Proposed Underground Vehicular Tunnel (Connecting Lee Garden One and the Redevelopment of Sunning Plaza / Sunning Court) Under Hysan Avenue between Lee Garden One (33 Hysan Avenue) and 10 Hysan Avenue
In respect of Condition (e) under Application No. A/H6/78-1

TREE PROTECTION PROPOSAL
For the Old and Valuable Trees (OVTs) on Hysan Avenue Before Commencement of Construction Works

(2nd RE-SUBMISSION)

June 2024

Landscape Government
Submission Consultant

Axxa Group Limited

axxa group

Table of Contents

1.0 INTRODUCTION

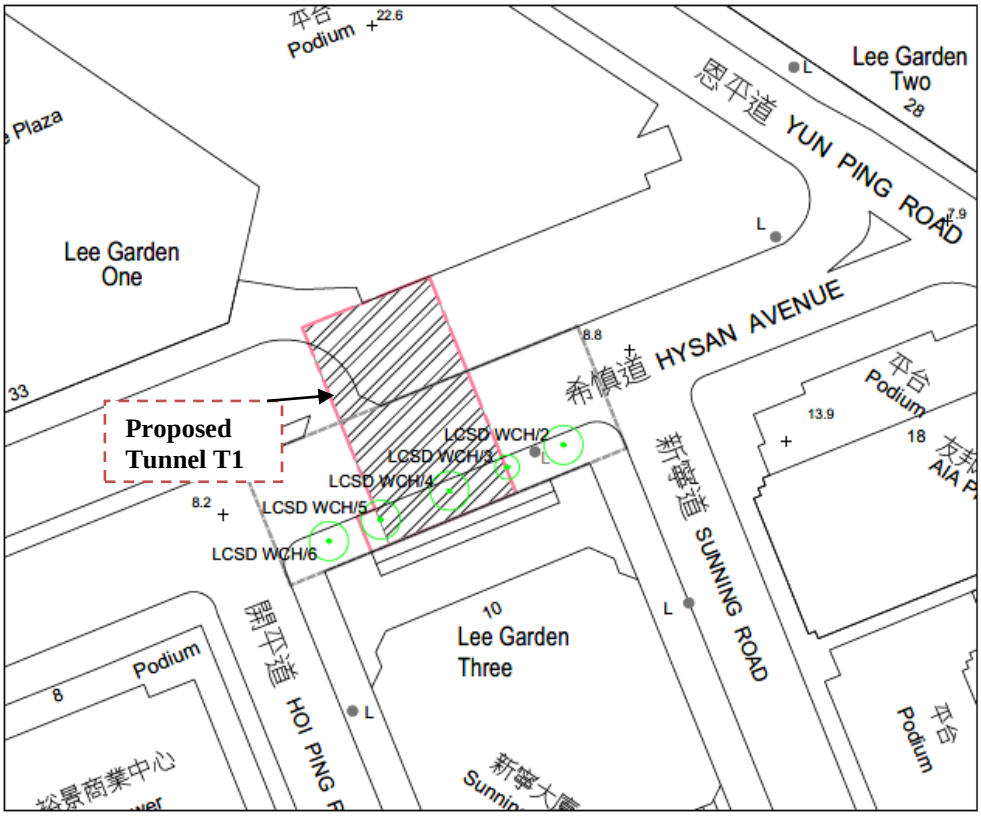
This Tree Protection Proposal is submitted for compliance with approval condition (e) "*the submission of a tree protection proposal of a tree protection proposal for the Old and Valuable Trees (OVTs) on Hysan Avenue before commencement of construction works to the satisfaction of the Director of Leisure and Cultural Services (DLCS) or of the TPB*" for the proposed underground vehicular tunnel connecting Lee Garden One and the redevelopment of Sunning Plaza / Sunning Court under Hysan Avenue between Lee Garden One (33 Hysan Avenue) and 10 Hysan Avenue.

This Tree Protection Proposal is formulated based on the principles of tree protection plan as set out in Appendix C of DEVB TC(W) No. 4/2020. The purpose of this proposal is to set up criteria of tree protection for 5 nos. OVTs on Hysan Avenue currently maintained by Leisure and Cultural Services Department (LCSD) before commencement of construction works, during and after works completion of underground vehicular tunnel named "T1".

1.1 Background
s

The proposed underground vehicular tunnel T1 is to be constructed below the ground of 5 nos. OVTs on Hysan Avenue. Locations of the 5 nos. OVTs named LCSD WCH/2, LCSD WCH/3, LCSD WCH/4, LCSD WCH/5 and LCSD WCH/6 are shown in below **Figure 1** for information.

Figure 1 Location Plan of Five OVTs on Hysan Avenue



The proposed tunnel T1 will be constructed below ground initially under 3 nos. OVTs named LCSD WCH/3, LCSD WCH/4 and LCSD WCH/5. Please refer to **Appendix A**, no works under the development as confined by this Application will be carried out at street level close to or within Tree Protection Zone (TPZ) of OVTs on Hysan Avenue. For more illustrations of proposed T1 development relating to works at below ground of OVTs on Hysan Avenue and coordination with respective government department relevant to the proposed construction of T1, please refer to **Appendix F**.

1.2 Conditions of OVTs

Tree inspection for the status of 5 nos. OVTs on Hysan Avenue was carried out in January 2024 with reference to DEVB TC (W) No. 5/2020 "*Registration and Preservation of Old and Valuable Trees in Hong Kong*" and DEVB TC (W) No. 6/2015 "*Maintenance of Vegetation and Hard Landscape Features*". The information of OVTs is recorded in Tree Assessment Schedule (**Appendix B**) prepared based on Methodology of Tree Survey (**Appendix D**). The current view of OVTs is referenced in Tree Photographic Record (**Appendix C**).

2.0 PROTECTION ZONE FOR TREE ROOTS & TREE PROTECTION AT IMPLEMENTATION

The proposed underground vehicular tunnel T1 and its associated works are to be constructed in below ground level of 3 nos. OVTs and there will not be any construction works at street level close to or within dripline of OVTs on Hysan Avenue. Please refer to proposed Layout and Section of Tunnel T1 in **Appendix A** illustrating the relationship between the proposed tunnel T1 and the OVTs on Hysan Avenue. To prevent OVTs from disturbance at ground level, engineering design and excavation methods such as open cut excavation, open trenching, and works from above ground to ground level within driplines of OVTs will not be adopted. Since no works will be carried out at street level, no protection fence and no TPZ will be set up at ground level for the OVTs and the OVTs will be continued to be maintained by LCSD. Protection zone for tree roots of OVTs may be required if the proposed works encroaches the root zone of OVTs at soil level.

2.1 Extent of Protection Zone for Tree Roots

With reference to "*Guidelines on Tree Preservation during Development (April 2015)*" issued by Greening, Landscape and Tree Management Section (GLTMS) of Development Bureau (DevB), "*protection of the roots and soil structure is treated as priority*" and "*over 90% of the roots are located at the top 1m of soil*". Root patterns, including distributions of all major roots such as lateral roots, heart roots, sinker roots and tap roots, are affected by topography, characteristics of the soil or substrate, and underground obstructions. In addition, according to para. 26 of DEVB TC(W) No. 5/2020, "*A zone encompassing the tree along its (OVTs') dripline projecting vertically from the tree canopy and extending 2m below the ground level and 2m above the top of an OVT shall be designated s tree protection zone*". Thus, a tree root detection exercise shall be provided during implementation stage to ensure sufficient protection for all lateral roots of OVTs on Hysan Avenue.

2.1.1 Root Detection for Extent of Tree Roots Protection at Implementation Stage

To avoid roots of OVTs from injury or damage by construction works and to comply with condition (f) of the Application (**Appendix E**), a tree root detection exercise shall be carried out on site well before commencement of works. It targets to practically define major tree roots patterns and create map of tree roots in radial and vertical distance.

Non-invasive method or equipment or tool that are non-invasive to trees shall be selected for root detection. The sensitivity of root detection equipment or tool shall accurately read and detect tree root of minimum size at or less than 30mm root diameter within the initial 600mm soil depth measuring from top of soil, 50mm root diameter down to minimum 2M soil depth and 100mm root diameter further down below 2M soil depth until no major tree roots detected. Details of root detection exercise shall be carried out depending on actual site condition. A root map of OVTs shall form as reference of tree root protection and tree root protection zone, which shall also form part of "*tree protection proposal for the OVTs on Hysan Avenue to the satisfaction of DLCS or of the TPB*" in accordance with condition (f) of the Application.

If major roots of OVTs on Hysan Avenue are only be detected within 1.5m measured from surface level, a clearance of minimum 2m soil measured vertically from top of soil at the location of concerned OVTs, including within dripline of tree and both lateral and vertical extents of roots, shall be formed as untouched area within TPZ of OVTs. Such untouched area is treated as means to protect the initial soils and all roots likely within the zone measured vertically away from surface dripline of OVTs on Hysan Avenue.

To ensure healthy growth of OVTs on Hysan Avenue free from potential damage by works, the current design of tunnel T1 and its associated works have ensured a clearance of minimum 2.5m soil zone measured vertically away from concerned OVTs on Hysan Avenue.

2.1.2 Qualification of Certified Arborist

All tree assessment and tree inspection, tree roots detection exercise, setting up of TPZ if any and tree monitoring reports shall be carried out and prepared by the qualified professional(s). Such qualified professional(s) shall meet the Registration Requirements of "Arborist" under the "Registration Scheme for Tree Management Personnel" maintained by the GLTMS of DevB with Academic Qualification up to or above the standard of Level 4 in the Hong Kong Qualifications Framework (HKQF) or equivalent in appropriate discipline, and; be a Registered Tree Management Professional (Arborist) registered in Hong Kong; or attained professional qualifications (i) Certified Arborist, Certified Arborist Utility Specialist, Certified Arborist Municipal Specialist or Board-Certified Master Arborist of the International Society of Arboriculture; or (ii) Technician Member, Professional Member or Fellow Member of the Arboricultural Association of the United Kingdom; or (iii) European Tree Worker or European Tree Technician of the European Arboricultural Council; or (vi) General Member of the National Arborists Association of Australia (issued on or before

31 Dec 2010); or (v) Registered Qualified Arborist, Registered Practicing Arborist, Registered Consulting Arborist, Registered Consulting & Practicing Arborist of the Arboriculture Australia; or (vi) Accredited Arborist of the Hong Kong Institute of Landscape Architects; or equivalent; With a minimum of 5 years' full-time experiences working in the professional tree care industry. Requirements of "Arborist" for Registered Tree Management Professional shall be referred to the link as follows:
https://www.greening.gov.hk/rstmp/en/types_of_registered_tree_management_personnel/index.html

2.2 Implementation of Tree Protection Proposal

To fulfil condition (f) of the Application, a Tree Protection Proposal (Implementation Stage) demonstrating method of protection for minimum 2m protected soil zone for OVTs with latest layout/section(s) of tunnel T1 design works illustrating the protected soil zone will be submitted to LCSD and associated authority(ies) for consent well before commencement of tunnel T1 construction works. Such Proposal shall include but not limited to site appraisal for the OVTs on Hysan Avenue, method of tree protection at below-ground, analysis of the results derived from root survey report and a map illustrating lateral roots distributions of the OVTs on Hysan Avenue. To avoid soil loss and damage in protected soil zone initially under dripline of OVTs, a continuous impermeable cover made of non-toxic material shall be installed along the entire ceiling of works area. To fulfil condition (g) of the Application, a monthly tree monitoring report for OVTs on Hysan Avenue will be carried out and submitted to LCSD until 12 months after works completion to the satisfaction of the LCSD. Illustrations of TPZ and untouched subsurface for OVTs on Hysan Avenue showing conditions of trees and condition at soil level will be incorporated into the tree monitoring report.

Training of site staff for care of OVTs in works areas shall be delivered to ensure quality of tree care at implementation stage. It is essential that training of relevant site staff shall ensure consistent and faithful compliance on protection of OVTs. A competent staff shall be provided on-site who shall oversee the works throughout implementation stage to ensure no intrusion of works into the TPZ of OVTs including tree roots protection. Unwanted incursions such as but not limited to site staff, solid debris, contaminated materials and water, fluids, machines, tools and all vehicles, fumes, hot air/water shall be prohibited and avoided physical contact within TPZ of OVTs including tree roots protection.

During construction phase, officers / representatives of LCSD or GLTMS of DevB have the right to access through the works areas to soil zone/ protection zone for tree roots of OVTs for the purposes of inspecting and checking the safety and health of the OVTs on Hysan Avenue, yet advance notice shall be given to the works agent for arrangements of site visit. For the sake of public safety, such soil zone/ protection zone for tree roots of OVTs, if any, shall be prohibited from public access.

3.0 METHOD STATEMENT FOR MONTHLY TREE MONITORING

3.1 To fulfil condition (g) of the Application, monthly tree monitoring reports for the OVTs shall be submitted to LCSD at least 3 months before the commencement of construction works for the proposed tunnel T1 until 12

months after works completion to the satisfaction obtained from LCSD.

3.2 The monthly tree monitoring reports shall be prepared by a service provider or a qualified professional(s) with recognised qualifications and expertise to undertake tree risk assessment and associated tree inspection works/ operations as defined in Section **2.1.2 Qualification of Certified Arborist**. Attention to the submissions of tree protection proposal (Implementation Stage) and monthly tree monitoring reports to fulfil Planning Application should be drawn to landscape consultant.

3.3 Such regular tree monitoring report for the OVTs on Hysan Avenue will include the following contents:

- Tree Assessment for the Conditions of OVTs
- Photographic Record of OVTs
- Recommendation

3.4 Tree Risk Assessment (Form 2) for the 5 nos. OVTs on Hysan Avenue will be conducted at least every six (6) months to follow para. 16 of DEVB TC(W) No. 5/2020 and with reference to "*Tree Risk Assessment and Management Arrangement*" in GLTMS's website:
https://www.greening.gov.hk/en/tree-care/tree-risk-assessment-and-management-arrangement/index.html

3.5 The findings of the first tree risk assessment will be treated as baseline for tree monitoring and will be incorporated in the first Tree Monitoring Report. Monthly tree inspection will be provided to update the conditions of OVTs in a tree assessment schedule for reference. The format of tree assessment schedule shall follow the format of *Appendix C (1)* under DEVB TC (W) No. 4/2020 "*Tree Preservation*" or deemed equivalent.

3.6 Photographic record of OVTs shall be of reasonable size and quality, in colour and imprinted showing the entire tree as far as practicable i.e. general view of whole tree, the crown in minimum two angles, tree trunk and surrounding ground near the root collar of each tree). Sensible labelling and annotation of the photo is required without blocking the imagery of each tree. Defect(s) of each OVT should be given close-up photos for record purpose.

3.7 Based on the findings of regular tree inspection and tree assessment supported by photographic record, recommendations may be made for better health and structure of OVTs. If tree defect(s) is spotted due to natural cause, recommendations will be considered as general and counter reference for the maintenance authority. If tree defect(s) due to construction of tunnel T1 or its associated works is/are spotted during tree inspection, mitigation measures for OVTs will be provided in the monthly tree monitoring report. Endorsement of mitigation measures from tree maintenance authority i.e. LCSD is required before

proceeding tree works. The completion of mitigation measures shall be reported to LCSD in photograph(s) and recorded in the next monthly tree monitoring report.

3.8 Tree inspection for OVTs on Hysan Avenue shall be carried out in 72 hours after lowering of adverse weather conditions including but not limited to severe storm signals, Typhoon Signal No. T8. Any defects on OVTs are found shall be detailed in Tree assessment with tree photographic records and recorded in the next monthly tree monitoring report. If substantial damage observed, an individual tree risk assessment may be conducted and reported in the next monthly tree monitoring report.

REFERENCES

DEVB TC (W) No. 4/2020	Tree Preservation
DEVB TC (W) No. 5/2020	Registration and Preservation of Old and Valuable Trees in Hong Kong
DEVB TC (W) No. 6/2015	Maintenance of Vegetation and Hard Landscape Features
GLTMS of DevB (April 2015)	Guidelines on Tree Preservation during Development
GLTMS of DevB (2023)	Guidelines for Tree Risk Assessment and Management Arrangement (10th Edition)
Jim, C.Y. (1994)	Champion Trees in Urban Hong Kong. Urban Council, Hong Kong
Webb, R. (1991)	Tree Planting and Maintenance in Hong Kong. Standing Interdepartmental Landscape Technical Group, HKSAR Government, Hong Kong

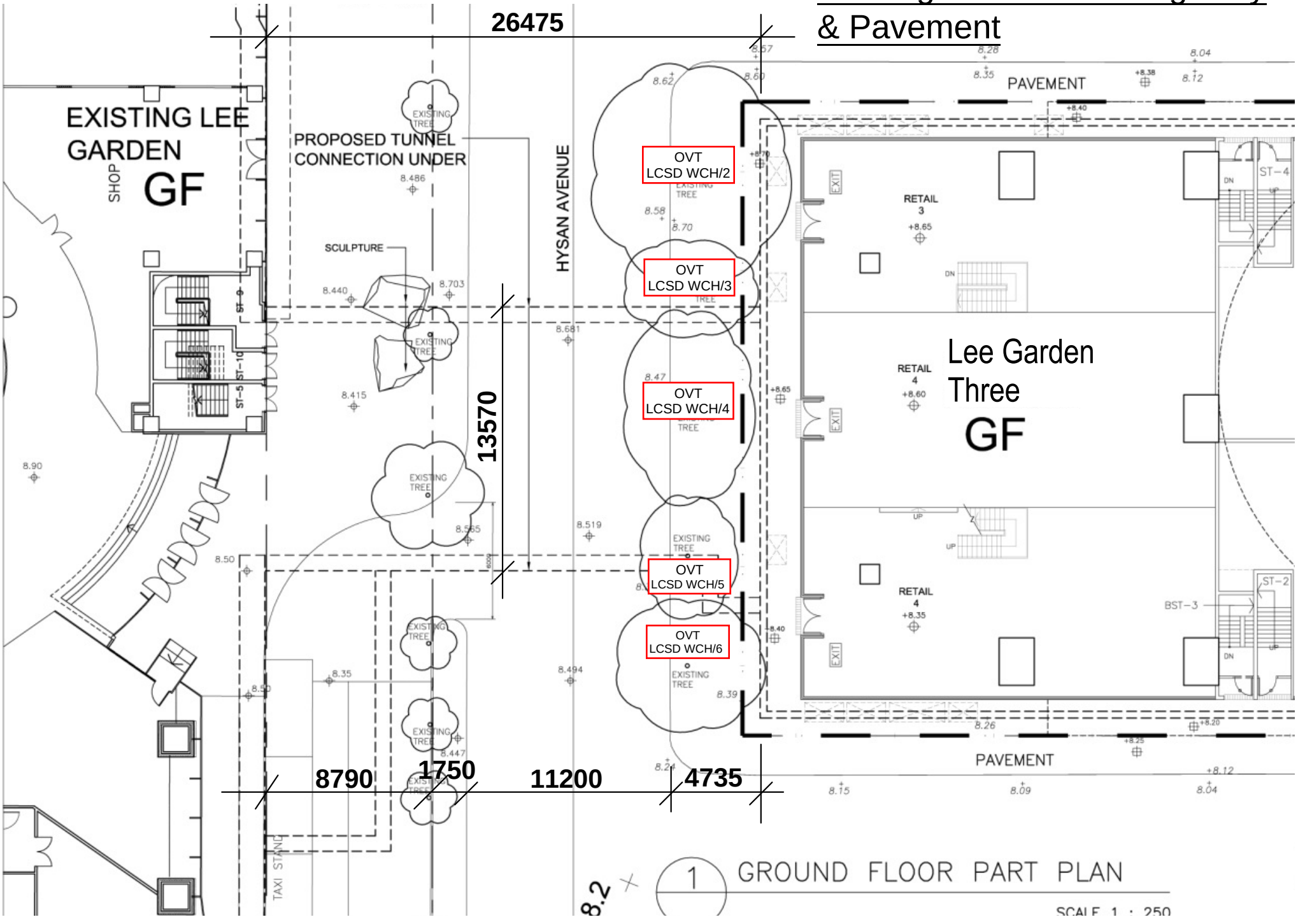
Websites:
Types of Registered Tree Management Personnel
https://www.greening.gov.hk/rstmp/en/types_of_registered_tree_management_personnel/index.html

Appendix 3 - Requirements for Inspection Officers for Form 1 – Tree Group Inspection and Form 2 - Individual Tree Risk Assessment
https://www.greening.gov.hk/filemanager/greening/common/pdf/tree_care/TRAM_10th.pdf

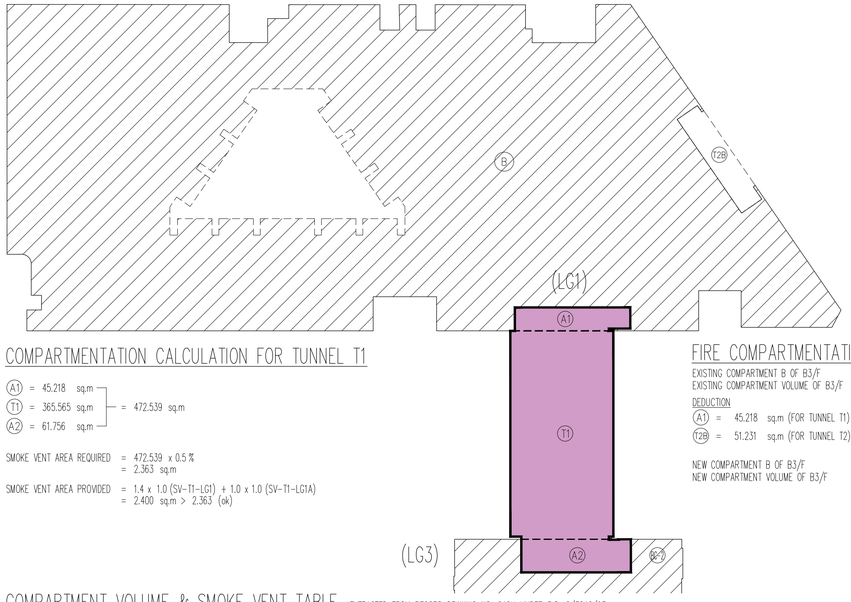
Appendix A

Proposed Layout & Section of Tunnel T1

Proposed Layout and Section of Tunnel T1



COMPARTMENTATION DIAGRAM FOR NEW TUNNEL T1



COMPARTMENTATION CALCULATION FOR TUNNEL T1

(A1) = 45.218 sq.m
(T1) = 365.565 sq.m = 472.539 sq.m
(A2) = 61.756 sq.m

SMOKE VENT AREA REQUIRED = 472.539 x 0.5 %
= 2.363 sq.m

SMOKE VENT AREA PROVIDED = 1.4 x 1.0 (SV-T1-LG1) + 1.0 x 1.0 (SV-T1-LG1A)
= 2.400 sq.m > 2.363 (ok)

FIRE COMPARTMENTATION VOLUME (LG1)

EXISTING COMPARTMENT B OF B3/F = 3583.010 sq.m
EXISTING COMPARTMENT VOLUME OF B3/F = 3583.010 x 3.2 = 11465.632cu.m — BD 2/3046/93

DEDUCTION
(A1) = 45.218 sq.m (FOR TUNNEL T1)
(T2B) = 51.231 sq.m (FOR TUNNEL T2) (UNDER SEPARATE SUBMISSION)

NEW COMPARTMENT B OF B3/F = 3583.010 − 45.218 − 51.231 = 3486.561 sq.m
NEW COMPARTMENT VOLUME OF B3/F = 3486.561 x 3.2 = 11156.995cu.m

FIRE COMPARTMENTATION VOLUME (LG3)

EXISTING COMPARTMENT AREA OF BC-2 = 2359 sq.m
EXISTING COMPARTMENT VOLUME OF BASEMENT 3 = 2359 x 3.5 = 8257 cu.m — BD 2/3001/09/(2)

REDUCED AREA FOR NEW TUNNEL T1 = 61.756 sq.m
REDUCED VOLUME FOR NEW TUNNEL T1 = 216.146 cu.m

NEW COMPARTMENT AREA OF BC-2 = 2359 − 61.756 = 2297.244 sq.m
NEW COMPARTMENT VOLUME OF BASEMENT 3 = 8257 − 216.146 = 8040.854 sq.m

COMPARTMENT VOLUME & SMOKE VENT TABLE

*EXTRACTED FROM RECORD DRAWING NO. 242H UNDER B.D. 2/3046/93.

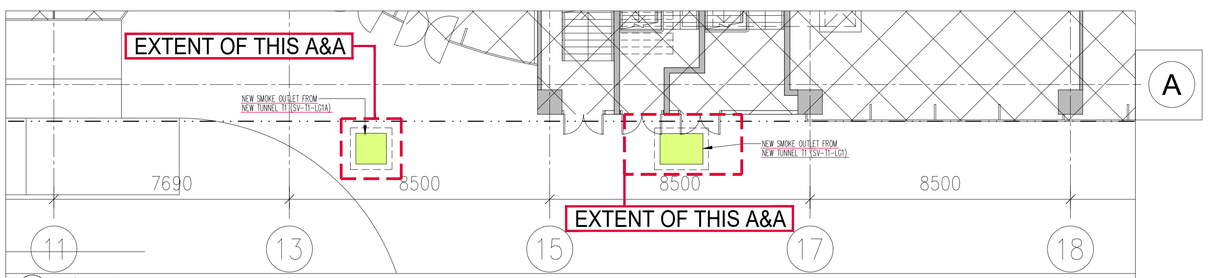
ZONE	FLOOR	USE	FLOOR AREA (sq.m)	FLOOR TO CEILING (m)	VOLUME (cu.m)	SMOKE EXTRACTION	SMOKE VENT REQUIRED	SMOKE VENT PROVIDED
(LG1) B	B3	CARPARK	3585.010 − 45.218 = 3539.792	3.2	11327	DYNAMIC	11327 / 3500 = 4 (NO CHANGE)	4 x 1 = 4 sq.m
A1+T1 +A2	B3	TUNNEL	472.539	3.2	1512	DYNAMIC	1512 / 3500 = 1	2
LG3 BC	B2	CARPARK	2297	3.5	(2297 + 2297.244 + 168) x 3.5 = 16668 <28000			
	B3	CARPARK	2359 − 61.756 = 2297.244					
	B4	CARPARK	168					

REQUIREMENT OF EXIT DOOR & EXIT ROUTE

LOCATION	U.F.A. (sq.m)	OCCUPANCY FACTOR	TOTAL NO. OF PERSON	REQUIRED	PROVIDED	MIN. WIDTH OF EACH				MIN. TOTAL WIDTH OF			
				MIN. NO OF EXIT DOORS OR EXIT ROUTES	NO OF EXIT DOORS OR EXIT ROUTES	REQUIRED		PROVIDED		REQUIRED		PROVIDED	
						EXIT DOORS	EXIT ROUTES	EXIT DOORS	EXIT ROUTES	EXIT DOORS	EXIT ROUTES	EXIT DOORS	EXIT ROUTES
TUNNEL T1	472.539	30	17	1	2	750	1050	750	1050	–	–	1500	2100

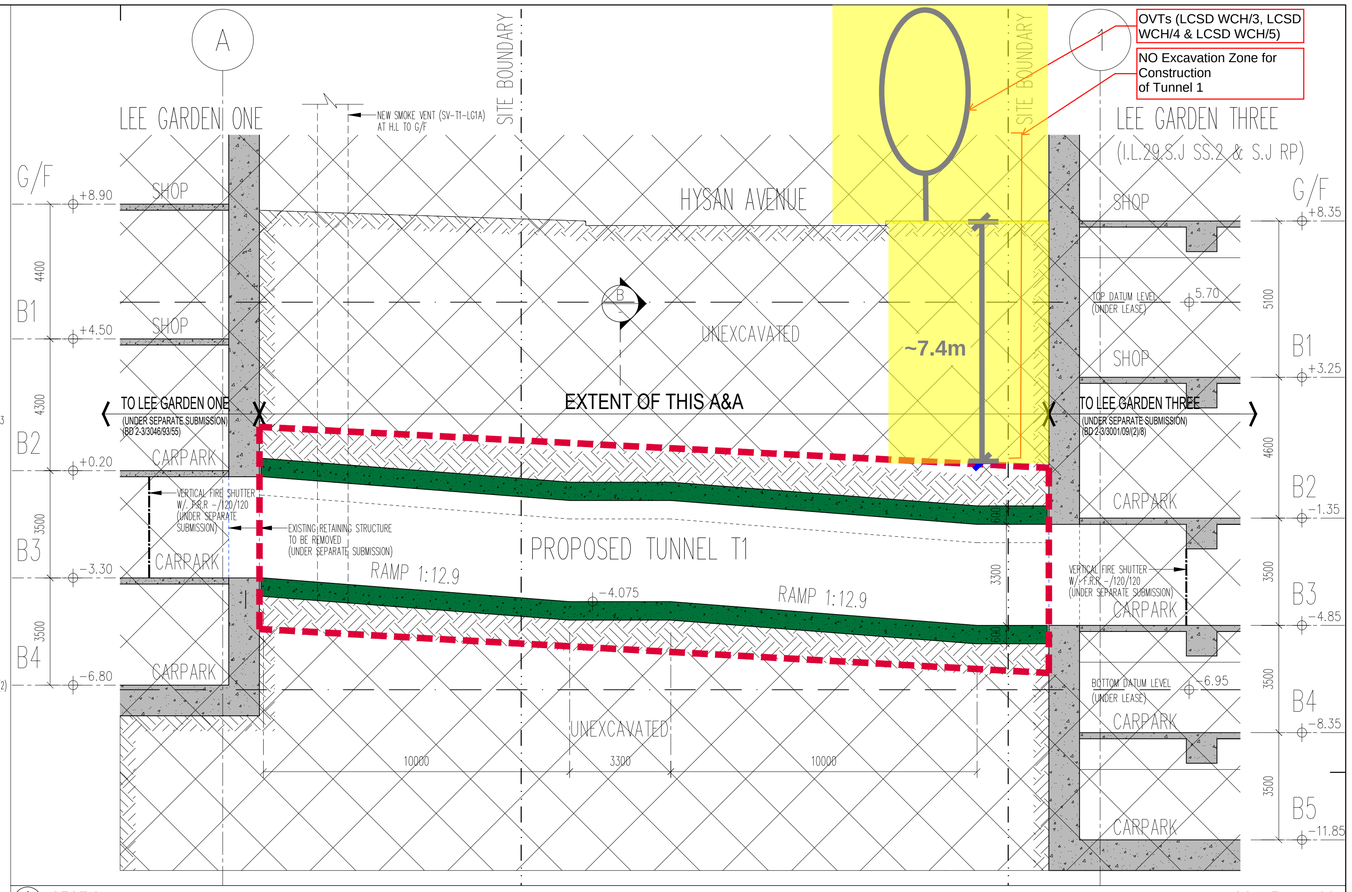
SCHEDULE OF FIRE RESISTANCE PERIOD

LOCATION	USE	CLASS	COMPARTMENT VOLUME		F.R.R. (HOURS)	MIN. DIMENSION FOR ELEMENTS OF CONSTRUCTION										MIN. THICKNESS OF PROTECTION			
						R.C. SLAB		R.C. BEAM		R.C. COLUMN		R.C. WALL		BRICK WALL	CONCRETE BLOCK WALL	R.C. STAIR		STEEL COLUMN		STEEL BEAM	
			FLOOR AREA (sq.m)	VOLUME (cu.m)		THICKNESS (mm)	COVER TO STEEL (mm)	MIN. WIDTH (mm)	COVER TO STEEL (mm)	THICKNESS (mm)	COVER TO STEEL (mm)	THICKNESS (mm)	COVER TO STEEL (mm)			SLAB THICKNESS (mm)	COVER TO STEEL (mm)	CONCRETE (mm)	SPRAYED MINERAL* FIBRE (mm)	CONCRETE (mm)	SPRAYED MINERAL* FIBRE (mm)
TUNNEL T1	CARPARK	7	472.539	1512	4	170	55 (S) 45 (C)	280	80 (S) 60 (C)	450	35	180	25	–	–	–	–	75	–	75	–

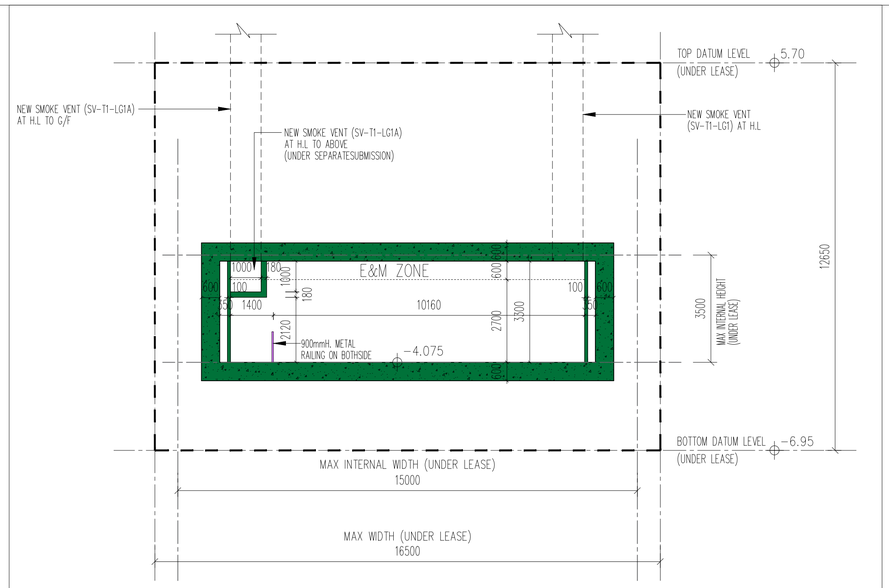


3 G/F PART PLAN — SCALE: 1:100

(REFER TO THE APPROVED BUILDING PLAN DWG NO.AA11/GBP/AA3.0 DATED:11 JUL 2023. BD REF: 2-3/3046/93/60)



1 SECTION A−A — SCALE: 1:100



2 SECTION B−B — SCALE: 1:100

Rev.	Description	Drawn	Checked	Approved	Date
-	1st_A&A BD SUBMISSION	FKL	LEL	CMC	16/11/2023

Check all measurements on site. Do not scale off drawings.

This drawing is to be read in conjunction with the specification and any discrepancies are to be immediately reported to the Architect.

B.D. Ref. -
F.S.D. Ref. -
D.L.O. Ref. -
Drawn FKL Date 11/2023
Checked LEL Date 11/2023
Approved CMC Date 11/2023
Cad File No. -

RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title: PROPOSED TUNNEL T1 LINKING LEE GARDEN ONE AND LEE GARDEN THREE

Drawing Title: SCHEDULES AND CALCULATIONS

Project No. 19030HK
Scale A.S Issue Date 11 / 2023
Drawing No. AA_T1 / GBP / GBP_AA2

AP's Signature: CHEUNG Man Ching Anthony Authorized Person (Architect)

Drawing Purpose: Buildings Department

Appendix B

Tree Assessment Schedule

Tree Assessment Schedule

Project: Area Rejuvenation- Connectivity Pedestrian Links in Lee Gardens, Causeway Bay

Surveyed by: Mr. Wilson CHIN (CA, no. HK-0797A)

Date of Tree Survey : 16 January 2024

To be read in conjunction with Drawing Nos.: TT1-01

Tree No.	Species		Measurements			Amenity Value	Form	Health Condition	Structural Condition	Suitability for Transplanting		Conservation Status (Yes/ No)	Recommendation	Maintenance Department to Provide Comments on TPRP		Additional Remarks*
	Scientific Name	Chinese Name	Height (m)	DBH (mm)	Crown Spread (m)	(High/ Medium/ Low)	(Good/ Average/ Poor)			(High/ Medium/ Low)	Remarks		(Retain/ Transplant/ Remove)	Before	After	
LCSD WCH/2	*Artocarpus nitidus subsp. lingnanensis*	桂木	8	414	12.5	M	A	A	A	L	Exposed root / wounds on branches with poor wound wood development	Y	Retain			
LCSD WCH/3	*Artocarpus nitidus subsp. lingnanensis*	桂木	6.5	263	5.5	M	A	A	A	L	Exposed root / wounds on branches with poor wound wood development	Y	Retain			
LCSD WCH/4	*Artocarpus nitidus subsp. lingnanensis*	桂木	9.2	356	10	M	A	A	A	L	Exposed root / wounds on branches with poor wound wood development / bark cracks / crossing branch	Y	Retain			
LCSD WCH/5	*Artocarpus nitidus subsp. lingnanensis*	桂木	8.4	308	8.5	M	A	A	A	L	Exposed root / wounds on branches with poor wound wood development	Y	Retain			
LCSD WCH/6	*Artocarpus nitidus subsp. lingnanensis*	桂木	7.5	302	7.5	M	A	A	A	L	Exposed root / wounds on branches with poor wound wood development	Y	Retain			

*Additional Remarks (Justification):	
A	Conflict with proposed covered walkway /canopy /footbridges
B	Poor condition/ poor form
C	Low survival rate after transplanting
D	Located on steep slope and inaccessible for transplanting
E	Overpruned/ topped after transplanting
F	Low Amenity Value

Summary	
Total no. of surveyed trees	5
Trees Proposed to be Retained	5
Trees Proposed to be Transplanted	0
Trees Proposed to be Removal	0

Note:

Appendix C

Photographic Record of Old and Valuable Trees on Hysan Avenue

LCSD WCH/2

Wounds on branches with poor wound development

Wounds on branches with poor wound development

Wounds on branches with poor wound development

Wounds on branches with poor wound development

CLOSE-UP

Exposed roots

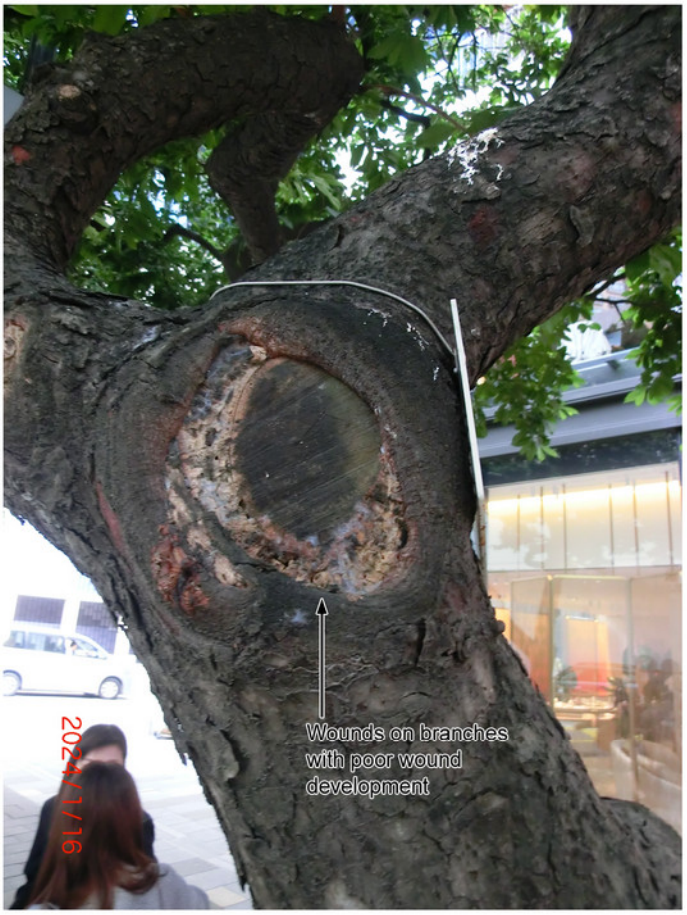
CLOSE-UP

Proposed Covered Walkway/ Canopy and Footbridges Linking Hysan Place and Lee Gardens

Tree Photographic Record

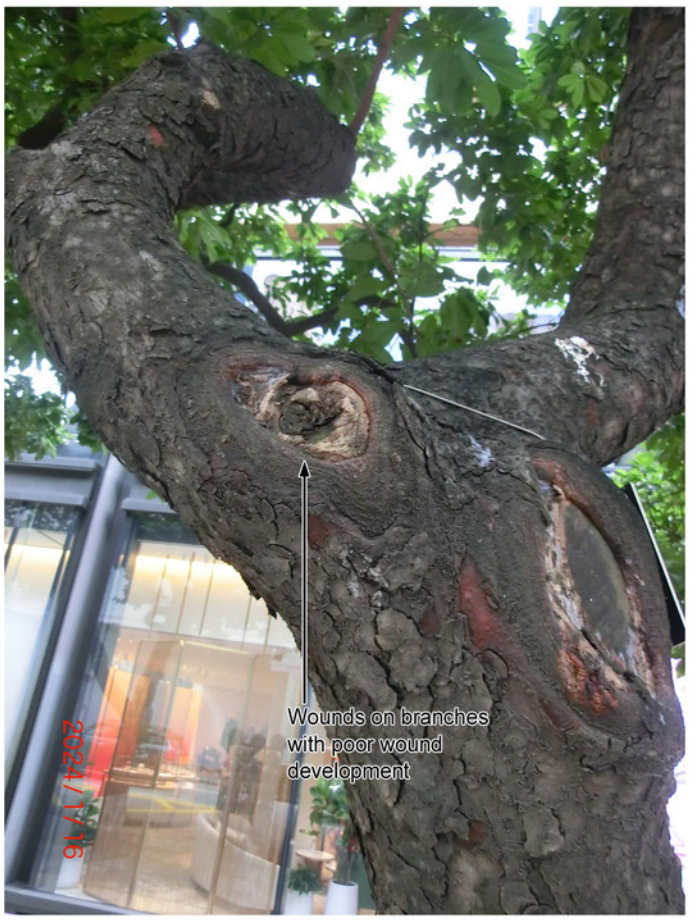
(OVT)

LCSD WCH/3



CLOSE-UP

CLOSE-UP



CLOSE-UP

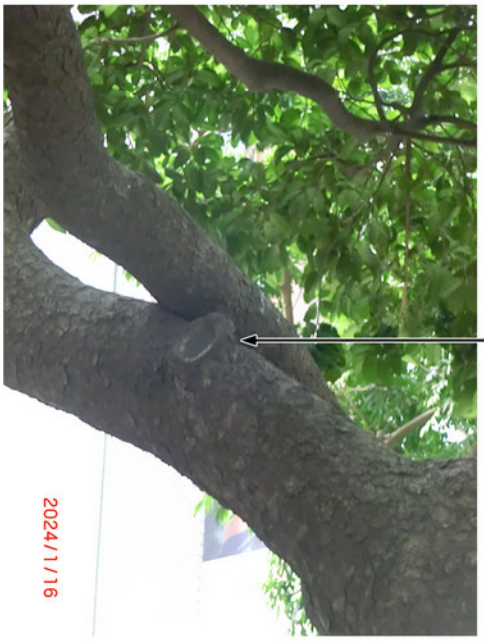
Proposed Covered Walkway/ Canopy and Footbridges Linking
Hysan Place and Lee Gardens

Tree Photographic Record

(OVT)

Y:\0-Axxagroup Project 2021\2021205_Lee Garden\Graphic Storage\2. Submission Photo\1. Tree Photos\2024-03-19_OVT\TREE_OVT3

LCSD WCH/4



CLOSE-UP

CLOSE-UP

Proposed Covered Walkway/ Canopy and Footbridges Linking Hysan Place and Lee Gardens

Tree Photographic Record

(OVT)

LCSD WCH/5

Wounds on branches with poor wound development

Dead branch is pruned

Wounds on branches with poor wound development

CLOSE-UP

Wounds on branches with poor wound development

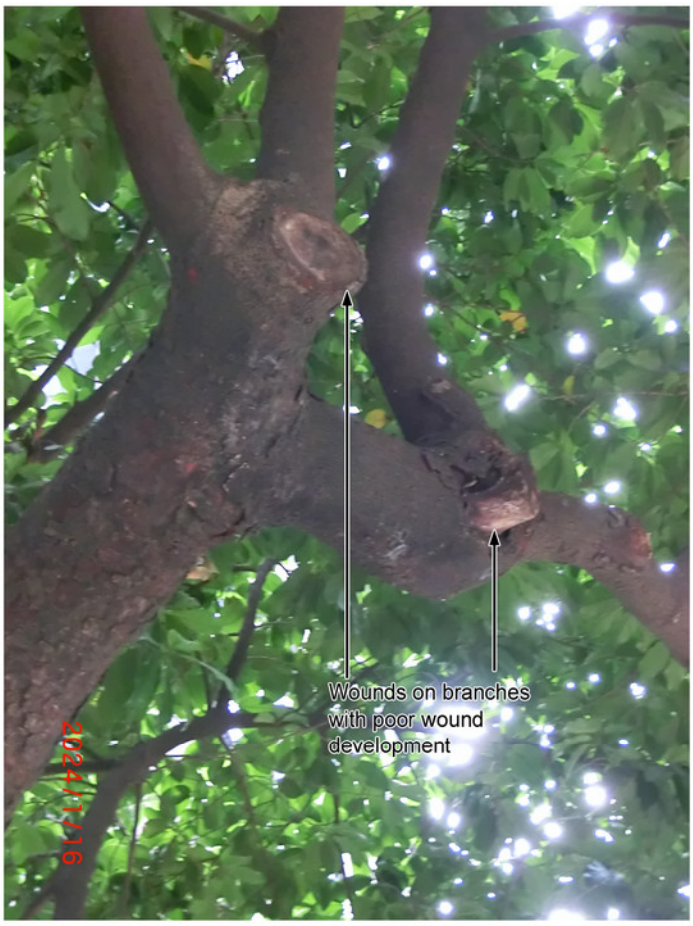
CLOSE-UP

Proposed Covered Walkway/ Canopy and Footbridges Linking Hysan Place and Lee Gardens

Tree Photographic Record

(OVT)

LCSD WCH/6



CLOSE-UP

CLOSE-UP

CLOSE-UP

Proposed Covered Walkway/ Canopy and Footbridges Linking Hysan Place and Lee Gardens

Tree Photographic Record

(OVT)

Appendix D

Methodology of Tree Survey

General Description

Tree(s) of a stem diameter over 95mm measured at a point 1.3m above the root collar (hereafter referred to as the DBH) are included in the Tree Survey as defined in the Nature Conservation Practise Note No. 02 (Rev. Jun 2006) issued by AFCD.

Each tree is allocated a tree number, is clearly marked on site with an identity label showing the tree number and its position plotted on topographic plans.

All trees are identified by species, or in some cases by genus if full identification is not possible. Where necessary, identification is verified / assisted by AFCD Hong Kong Herbarium or CUHK Herbarium.

Measurements are recorded of the DBH, overall height and overall spread of each tree and a photograph taken of each tree.

The following information about each tree surveyed is included in The Tree Assessment Schedule in **Appendix B**.

Tree assessment

Tree assessment should be conducted in form of *tree assessment schedule* specified as follows for Old and Valuable Trees (OVTs) on Hysan Avenue:

i) The *tree assessment schedule* (**Appendix B**) should include the following information:

a. tree assessment schedule
b. tree no.
c. the species (both scientific name and Chinese common name);
d. measurements including height, DBH (trunk diameter at 1.3m above the ground level) and crown spread;
e. amenity value;
f. form;
g. health and structural conditions;
h. suitability for transplanting;
i. conservation status (indicates rarity and protection status under relevant ordinances of a species in Hong Kong. References such as Rare and Precious Plants of Hong Kong[3], the IUCN Red List of Threatened Species[4] and the Forestry Regulations (Cap. 96A) may be used.); and
j. recommendations, i.e. retain, transplant or remove.

i) Colour photographs with imprinted dates of each whole tree as far as practicable and marked with tree identification numbers. The photograph should also show the defective part(s) of the tree(s) and the proposed treatment(s) with clear annotation.

ii) Where the project involves removal of trees of particular interest, paragraph 26 of the Circular and Sensitivity Analysis specified in the TRAM Guidelines shall be followed.

iii) For trees in government projects, the tree survey plan and assessment schedule should be based on the findings of tree surveys conducted within two years prior to submission, provided that there have been no substantial deviations to the number and conditions of the trees in the affected area. For trees in arboricultural maintenance, the current requirements on tree risk assessment as stipulated in the TRAM Guidelines should be followed.

Tree Assessment Schedule

The tree assessment schedule in table format is prepared based on Appendix C(1) of DEVB TC(W) No. 4/2020. Individual tree survey for each OVT will be conducted and recorded in this tree assessment schedule.

Tree No,

Identification of Tree No. for OVTs on Hysan Avenue is based on the Register of Old and Valuable Trees recorded in the web page of Old and Valuable Trees in Hong Kong (*https://ovt.greening.gov.hk/*) with unique registration numbers.

Species,

Guidance on proper use of scientific name of plants is given in the Agriculture, Fisheries and Conservation Department's Nature Conservation Practice Note No. 3,which can be viewed at AFCD's web page *http://www.afcd.gov.hk/english/conservation/con_tech/files/common/NCPC_No.03_The_use_of_plant_names_rev_2008_2.pdf*). Identification of tree species for OVTs on Hysan Avenue shall follow website of Old and Valuable Trees in Hong Kong (*https://ovt.greening.gov.hk/*).

Measurements

DBH of a tree refers to its diameter at breast height (i.e. measured at 1.3 m above ground level). Guidance on DBH measurement is given in the Agriculture, Fisheries and Conservation Department's Nature Conservation Practice Note No. 2, which can be viewed at AFCD's web page http://www.afcd.gov.hk/english/conservation/con_tech/files/common/NCPN_No.02_measurement_of_DBH_ver.2006.pdf).

The measurement of OVTs including DBH, Height and Crown Spread, shall make reference to and consistent to the latest *Old and Valuable Tree Information* at web page (*https://ovt.greening.gov.hk/*).

Amenity value

Amenity value of a tree should be assessed by its functional values for shade, seasonal interest, screening, reduction of pollution and noise and also its fung shui significance, and classified into the following categories.

High (H):	important trees which should be retained by adjusting the design layout accordingly.
Medium (M):	trees that are desirable to be retained in order to create a pleasant environment, which includes healthy specimens of lesser importance than "High" trees.
Low(L):	trees that are dead, dying or potentially hazardous and should be removed.

Form

Tree form is evaluated with reference to the overall tree size, shape and any special features.

The form of each tree is recorded in **Appendix B** - Tree Assessment Schedule by means of the following codes and definitions:

- Good — Trees with well-balanced, upright, evenly branching, well-formed crowns and which are considered good examples of their species are graded as good;
- Average — Trees with less balanced crowns which are mildly distorted due to competition with neighbouring trees or structures, or which have suffered minor damage or which have leaning trunks for example are graded as average;
- Poor — Trees with very distorted crowns, which are leaning severely or which have suffered the loss of major branches or which are unstable are graded as poor.

Health and Structural condition

OVTs on Hysan Avenue of 300mm girth (= 95mm diameter) or over (measured at 1.3m above ground level) were studied. Each tree was identified to species level, and its girth, height and spread measured. The condition of each tree was then evaluated according to the following criteria (Webb 1991)[1]:

- Good — Trees of good from, moderate to large size (for their species type) and in good health are classified as Good
- Average — Trees of reasonable form, with few or no visible defects or health problems are classified as average;
- Poor — Trees which are of poor form, badly damaged or clearly suffering from decay, die back, or the effects of very heavy vine growth are classified as poor.

Suitability for transplanting

Assessment shall take into account conditions of an individual tree at the time of survey (including health, structure, age and root conditions), site conditions (including topography and accessibility), and intrinsic characters of tree species (survival rate after transplanting).

Major determining factors for the rating on suitability for transplanting should be included if necessary.

Conservation status

State the rarity and protection status of the species.

[1] Webb, R(ed.) 1991 Tree Planting & Maintenance in Hong Kong, Government Printer

Recommendation

- Retain
- Transplant
- Remove

The felling of a tree must be justified by the following criteria:

a) No irreplaceable, rare or protected species (under Forestry Regulation Cap.96) is felled.

b) The felling would not cause a serious loss of species diversity in the subject area.

c) A genuine development or traffic need exists, which cannot be reasonably overcome.

d) Adequate compensatory tree planting is to be implemented.

e) The tree is not an unusually large or fine example of its species.

f) The tree is in poor condition or is unsuitable for transplanting due to its low survival potential.

g) The tree is not in the list of Champion Trees (Ref: Jim, C.Y. 1994. *Champion Trees in Urban Hong Kong*. Urban Council, Hong Kong) nor Unusual Trees (Ref: *AFCD's Register of Unusual Trees in Rural Areas*).

h) The tree is neither a significant landmark tree nor of special *fung shui* or cultural significance.

i) Existing site conditions are such that transplantation would be hazardous to the public.

j) The tree is dead, hazardous or diseased.

k) A tree that has been rendered unstable because of the removal of neighbouring trees may be considered for felling.

l) The tree possesses invasive habits.

Maintenance department to provide comments on Tree Protection Proposal

Refer to paragraphs 35 and 36 of the Circular DEVB TC(W) No.4/2020

Comments from the tree maintenance department(s), including the tree maintenance department(s) of the subject site before the commencement of the government project and the tree maintenance department(s) which will take over the subject site for long-term tree maintenance if known at this stage, should be obtained before the formulation of the TPRP in order to draw the attention of the responsible TWVPs to noteworthy issues concerning the TPRPs for the affected trees.

At the design stage, the maintenance responsibilities of the proposed new planting, retained trees and compensatory planting, if any, in the government project after the establishment period or the completion of the government project whichever is longer should be determined[5]. The views of the maintenance department(s) on the proposed new planting, retained trees and compensatory planting should be addressed in the TPRP.

Additional remarks

Any additional information deemed necessary for consideration of the proposed management recommendation.

[3] Agriculture, Fisheries and Conservation Department, *Rare and Precious Plants of Hong Kong* (Hong Kong: AFCD, the Government of the Hong Kong Special Administrative Region, 2003).

[4] IUCN Red List of Threatened Species. The latest version can be accessed at www.iucnredlist.org.

Appendix E

Conditions of Planning Application No. A/H6/78-1

規 劃 署
港島規劃處
香港北角渣華道 333 號
北角政府合署 14 樓

Planning Department
Hong Kong District Planning Office
14/F, North Point Government Offices,
333 Java Road, North Point,
Hong Kong

By Fax (2587 7068)

本函檔號 Your Reference
本署檔號 Our Reference ( ) in TPB/A/H6/78-1
電話號碼 Tel. No. : 2231 4603
傳真機號碼 Fax No. : 2895 3957

11 March 2024

Masterplan Ltd.
Room 3516B, 35/F, China Merchants Tower
Shun Tak Centre
200 Connaught Road, Central, Hong Kong
(Attn.: Ms. Kira BROWNLEE)

Dear Sir/Madam,

Proposed Underground Vehicular Tunnel (Connecting Lee Garden One and the Lee Garden Three) under Hysan Avenue between Lee Garden One (33 Hysan Avenue) and 10 Hysan Avenue (Application No. A/H6/78-1)

Submission of Tree Protection Proposal for Compliance with Approval Condition (e)

I refer to your email/letter dated 22.2.2024 enclosing a Tree Protection Proposal for compliance with approval condition (e) of the subject planning application on "the submission of a tree protection proposal for the Old and Valuable Trees (OVTs) on Hysan Avenue before commencement of construction works to the satisfaction of the Director of Leisure and Cultural Services (DLCS) or of the Town Planning Board".

DLCS has been consulted on your submission and his comments are appended in **Appendix I** for your information.

In view of the comments from DLCS, approval condition (e) of the subject planning application could not be considered complied with at the current stage. Should you have any queries on the technical comments stated in paragraph 2 above, please contact Mr. Kaizer CHAN of the Leisure and Cultural Services Department at 2601 8687 direct.

Yours faithfully,

(David LEUNG)
for District Planning Officer/Hong Kong
Planning Department

c.c.
DLCS (Attn.: Mr. Kaizer CHAN) Fax: 2695 3886

Internal
Secy, TPB
HK-6/03
Site Record – H6/133

Appendix F1

Letter to DLO dated 23 November 2021

District Lands Office / Hong Kong East
19/F, Southorn Centre
130 Hennessy Road
Wanchai, Hong Kong

Attentions: Mr. Arnold Chu

23 November 2021
Your Ref: (1) in LD DLO/HE 1067/47A MOD V
Our Ref: PS/2019/VPS/0306/L633/WAC/HIN/ENL/bs

Walter Cheung
E: wacheung@savills.com.hk
DL: (852) 2840 4698
F: (852) 3007 0530

Room 1208,
1111 King's Road,
Taikoo Shing, Hong Kong

EA LICENCE: C-023750
T: (852) 2801 6100
savills.com

BY FAX, BY EMAIL AND BY HAND
(FAX : 2834 4324)

Dear Sir,

RE: PROPOSED LEASE MODIFICATION FOR
(I) PROPOSED TUNNEL T1 LINKING LEE GARDEN ONE AND LEE GARDEN THREE; AND
(II) PROPOSED TUNNEL T2 LINKING LEE GARDEN ONE AND LEE GARDEN TWO
LEE GARDEN ONE – IL 457 S.L, IL 457 R.P., IL 29 S.DD, IL 29 S.L R.P., IL 29 S.MM
LEE GARDEN TWO – IL 29 S.G, IL 457 S.A, IL 457 S.O, IL 457 S.F, IL 457 S.C R.P., IL 457 S.C SS.1, IL 457 S.D R.P., IL 457 S.D SS. 1, IL 457 S.E R.P., IL 457 S.E SS.1, IL 457 S.E SS.2, IL 457 S.G R.P., IL 457 S.G SS.1, IL 457 S.H, IL 461 S.C SS.1, IL 461 S.C SS.2, IL 461 S.C SS.3 AND IL 461 S.C R.P., LEE GARDEN THREE – IL 29 S.J SS.1 R.P., IL 29 S.J SS.2 AND IL 29 S.J R.P., (COLLECTIVELY DESCRIBED BELOW AS THE "LOTS")

We refer to the paragraph 4.1 of the DLC Notes and the DLC on 30 September 2021.

Please find the attached letter for the advice from ARUP on "the nature and scale of physical and/or structural operations involved in the proposed works below ground" for the construction of Tunnels T1 and T2.

Besides, please also note the receiving level of Tunnel 1 at Lee Garden Three is changed from B2/F (at S.16 Stage) to B3/F.

Please do not hesitate to contact the undersigned at 2840 4698 or our Mr. CH Kwok at 2842 4571 / Mr. Enoch Lee at 2840 4685 for any queries.

Yours faithfully,
For and on behalf of
Savills Valuation and Professional Services Limited

Walter Cheung
MHKIS RPS (GP)
Director

Encl.
c.c. Client
AP
MVA
Arup

Our ref 229731-CON/JP/at/21-0004
Your ref PS/2019/VPS/0306/L546/WAC/HIN/ENL/bs

ARUP

By Email

Savills Valuation and Professional Services Limited
Room 1208, 111 King's Road
Taikoo Shing
Hong Kong

Attention: Mr Walter Cheung

Level 5 Festival Walk
80 Tat Chee Avenue
Kowloon Tong
Kowloon
Hong Kong

t +852 2528 3031
d +852 2268 3845
f +852 2268 3946

johnson.po@arup.com
www.arup.com

19 November 2021

Dear Sirs,

Proposed Construction Methodology and Tentative Programme for Tunnel T1 and T2 Connecting Lee Garden One to Lee Garden Three and Lee Garden One to Lee Garden Two Respectively

We refer to the paragraph 4.1 of the DLC Notes and the DLC on 30 September 2021. It is understood that further advice/clarification would be required on "the nature and scale of physical and/or structural operations involved in the proposed works below ground" for construction of Tunnels T1 and T2.

Based on our review together with construction consultant Gammon, underground mining method with horizontal pipe piles would be adopted for constructing T1 and T2. While T1 is longer (~26m) than T2 (~12m) and thus more critical, the work sequence described below and attached are illustrated by using T1 as an example. Similar approach would also be adopted for T2.

The works area/starting area of excavation will be at basement B2&3 levels of Lee Garden One, for T1 and/or T2. A number of existing Car Parking Spaces and Driveway will be temporarily suspended to facilitate the construction works. On the wall where the proposed opening is located, the following work sequence will be performed:

i. Insertion of pipe piles and grouting at the top of proposed tunnel, penetrating underneath the government land, to the other end of the tunnel;
ii. Excavation and removal of excavation material starts;
iii. Concrete lining applies to the tunnel inner surface as the excavation advances;
iv. Repeat above steps (ii) and (iii) until reaching the other end of the tunnel.

Some renderings provided by Gammon showing the work sequence for T1 are enclosed for your easy understanding.

In addition, our construction consultant has also estimated that the overall duration for T1 excavation works would be approximately 36 months.

We trust the above has demonstrated that the works will not render physical construction at street level and will not affect the usage of Hysan Avenue and/or Yun Ping Road during the above-mentioned tunnel construction.

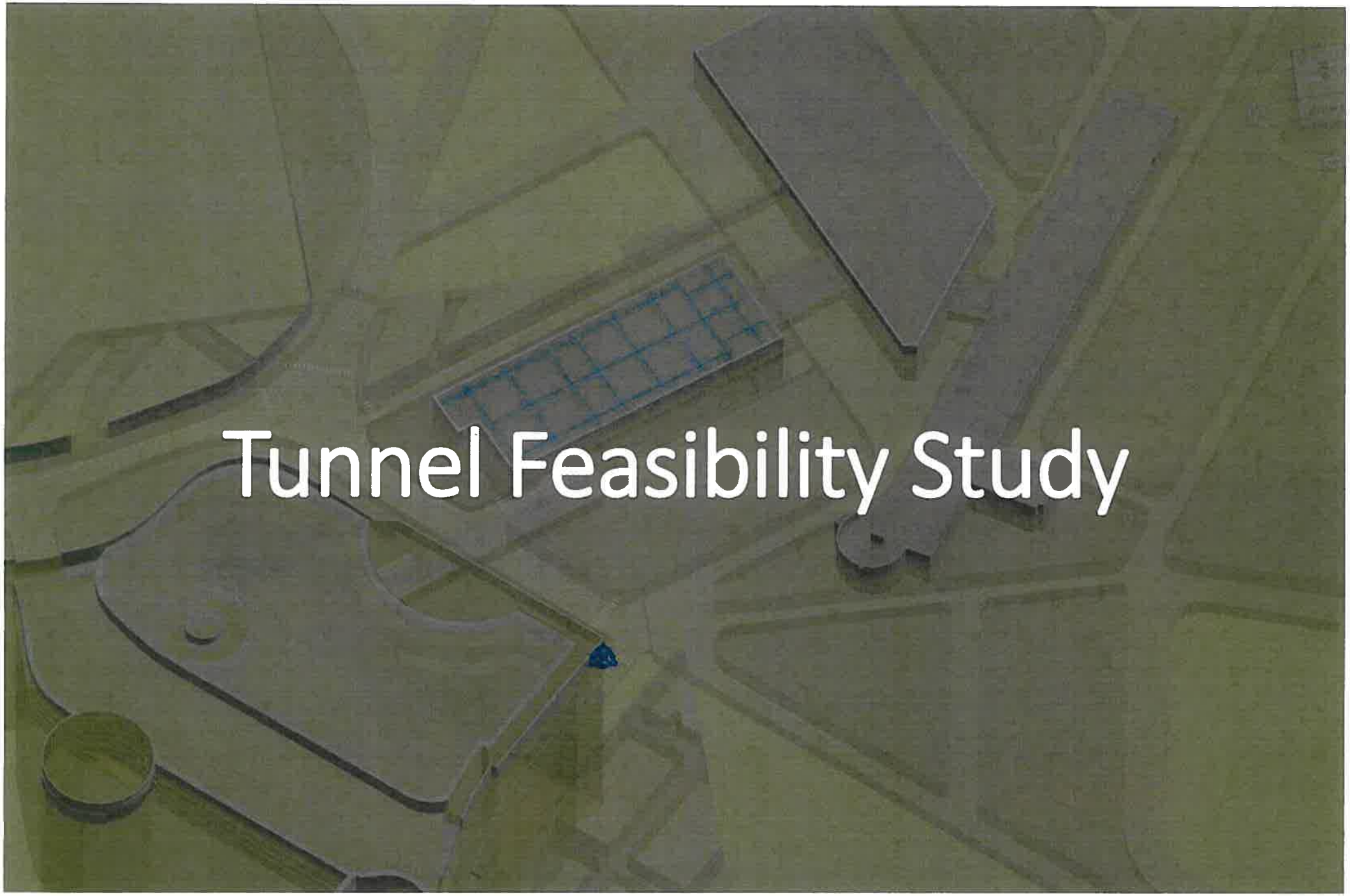
Should you have any inquiries, please feel free to contact our Stephen Deng at 2908-4176 or the undersigned at 2268-3845.

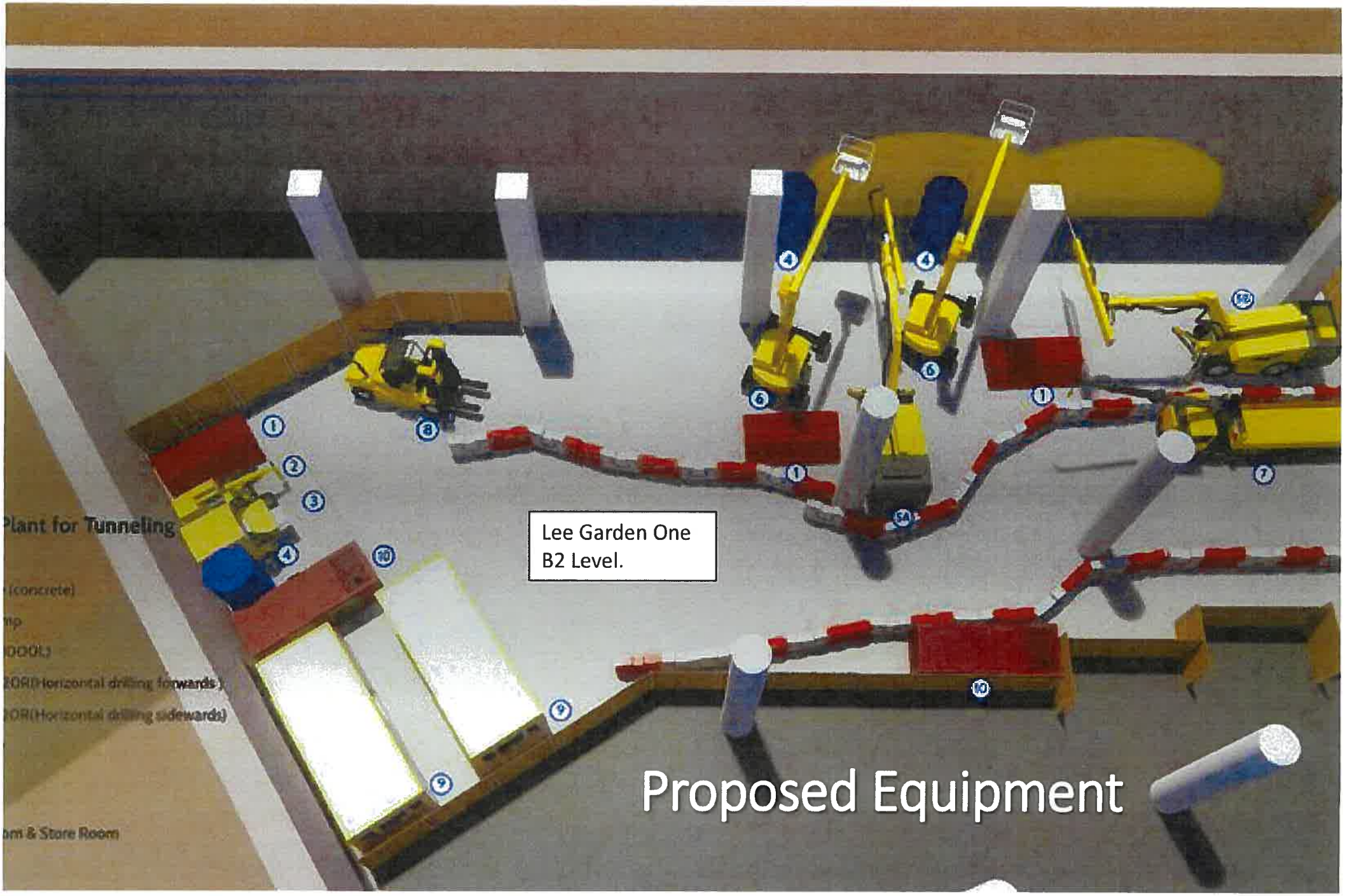
Yours faithfully

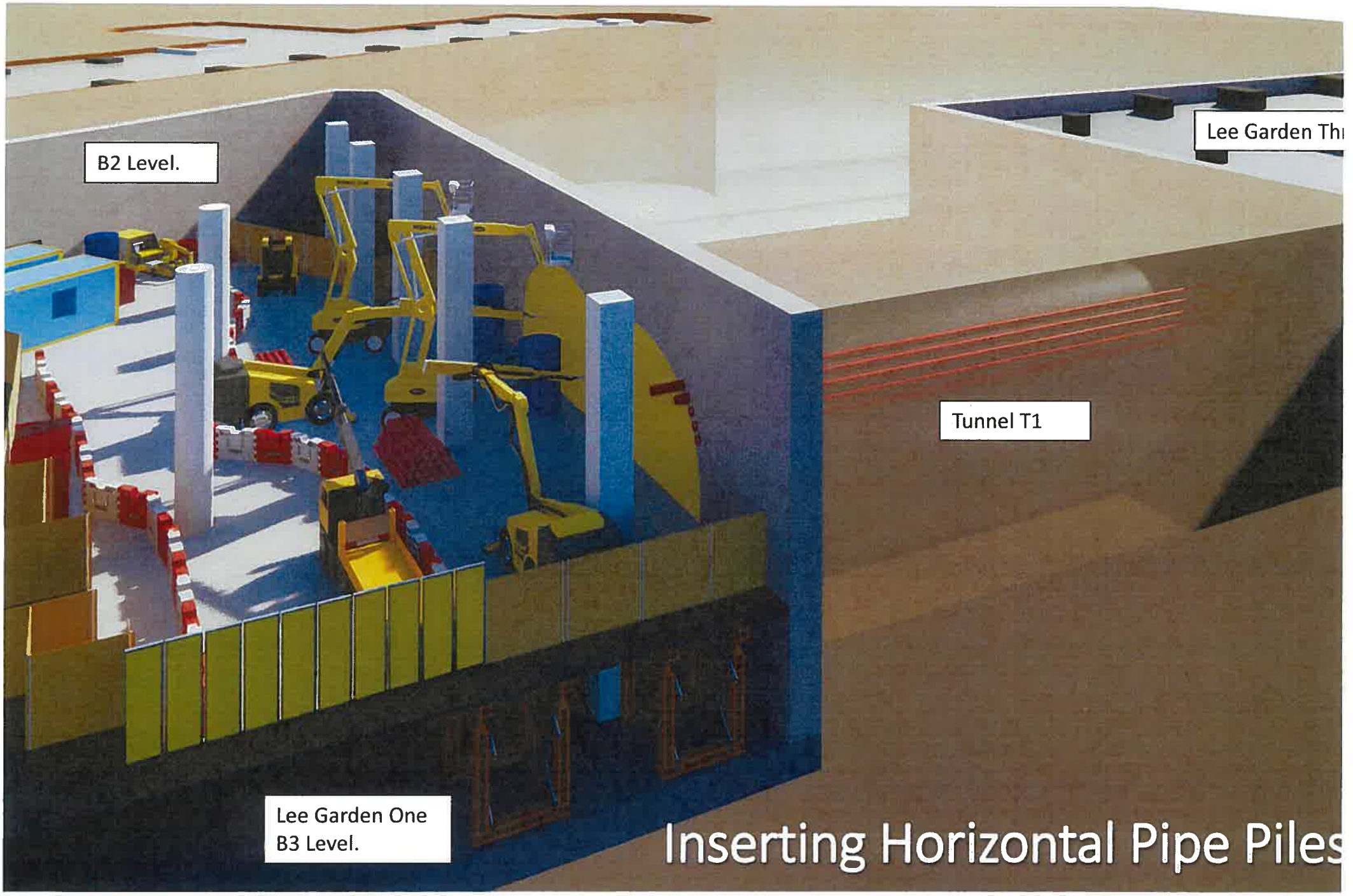
Johnson Po
Associate Director

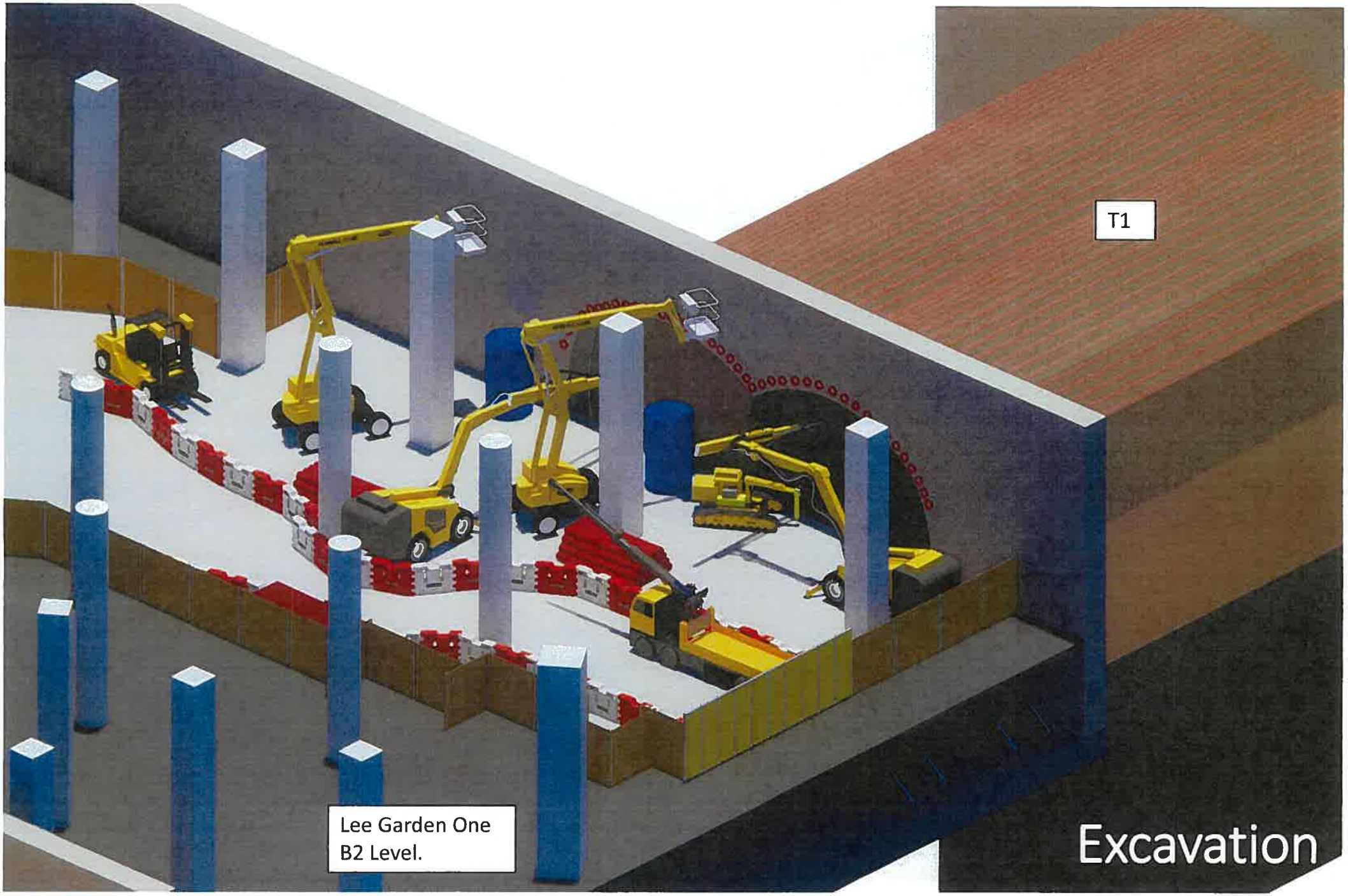
Encl.

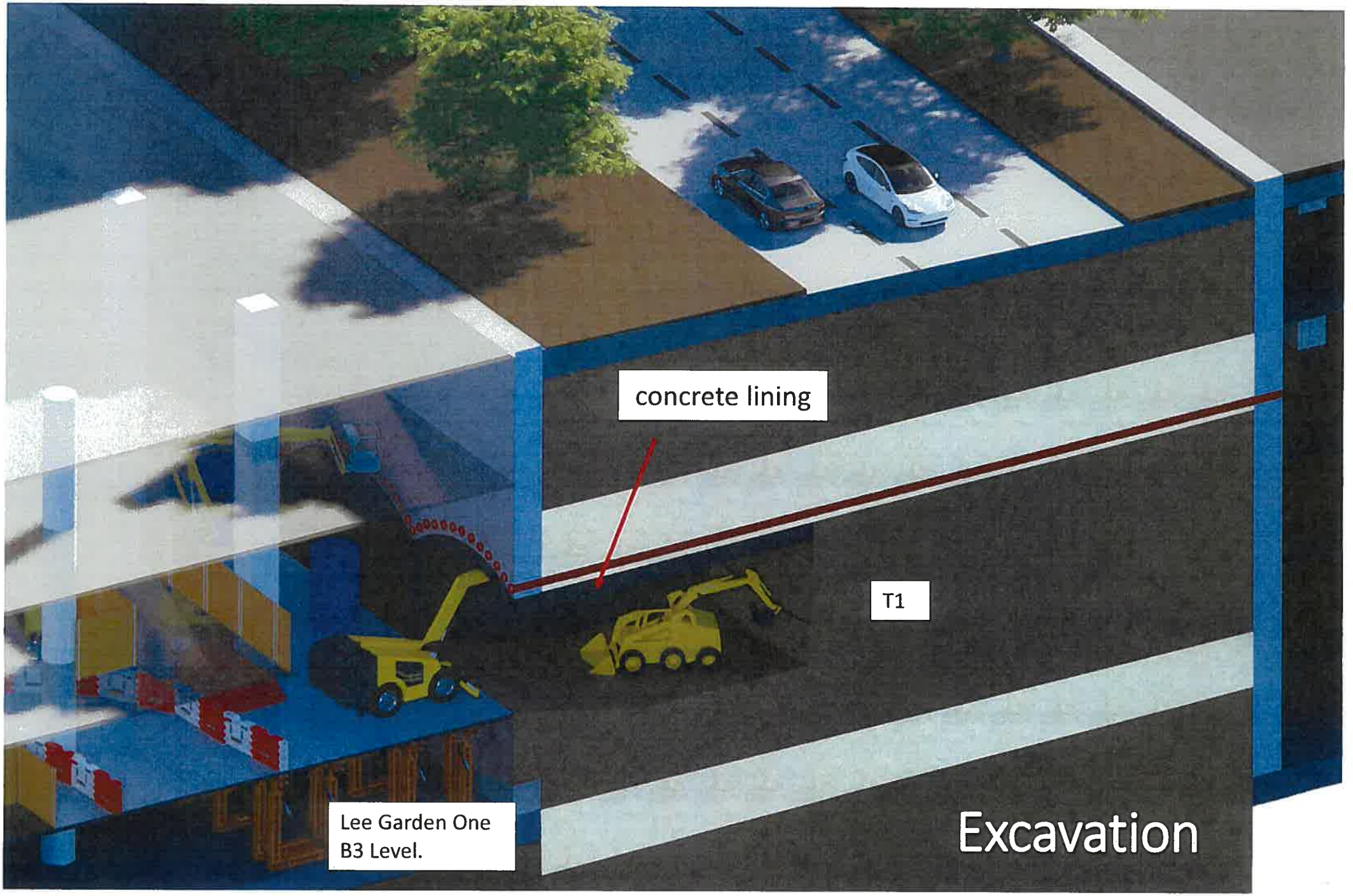
c.c. Hysan – Winnie Wong, Keith Yue, Francis Wong, Kenny Cheng
RLP – Anthony Cheung, Tommy Li, Cindy Ng
MVA – Rebecca Chan, Charles Lee


Tunnel Feasibility Study


Lee Garden One
B2 Level.
Proposed Equipment


B2 Level.
Lee Garden Thr
Tunnel T1
Lee Garden One
B3 Level.
Inserting Horizontal Pipe Piles


T1
Lee Garden One
B2 Level.
Excavation


concrete lining
T1
Lee Garden One
B3 Level.
Excavation


Tunnel Works Completed with Finishing and MEP
T1
T2
Lee Garden On

Appendix F2

Letter to DLO dated 8 December 2021

savills
第一太平戴維斯

District Lands Office / Hong Kong East
19/F, Southorn Centre
130 Hennessy Road
Wanchai, Hong Kong

Attentions: Mr. Arnold Chu

8 December 2021
Your Ref: (1) in LD DLO/HE 1067/47A MOD V
Our Ref: PS/2019/VPS/0306/L666/WAC/HIN/ENL/bs

Walter Cheung
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Room 1208,
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Taikoo Shing, Hong Kong

EA LICENCE: C-023750
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savills.com

BY FAX, BY EMAIL AND BY HAND
(FAX : 2834 4324)

Dear Sir,

RE: PROPOSED LEASE MODIFICATION FOR
(I) PROPOSED TUNNEL T1 LINKING LEE GARDEN ONE AND LEE GARDEN THREE; AND
(II) PROPOSED TUNNEL T2 LINKING LEE GARDEN ONE AND LEE GARDEN TWO
LEE GARDEN ONE – IL 457 S.L, IL 457 R.P., IL 29 S.DD, IL 29 S.L R.P., IL 29 S.MM
LEE GARDEN TWO – IL 29 S.G, IL 457 S.A, IL 457 S.O, IL 457 S.F, IL 457 S.C R.P., IL 457 S.C SS.1, IL 457 S.D R.P., IL 457 S.D SS. 1, IL 457 S.E R.P., IL 457 S.E SS.1, IL 457 S.E SS.2, IL 457 S.G R.P., IL 457 S.G SS.1, IL 457 S.H, IL 461 S.C SS.1, IL 461 S.C SS.2, IL 461 S.C SS.3 AND IL 461 S.C R.P., LEE GARDEN THREE – IL 29 S.J SS.1 R.P., IL 29 S.J SS.2 AND IL 29 S.J R.P., (COLLECTIVELY DESCRIBED BELOW AS THE "LOTS")

We refer to our tele-conversation with you last week and your email dated 6 December 2021.

In addition to our letter dated 23 November 2021, we would like to supplement you the advice from ARUP on whether the construction of T1/T2 may cause potential noise and nuisance to the adjoining public including road users, nearby residents and office/shop occupiers.

Please do not hesitate to contact the undersigned at 2840 4698 or our Mr. CH Kwok at 2842 4571 / Mr. Enoch Lee at 2840 4685 for any queries.

Yours faithfully,
For and on behalf of
Savills Valuation and Professional Services Limited

PP

Walter Cheung
MHKIS RPS (GP)
Director

Encl.
c.c. Client
AP
MVA
Arup

Our ref 229731-CON/JP/at/21-0006
Your ref PS/2019/VPS/0306/L546/WAC/HIN/ENL/bs

ARUP

By Email

Savills Valuation and Professional Services Limited
Room 1208, 111 King's Road
Taikoo Shing
Hong Kong

Attention: Mr Walter Cheung

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7 December 2021

Dear Sirs,

Proposed Construction Methodology and Tentative Programme for Tunnel T1 and T2 Connecting Lee Garden One to Lee Garden Three and Lee Garden One to Lee Garden Two Respectively – Further Clarifications

Further to our letter to you dated November 19, 2021 regarding the captioned proposal and our subsequent review with Gammon, we would like to supplement on whether the construction of T1/T2 may cause potential noise and nuisance to the adjoining public including road users, nearby residents and office/shop occupiers.

As stated in the aforesaid letter, there will be three stages of construction for Tunnel T1/2, namely pipe piles insertion, excavation and concrete lining installation.

Noise

As the proposed works will be carried out at B2/B3 level inside relevant building basements (which is about 9-12m below grade), it is envisaged that the construction noise generated would mainly be confined within the basement area and therefore the impact to the public above grade could be considered as minimal, if not nil.

Nuisance

Both insertion of pipe piles and excavation will cause vibration to the surrounding ground. However, due to the works will be carried out at such deep level below grade, most of the vibration will be attenuated as it transmits towards the surface ground. Therefore, the vibration to the public at grade level could also be considered as minimal or very minor.

For disposal of excavation material and delivery of concrete, anticipated nuisance such as dust and truck traffic will be significantly lesser than other typical building construction sites. In addition, excavation material will be transported off site during non-peak hours as necessary to alleviate the impact to nearby traffic.

In conclusion, the proposed excavation method would not cause adverse impact to the public above grade.

Should you have any inquiries, please feel free to contact our Stephen Deng at 2908-4176 or the undersigned at 2268-3845.

Yours faithfully

Johnson Po
Associate Director

c.c. Hysan – Winnie Wong, Keith Yue, Francis Wong, Kenny Cheng
RLP – Anthony Cheung, Tommy Li, Cindy Ng
MVA – Rebecca Chan, Charles Lee

Appendix F3

Ground Investigation final fieldwork report (Drillhole record)

Appendix C

Drillhole Record

DRiLTECH

DRiLTECH GEOTECHNICAL ENG. LTD.

DRILLHOLE RECORD

HOLE NO. **BH301**

SHEET 1 of 4

PROJECT **Ground Investigation Works for Tunnel Connection at Yun Ping Road and Hysan Avenue, Causeway Bay, Hong Kong**

METHOD **ROTARY**	CO-ORDINATES E **837112.63** N **815504.26**	WORKS ORDER NO. **DG-245**
MACHINE **SD04**		DATE **02.03.2018** to **10.03.2018**
FLUSHING MEDIUM **WATER**	ORIENTATION **VERTICAL**	GROUND LEVEL **+8.56** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
02.03.2018	SW							0.00	+8.56	0.00			Pink spotted and mottled white, clayey silty fine to coarse SAND with some subangular fine to medium gravel. (FILL)
								1 0.45					
								2 INSPECTION PIT 0.95					
								3 1.45	+7.06	1.50		V	Very weak to weak, pink spotted white and brown, completely decomposed medium grained GRANITE. (Clayey silty sandy fine to medium and occasional coarse GRAVEL)
								4 1.95	+6.56	2.00		V	Extremely weak, pink or very pale brown spotted white, completely decomposed medium grained GRANITE. (Clayey silty fine SAND with some fine gravel)
	SW 2.50m							5 2.50					
	PW		90					6 3.50					
							2,5 9,13,18,21 N=61	7 3.60					
								8 4.00					
								9 4.50					
			91					10 5.50					
							3,5 9,21,24,29 N=83	11 5.60					
								12 6.00					
								13 6.50					
			89					14 7.50					
02.03.2018	PW 7.60m	1.88 at 1800						15 7.60	+0.96	7.60			
03.03.2018	HW	2.94 at 0800					15,22 30,51,79,40/25mm 200blS/250mm	16 7.93				V	Very weak to weak, pink spotted white and brown, completely decomposed medium grained GRANITE. (Sandy fine to medium and some coarse GRAVEL)
								8.50					
			0					17 9.50					
								18 9.60	-1.44	10.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	L. Zhang
DATE	11.03.2018
CHECKED	C. Lun
DATE	21.03.2018

REMARKS

1. An inspection pit was excavated to 2.00m deep by hand tools.
2. Falling head permeability test was carried out from 8.80m to 10.30.
3. Constant head permeability test was carried out from 4.60m to 6.10m.
4. Packer (Water Absorption) tests were carried from 25.00m to 27.00m, 27.00m to 29.00m and 28.80m to 30.30m.
5. A standpipe was installed at 8.00m.
6. A piezometer was installed with tip at 18.00m.

DRILTECH GEOTECHNICAL ENG. LTD.

DRILLHOLE RECORD

HOLE NO. **BH301**

SHEET **2** of **4**

PROJECT **Ground Investigation Works for Tunnel Connection at Yun Ping Road and Hysan Avenue, Causeway Bay, Hong Kong**

METHOD **ROTARY**	CO-ORDINATES E **837112.63** N **815504.26**	WORKS ORDER NO. **DG-245**
MACHINE **SD04**		DATE **02.03.2018** to **10.03.2018**
FLUSHING MEDIUM **WATER**	ORIENTATION **VERTICAL**	GROUND LEVEL **+8.56** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			100					19 10.40–10.50	-1.94	10.50		V	As sheet 1 of 4.
		1.82 at 1800	59	36	44	NI		T2-101	-2.16	10.72		IV	Very weak to moderately weak, very pale brown, highly decomposed medium grained GRANITE. (Recovered as COBBLES and GRAVEL)
03.03.2018								10.94		10.97		III	
05.03.2018		3.06 at 0800	83	83	83	5.7		T2-101				II	Strong, light greyish pink spotted black and white, slightly decomposed medium grained GRANITE. (CORESTONES)
						NR				11.78		V	10.72m to 10.97m, 12.30m to 12.43m, 12.87m to 13.00m, 13.14m to 13.21m, 13.66m to 13.81m, 13.94m to 14.14m, 15.98m to 16.07m, 16.55m to 16.75m and 19.21m to 19.32m: Moderately strong, moderately decomposed.
12			80					20 11.95		11.95		IV	
								21 12.20–12.30		12.30		III	
			83	83	74	1.4		T2-101		12.43		II	
						NR		13.14		12.87		III	
13			100	100	100	1.7		T2-101		13.00		V	11.78m to 11.95m, 13.00m to 13.14m, 16.07m to 16.27m, 16.75m to 16.90m, 18.99m to 19.21m and 19.60m to 19.80m: No recovery, assumed to be completely decomposed.
								13.44		13.14		III	
										13.21		II	
										13.66		III	
14		2.05 at 1800	81	65	59	NI		T2-101		13.81		IV	11.95m to 12.30m: Weak, pink spotted white, highly decomposed. (Silty SAND wit some fine gravel)
						5.0				13.94		III	
05.03.2018						NR				14.14		V	
06.03.2018		3.37 at 0800					18,30 49,78,73/40mm 200bls/190mm	22 14.30		14.30		V	13.81m to 13.94m: Weak to moderately weak, pinkish spotted white and brown, highly decomposed. (COBBLES with some fine to coarse gravel)
								23 14.59		14.80		IV	
15			0					14.80					14.14m to 14.80m: Extremely weak, yellowish brown spotted white and pink, completely decomposed. (Slightly silty fine to coarse SAND with some fine gravel)
								24 15.22–15.32		15.32		II	
			79	79	75	1.7		T2-101		15.98		III	14.80m to 15.32m: Weak, pink spotted white and brown, highly decomposed. (Slightly clayey silty sandy fine to medium and occasional GRAVEL)
16						NR		16.27		16.07		V	
										16.27		II	
		1.91 at 1800	76	70	67	8.3		T2-101		16.55		III	
06.03.2018						NR		25 16.90		16.75		V	
07.03.2018		3.42 at 0800					9,28 39,57,75,29/15mm 200bls/240mm	26 17.17		16.90		IV	16.90m to 18.68m: Weak, pink spotted white and brown, highly decomposed. (Slightly clayey silty sandy fine to medium and occasional GRAVEL)
								27 17.40					
18			95										
								28 18.40					
							50/20mm 200/50mm 200bls/50mm	29 18.50–18.52–18.68		18.68		II	
			58	58	58	0.0		T2-101		18.99		V	
19						NR		19.21		19.21		III	
										19.32		II	
		2.02 at 1800	66	59	54	5.1		T2-101		19.60		V	
						NR				19.80		IV	
07.03.2018							50/50mm 200/50mm	30 19.85–19.96	-11.44	19.96			
08.03.2018													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	**L. Zhang**
DATE	**11.03.2018**
CHECKED	**C. Lun**
DATE	**21.03.2018**

REMARKS

DRiLTECH
DRILTECH GEOTECHNICAL ENG. LTD.

DRILLHOLE RECORD

HOLE NO. **BH301**

SHEET **3** of **4**

PROJECT **Ground Investigation Works for Tunnel Connection at Yun Ping Road and Hysan Avenue, Causeway Bay, Hong Kong**

METHOD **ROTARY**

MACHINE **SD04**

FLUSHING MEDIUM **WATER**

CO-ORDINATES
E **837112.63**
N **815504.26**

ORIENTATION **VERTICAL**

WORKS ORDER NO. **DG-245**

DATE **02.03.2018** to **10.03.2018**

GROUND LEVEL **+8.56** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
21 08.03.2018 09.03.2018		3.25 at 0800 2.06 at 1800 3.41 at 0800	88	88	88	1.7 NR	200bls/50mm	T2-101		20.38 20.55 20.69 20.86		II III V III II	19.80m to 19.96m: Weak, pink stained brown, highly decomposed. (Sandy fine to coarse gravel) As sheet 2 of 4. 20.38m to 20.55m, 20.69m to 20.86m, 22.03m to 22.26m and 23.20m to 23.36m: Moderately strong, moderately decomposed.
22			93	92	92	1.0		T2-101		22.03 22.26 22.65		III II	20.55m to 20.69m, 22.65m to 23.00m and 23.36m to 23.50m: No recovery, assumed to be completely decomposed. 23.00m to 23.20m: Weak, pink spotted white and light grey, highly decomposed. (Slightly sandy fine to coarse GRAVEL)
23			34	34	34	NR	150/15mm 200/45mm 200bls/45mm	T2-101		23.00 23.20 23.36		V IV III	
	HW 23.50m		53	53	53	6.3 NR		T2-101	-14.94	23.50		V	
24			94	94	91	2.8		T2-101				II	Strong, light greyish pink white and black, slightly decomposed medium grained GRANITE. Joints are medium to widely, occasional very closely to closely spaced, rough planar, iron and manganese oxide stained, dipping at 5° to 15°, 45° to 55° and 65° to 75°.
25			91	87	87			T2-101		25.28		III	
26			93	82	82	11.1		T2-101		25.46		II	25.28m to 25.31m: Weak, highly decomposed along a subvertical joint dipping at 55°. 25.28m to 25.46m: Moderately strong, moderately decomposed.
27			88	85	81	1.4		T2-101					
28			100	100	90			T2-101		27.50 27.66		III II	27.50m to 27.66m: Moderately strong, moderately decomposed.
09.03.2018 10.03.2018 29		2.01 at 1800 3.60 at 0800	100	98	93	≥20 1.0		T2-101					
30			100	100	100			T2-101	-21.44	29.62 30.00			
			100	87	87								

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LOGGED **L. Zhang**

DATE **11.03.2018**

CHECKED **C. Lun**

DATE **21.03.2018**

REMARKS

DRiLTECH
DRILTECH GEOTECHNICAL ENG. LTD.

DRILLHOLE RECORD

HOLE NO. **BH301**

SHEET **4** of **4**

PROJECT **Ground Investigation Works for Tunnel Connection at Yun Ping Road and Hysan Avenue, Causeway Bay, Hong Kong**

METHOD **ROTARY**

MACHINE **SD04**

FLUSHING MEDIUM **WATER**

CO-ORDINATES
E **837112.63**
N **815504.26**

ORIENTATION **VERTICAL**

WORKS ORDER NO. **DG-245**

DATE **02.03.2018** to **10.03.2018**

GROUND LEVEL **+8.56** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
10.03.2018						7.4		T2-101	-21.74	30.30		II	As sheet 3 of 4.
													End of hole at 30.30 m.

31 32 33 34 35 36 37 38 39 40

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LOGGED **L. Zhang**

DATE **11.03.2018**

CHECKED **C. Lun**

DATE **21.03.2018**

REMARKS