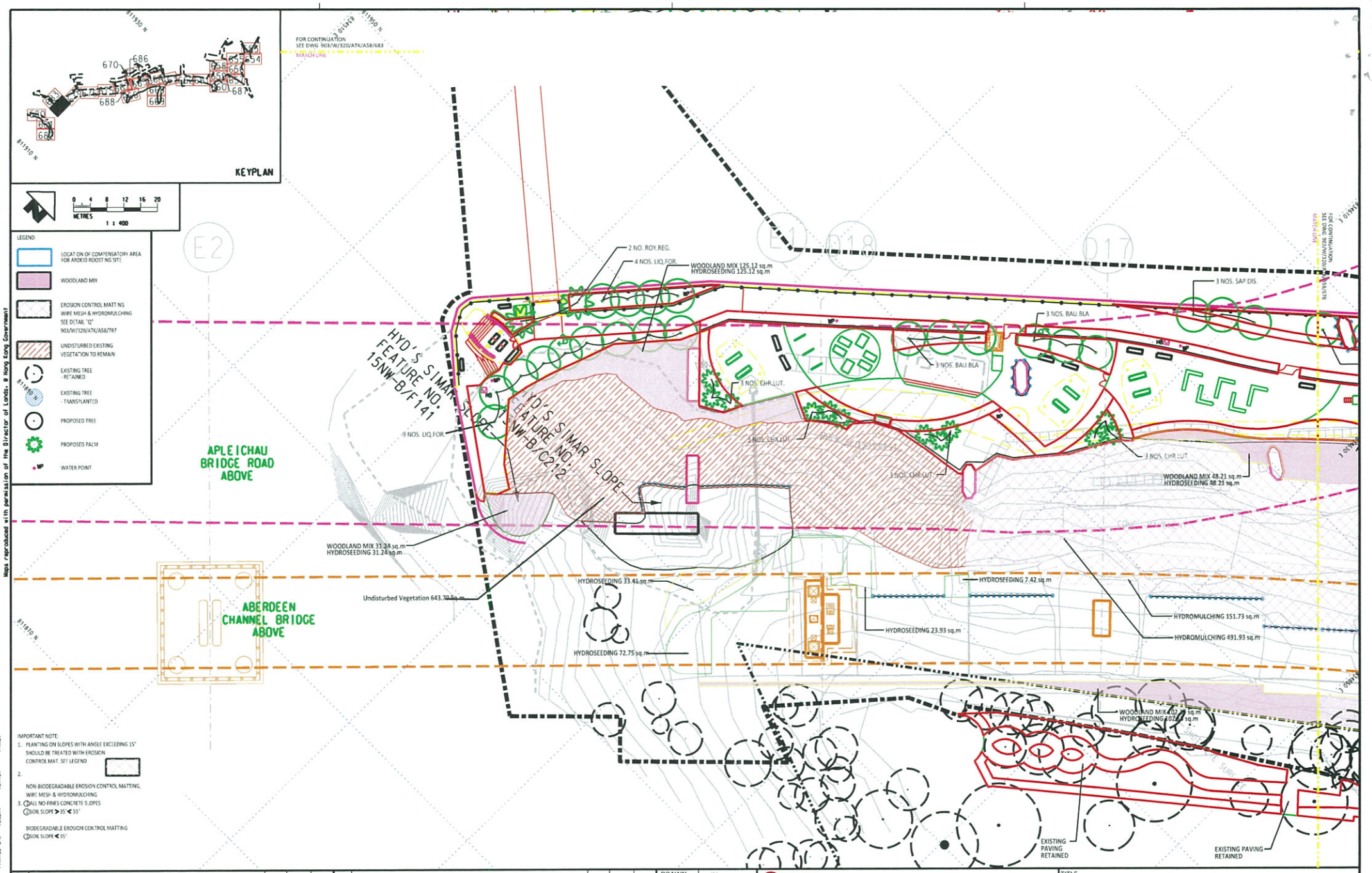
TITLE: ECOLOGICAL PLANTING AND LANDSCAPE PLAN ALONG WONG CHUK HANG NULLAH

SCALE: 1 : 400 (A3)

DRAWING NO.: Figure 1d

REV.: D3

PLOT DRV: $PLTDRV$
MODELNAME: $MODEL$
FILENAME: $FILES$
PRINTED BY: $USER$
$DATE$
$TIME$



REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	JH
DESIGNED	IY
CHECKED	IY
APPROVED	IY
DATE	16/MAY/2014

DO NOT SCALE DRAWING. ALL DIMENSIONS SHALL BE VERIFIED ON SITE.
© MTR CORPORATION LIMITED 2008 COPYRIGHT IN RESPECT OF THIS DRAWING / DOCUMENT IS OWNED BY THE MTR CORPORATION LIMITED OF HONG KONG. NO REPRODUCTION OF THE DRAWING / DOCUMENT OR ANY PART BY WHATEVER MEANS IS PERMITTED WITHOUT THE PRIOR WRITTEN CONSENT OF THE MTR CORPORATION LIMITED.

MTR

SOUTH ISLAND LINE (EAST)

CONSULTANTS: ecology arboriculture landscape aec

CADD REF: SFILESS

TITLE
ECOLOGICAL PLANTING AND LANDSCAPE PLAN ALONG WONG CHUK HANG NULLAH

SCALE	DRAWING NO.	REV.
1 : 400 (A3)	Figure 1e	D3

PLOT DRV: $PLOTDRIVE$
PLOT NAME: $MODEL$
FILENAME: $FILE$
PRINTED BY: $USER$
DATE: $DATE$
TIME: $TIME$