For discussion **PWSC(2016-17)45**
on 15 February 2017

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 705 – CIVIL
Civil Engineering – Land development
758CL – Site formation and associated infrastructural works for development of columbarium, crematorium and related facilities at Sandy Ridge Cemetery

Members are invited to recommend to the Finance Committee –

(a) the upgrading of part of **758CL**, entitled "Site formation and associated infrastructural works for development of columbarium at Sandy Ridge Cemetery" to Category A at an estimated cost of $2,566.4 million in money-of-the-day prices; and

(b) the retention of the remainder of **758CL** in Category B.

PROBLEM

We need to carry out site formation works, associated road works and ancillary works for the proposed columbarium development at the Sandy Ridge Cemetery to meet the demand for public niches.

/ **PROPOSAL** …..

PROPOSAL

2. The Director of Civil Engineering and Development, with the support of the Secretary for Food and Health, proposes to upgrade part of **758CL** to Category A, at an estimated cost of $2,566.4 million in money-of-the-day (MOD) prices for the site formation and associated infrastructural works (the Project) for the proposed columbarium development at the Sandy Ridge Cemetery.

PROJECT SCOPE AND NATURE

3. The part of **758CL** which we propose to upgrade to Category A comprises –

(a) site formation of about 1.8 hectares of land at the Sandy Ridge Cemetery for development of columbarium and construction of a pick-up and drop-off area;

(b) widening of a section of the existing Sha Ling Road of about 800 metres (m) long to a 7.3-m-wide carriageway with footpaths;

(c) construction of a pick-up and drop-off point near the junction of Sha Ling Road and Man Kam To Road;

(d) widening of a section of the existing Lin Ma Hang Road of about 1.4 kilometres long to a 7.3-m-wide carriageway with footpaths; and

(e) construction of associated infrastructural works, including road works, waterworks, drainage and sewerage works, geotechnical works, landscaping works and environmental mitigation measures, and other ancillary works.

4. Layout plans of the proposed site formation and associated infrastructural works for the development of columbarium at the Sandy Ridge Cemetery are at Enclosures 1 to 5. Layout plans showing the tentative layout of columbarium buildings are at Enclosures 6 to 7.

5. Subject to funding approval of the Finance Committee (FC), we plan to commence the site formation and associated infrastructural works in the second quarter of 2017 for completion in the fourth quarter of 2020. To achieve this programme, we have invited tenders for one of the two contracts for the Project in January 2017 and will invite tenders for the other contract in the third quarter of 2017, but we will only award the contracts after the FC has approved the funding proposal.

6. We will retain the remainder of **758CL**, which covers the site formation and associated infrastructural works for development of related facilities (including the crematorium) at the Sandy Ridge Cemetery, in Category B. Funding for the remainder of **758CL** will be sought to dovetail with the implementation programme of the development.

7. For the building works on provision of the columbarium as well as related facilities in the Sandy Ridge Cemetery, separate funding applications will be submitted in due course.

JUSTIFICATION

8. With a growing and ageing population, the number of deaths and cremations in Hong Kong has been rising gradually. The estimated number of deaths and cremations in 2016 and 2035, as compared with the annual average number of deaths and cremations in the past few decades are set out below –

	Annual average	
	Number of deaths	**Number of cremations**
1975 to 1994 (actual)	26 000	14 000
1995 to 2015 (actual)	38 000	32 000
2016 (projection)	48 300	44 400
2035 (projection)	68 500	65 100

9. To meet the demand for public niches, the Government announced in July 2010 a policy under which the 18 districts would collectively share the responsibility of developing district-based columbarium facilities. The Government has also identified a total of 24 potential sites in the 18 districts for columbarium development. The Government stressed that whether the sites could eventually be used for developing columbarium facilities would depend on the results of traffic impact assessment (TIA), engineering feasibility study (if applicable) and consultation with the District Councils concerned.

/ 10. …..

10. The Sandy Ridge Cemetery in the North District is one of the 24 sites. We plan to develop a cluster of columbarium and related facilities at the Sandy Ridge Cemetery to provide one-stop funeral services for the public. The columbarium development at the Sandy Ridge Cemetery, with a total capacity of about 200 000 niches, will be completed and allocated by phases. The whole cluster will be located within the boundary of the existing Sandy Ridge Cemetery which is currently used for coffin and urn burial.

11. A TIA has been completed and revealed that a section of the existing Sha Ling Road and the existing Lin Ma Hang Road would require widening to facilitate safe operations of specially arranged buses during festive periods. Hence, we propose widening these sections of Sha Ling Road and Lin Ma Hang Road to a 7.3-m-wide carriageway (please refer to the Traffic Implications section in paragraph 30 below).

12. Before proceeding with the columbarium development, it is necessary to carry out the Project.

FINANCIAL IMPLICATIONS

13. We estimate the capital cost of the Project to be $2,566.4 million in MOD prices (please see paragraph 15 below), broken down as follows –

			$ million
(a)	Site formation and geotechnical works		1,149.0
(b)	Road works		252.5
(c)	Drainage, sewerage, landscaping works and waterworks		319.6
(d)	Environmental mitigation measures		20.5
(e)	Consultants' fees for		18.5
	(i) contract administration	7.5	
	(ii) management of resident site staff (RSS)	6.6	

/ **$ million** …..

			$ million	
	(iii)	environmental monitoring and audit programme	4.4	
(f)	Remuneration of RSS		165.4	
(g)	Contingencies		188.4	
		Sub-total	2,113.9	(in September 2016 prices)
(h)	Provision for price adjustment		452.5	
		Total	2,566.4	(in MOD prices)

14. In view of insufficient in-house resources, we propose to engage consultants to undertake the contract administration and site supervision for the Project. A breakdown of the estimates for the consultants' fees and RSS costs by man-months is at Enclosure 8.

15. Subject to funding approval, we will phase the expenditure as follows –

Year	**$ million (Sept 2016)**	**Price adjustment factor**	**$ million (MOD)**
2017 – 2018	127.8	1.05750	135.1
2018 – 2019	382.9	1.12095	429.2
2019 – 2020	701.2	1.18821	833.2
2020 – 2021	505.8	1.25950	637.1
2021 – 2022	297.3	1.32562	394.1
2022 – 2023	98.9	1.39190	137.7
	2,113.9		2,566.4

/ 16. …..

16. We have derived the MOD estimates on the basis of the Government's latest set of assumptions on the trend rate of change in the prices of public sector building and construction output for the period from 2017 to 2023. Subject to funding approval, we will deliver the proposed works under two contracts based on the New Engineering Contract (NEC) form[1] with provision for price adjustments.

17. We estimate the annual recurrent expenditure arising from the proposed works to be about $8.2 million.

PUBLIC CONSULTATION

18. We consulted the North District Council (NDC) on 9 October 2014. The NDC had no objection to **758CL**.

19. We gazetted two road schemes (i.e. the Sha Ling Road scheme and the Lin Ma Hang Road scheme) and a sewerage scheme under the Roads (Works, Use and Compensation) Ordinance (Cap. 370) and the Roads (Works, Use and Compensation) Ordinance as applied by section 26 of the Water Pollution Control (Sewerage) Regulation (Cap. 358AL) respectively on 27 February 2015.

20. As regards the gazettals, we received 508 objections to each of the road schemes and 504 objections to the sewerage scheme. Seven objectors withdrew their objections unconditionally to each of the road and sewerage schemes. The remaining objectors expressed concerns mainly on traffic congestion at Man Kam To Road and requested for road widening at Man Kam To Road to provide an additional southbound traffic lane. They also requested for provision of cycle tracks along Man Kam To Road and Lin Ma Hang Road. We explained that there would be sufficient traffic capacity at Man Kam To Road after the commissioning of all the proposed columbarium and related facilities and there is no need to widen Man Kam To Road. We also explained that the proposed columbarium and related facilities would not attract increased traffic of bicycles, and therefore cycle tracks along Man Kam To Road and Lin Ma Hang Road are not included in the Project. Notwithstanding our explanations, the remaining objections maintained unresolved. The unresolved objections and our explanations were submitted to the Chief Executive in Council for consideration.

/ 21. …..

[1] NEC is a suite of contracts developed by the Institution of Civil Engineers, United Kingdom. It is a contract form that emphasises cooperation, mutual trust and collaborative risk management between contracting parties.

21. The Chief Executive in Council authorised the Lin Ma Hang Road scheme on 1 March 2016, and the Sha Ling Road scheme and the sewerage scheme on 31 May 2016, without modification.

22. We consulted the Advisory Committee on the Appearance of Bridges and Associated Structures (ACABAS)[2] on the aesthetic design of the noise barriers and retaining walls proposed in the Project. The ACABAS accepted the proposed aesthetic design.

23. We consulted the Legislative Council Panel on Food Safety and Environmental Hygiene on 19 December 2016. Members supported the submission of the funding proposal to the Public Works Subcommittee (PWSC).

ENVIRONMENTAL IMPLICATIONS

24. **758CL** is a designated project under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and an environmental permit is required for the construction and operation of **758CL**. In August 2016, the EIA report for **758CL** was approved under the EIA Ordinance. The EIA report concluded that the environmental impact of **758CL** can be controlled to within the criteria under the EIA Ordinance and the Technical Memorandum on the EIA Process. We shall implement the environmental mitigation measures recommended in the approved EIA report. The key measures include noise barriers along a section of Sha Ling Road, noise barriers and low noise road surfacing along sections of Lin Ma Hang Road, tree transplantations, etc. We have included in the project estimate the cost of implementing the environmental mitigation measures.

/ 25. …..

[2] ACABAS comprises representatives of the Hong Kong Institute of Architects, Hong Kong Institute of Engineers, Hong Kong Institute of Planners, academic institutions, Architectural Services Department, Highways Department, Housing Department, and Civil Engineering and Development Department. It is responsible for vetting the design of bridges and other structures associated with the highway system, including noise barriers and enclosures, from the aesthetic and visual impact points of view.

25. At planning and design stages, we have considered design alignment and construction sequence so as to reduce generation of construction waste where possible. In addition, we will require the contractors to reuse inert construction waste (e.g. excavated materials) on site or in other suitable construction sites as far as possible, in order to minimise the disposal of inert construction waste to public fill reception facilities[3]. We will encourage the contractors to maximise the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further reduce generation of construction waste.

26. At construction stage, we will require the contractors to submit for approval a plan setting out the waste management measures, which will include appropriate mitigation measures to avoid, reduce, reuse and recycle inert construction waste. We will ensure that the day-to-day operations on site comply with the approved plan. We will require the contractors to separate the inert portion from the non-inert construction waste on site for disposal at appropriate facilities. We will control the disposal of inert construction waste and non-inert construction waste to public fill reception facilities and landfills respectively through a trip-ticket system.

27. We estimate that the proposed works will generate in total 1.25 million tonnes of construction waste. Of these, we will reuse 0.59 million tonnes (47%) of inert construction waste on site and deliver 0.65 million tonnes (52%) of inert construction waste to concurrent projects for subsequent reuse. We will dispose of the remaining 0.01 million tonnes (1%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at landfill sites is estimated to be about $2.0 million for the Project (the amount is based on a unit charge rate of $200 per tonne for disposal at landfills as stipulated in the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)).

HERITAGE IMPLICATIONS

28. The proposed works will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites and buildings, sites of archaeological interest and government historic sites identified by the Antiquities and Monuments Office.

/ LAND …..

[3] Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N). Disposal of inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

LAND ACQUISITION

29. Land resumption of about 1 289 square metres (m^2) of private land and clearance of about 248 444 m^2 of government land are required. The cost of land resumption and clearance, estimated at $8.2 million, will be charged to **Head 701 – Land Acquisition**. A breakdown of the land resumption and clearance cost is at Enclosure 9.

TRAFFIC IMPLICATIONS

30. The completed TIA study concluded that the additional vehicular traffic and pedestrian volume arising from operation of the columbarium and related facilities within the Sandy Ridge Cemetery during the Ching Ming and Chung Yeung festive periods should be manageable with the implementation of the proposed road works and special traffic and transport measures, such as temporary road closure and provision of specially arranged bus service. To facilitate the safe operation of the specially arranged buses during festive periods, a section of the existing Sha Ling Road and the existing Lin Ma Hang Road would need to be widened. After the commissioning of the columbarium facilities, the Food and Environmental Hygiene Department will work closely with the Hong Kong Police Force and other relevant government departments to ensure that effective traffic and crowd control measures are implemented during the grave sweeping seasons.

BACKGROUND INFORMATION

31. We upgraded **758CL** to Category B in September 2012.

32. In January 2013, PWSC Members considered and recommended upgrading of part of **758CL** to Category A as **762CL** for engaging consultants to undertake detailed design and site investigation works of the site formation and associated infrastructural works for the proposed columbarium and crematorium developments at the Sandy Ridge Cemetery. Following consideration by FC in February 2013, **758CL** was part-upgraded to Category A as **762CL** at an estimated cost of $66.4 million in MOD prices. The detailed design and site investigation works then commenced in mid-2013.

/ 33. …..

33. Of the 1 333 trees within the boundary of the Project, 531 trees will be preserved. The Project will involve removal of 802 trees, including 792 trees to be felled and 10 trees to be transplanted. Amongst these trees, two important trees[4] which are not registered Old and Valuable Trees will be affected by the Project. Details of these two important trees affected are provided at Enclosure 10. We will incorporate planting proposals as part of the Project, including the planting of 119 trees, 10 749 whips, 247 735 shrubs and 33 419 m^2 of grassed area.

34. We estimate that the proposed works will create 860 jobs (700 for labourers and another 160 for professional or technical staff) providing a total employment of 29 000 man-months.

Food and Health Bureau
February 2017

[4] "Important trees" refers to trees in the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria:

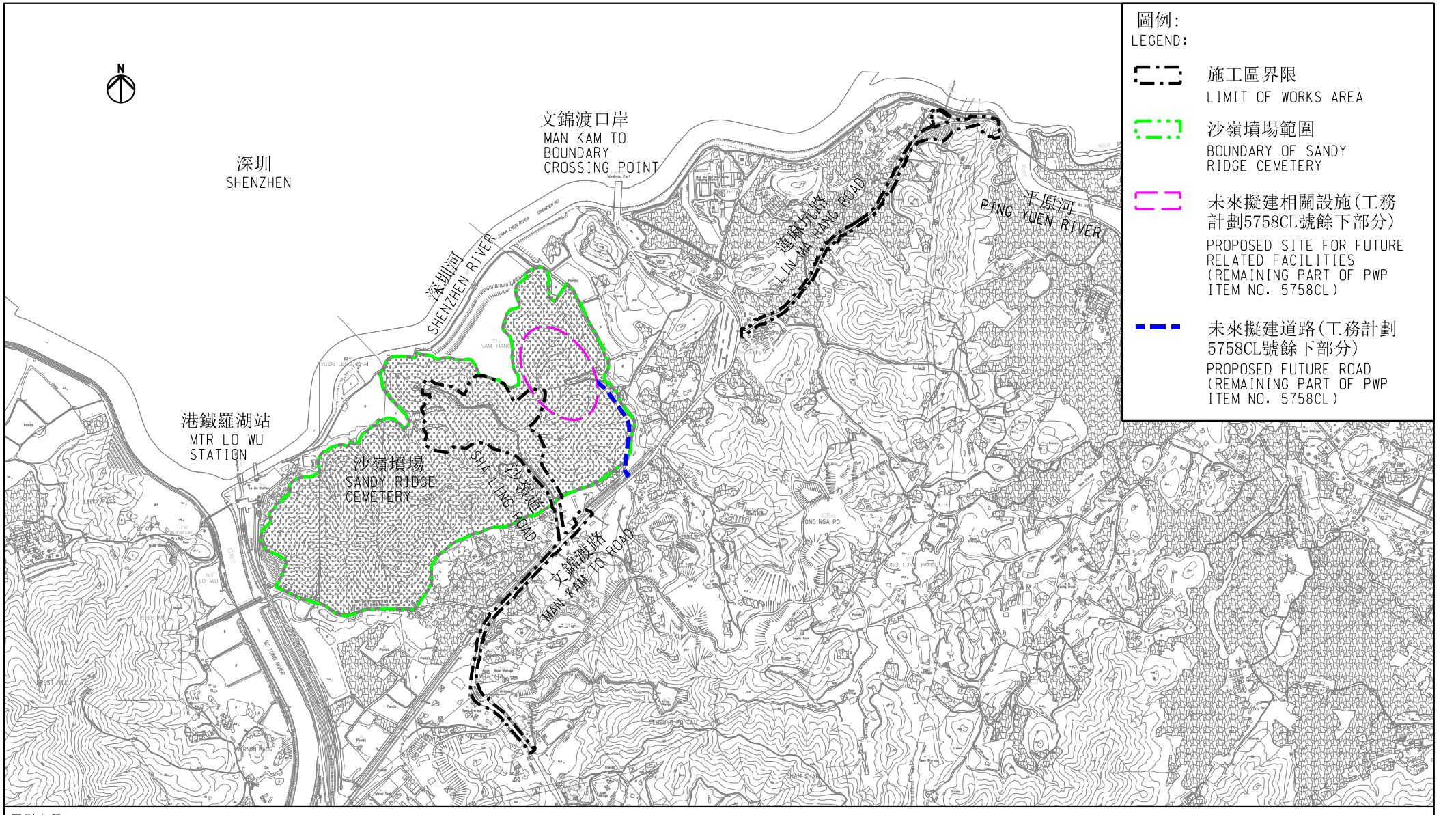
(a) trees of 100 years old or above;

(b) trees of cultural, historical or memorable significance e.g. Fung Shui trees, trees as landmark of monastery or heritage monument, and trees in memory of an important person or event;

(c) trees of precious or rare species;

(d) trees of outstanding forms (taking account of overall tree sizes, shape and any special features) e.g. trees with curtain like aerial roots, trees growing in unusual habitat; or

(e) trees with a trunk diameter equal to or exceeding 1.0 m (measured at 1.3 m above ground level), or with a height or canopy spread equal to or exceeding 25 m.



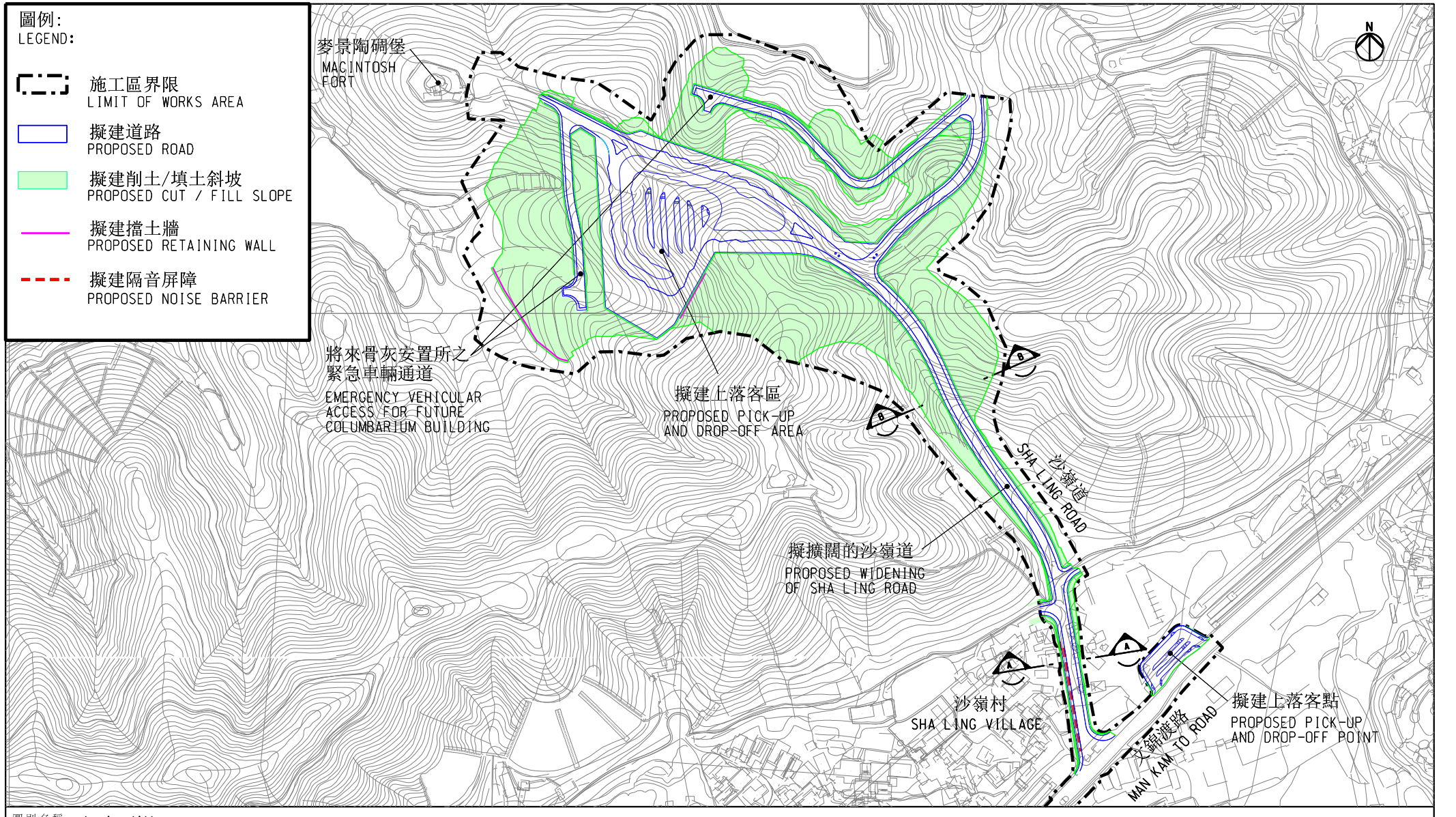
圖則名稱 drawing title

工務計劃第5758CL號(部分)
沙嶺墳場興建骨灰安置所的土地平整及相關基礎設施工程 - 位置圖
PWP ITEM NO. 5758CL(PART)
SITE FORMATION AND ASSOCIATED INFRASTRUCTURAL WORKS FOR DEVELOPMENT
OF COLUMBARIUM AT SANDY RIDGE CEMETERY - LOCATION PLAN

J:*231448*ARUP*Civil*Sketch*231448_SK241.dgn

2/3/2017

A4 210 x 297



圖則名稱 drawing title

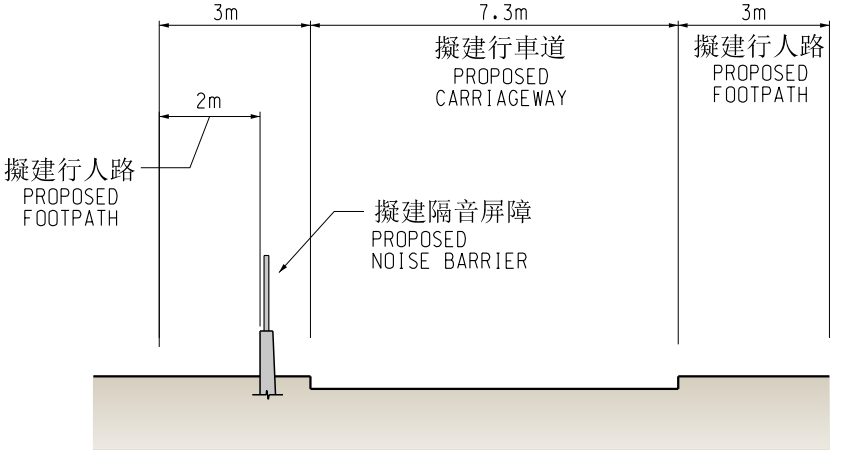
骨灰安置所的土地平整及擴闊沙嶺道

SITE FORMATION AND WIDENING OF SHA LING ROAD FOR DEVELOPMENT OF COLUMBARIUM

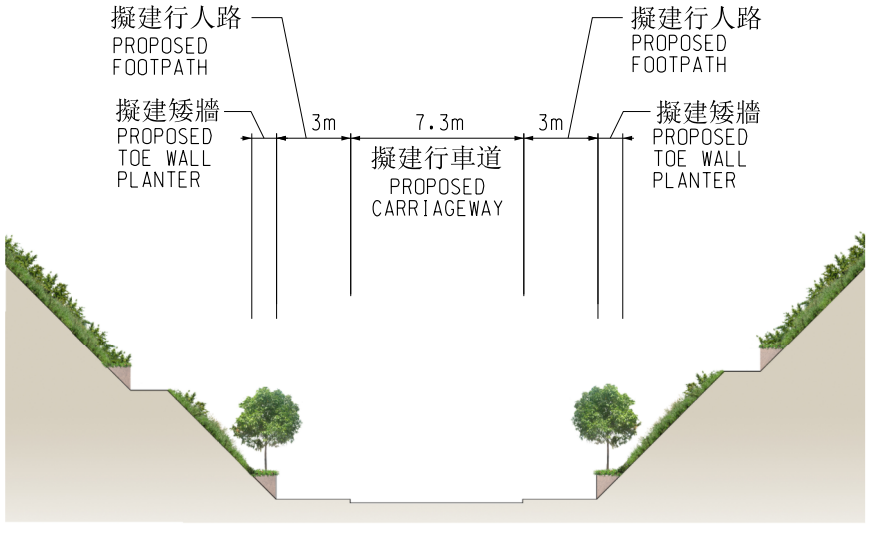
J:*231448*ARUP*Civil*Sketch*231448_SK242.dgn

2/7/2017

A4 210 x 297



剖面圖 A - A
SECTION A - A



剖面圖 B - B
SECTION B - B

圖則名稱 drawing title

骨灰安置所的土地平整及擴闊沙嶺道 - 剖面圖

SITE FORMATION AND WIDENING OF SHA LING ROAD FOR DEVELOPMENT OF COLUMBARIUM - SECTIONS

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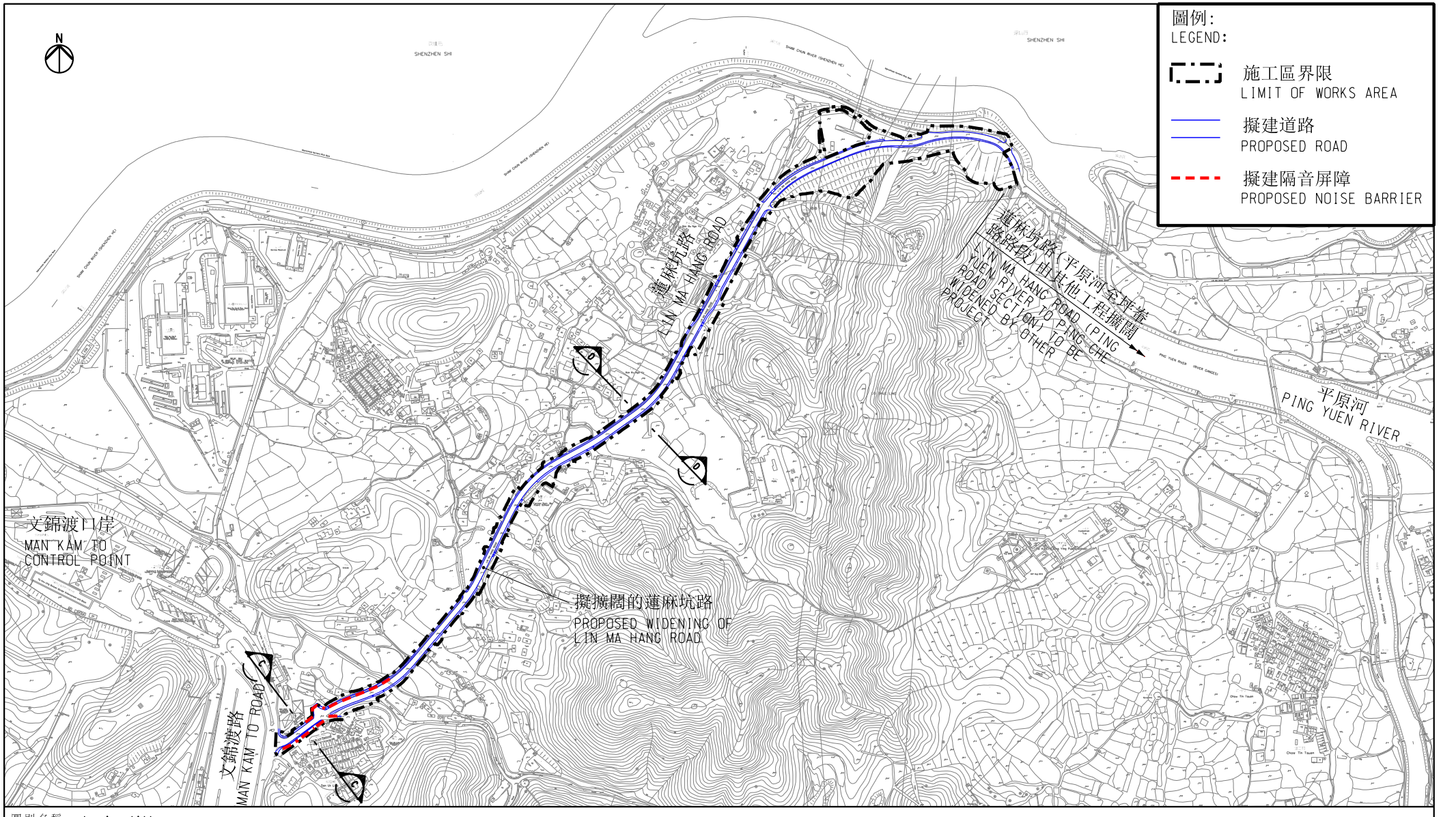
2/1/2017

A4 210 x 297



圖則名稱 drawing title

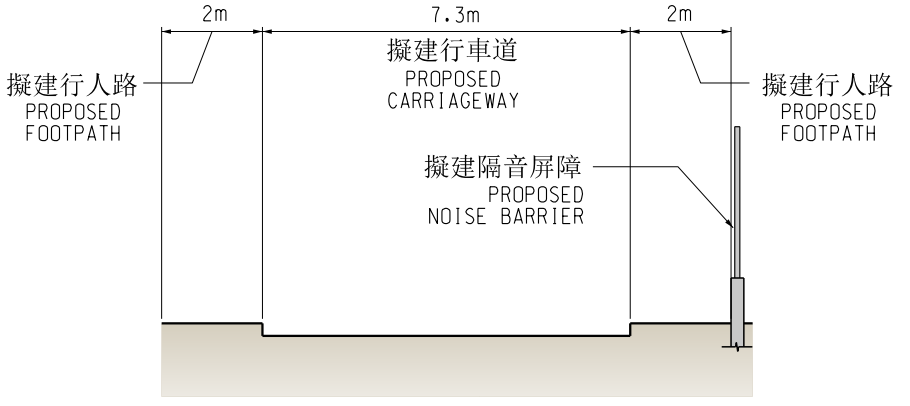
擴闊部分蓮麻坑路

WIDENING PART OF LIN MA HANG ROAD

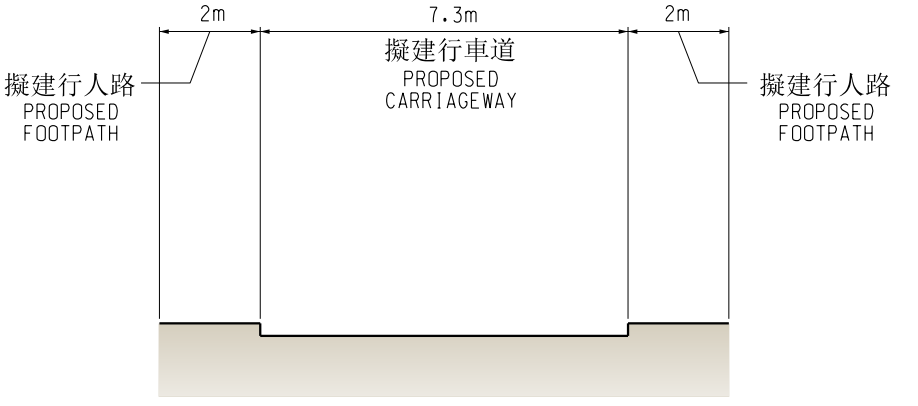
J:*231448*ARUP*Civil*Sketch*231448_SK254.dgn

2/1/2017

A4 210 x 297



剖面圖 C - C
SECTION C - C



剖面圖 D - D
SECTION D - D

圖則名稱 drawing title

擴闊部分蓮麻坑路 - 剖面圖

WIDENING PART OF LIN MA HANG ROAD - SECTIONS

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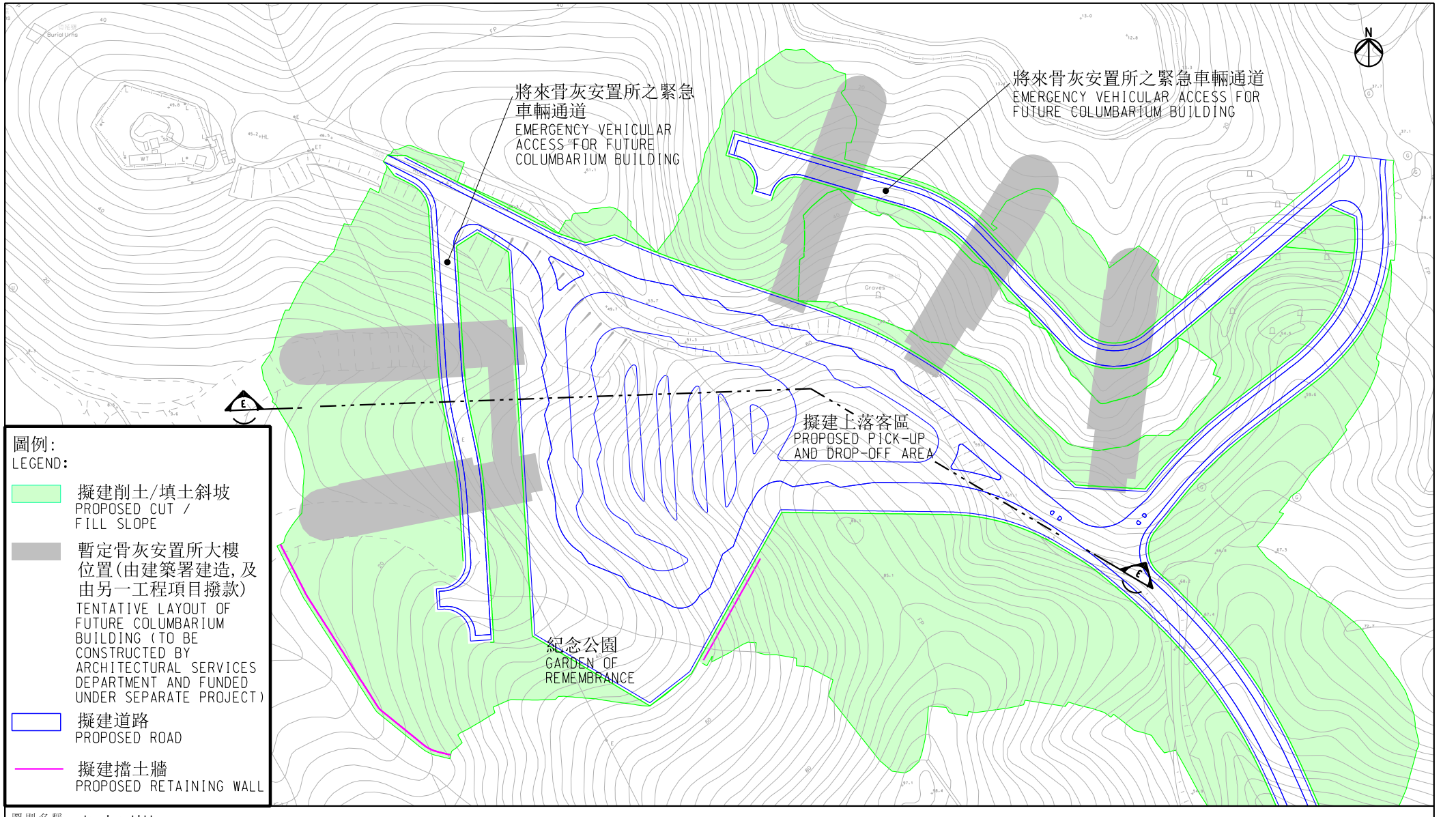
2/1/2017

A4 210 x 297



圖則名稱 drawing title

暫定沙嶺墳場骨灰安置所位置圖(由建築署提供)

TENTATIVE LAYOUT OF COLUMBARIUM AT SANDY RIDGE CEMETERY (PROVIDED BY ARCHITECTURAL SERVICES DEPARTMENT)

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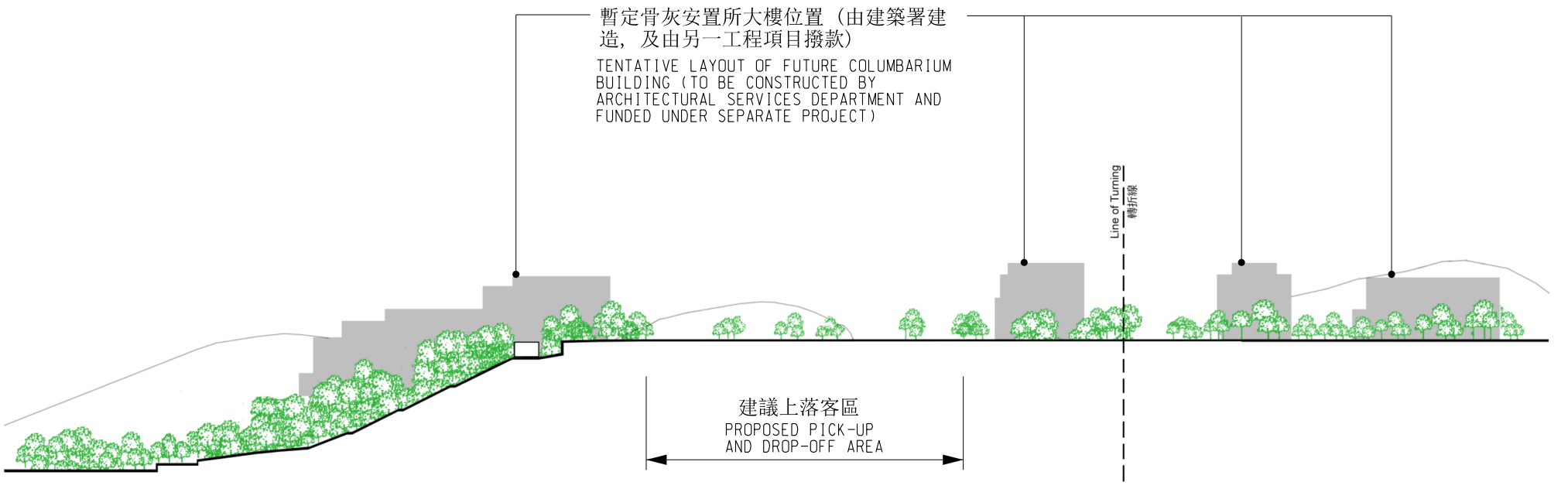
2/7/2017

A4 210 x 297



圖則名稱　drawing title

暫定沙嶺墳場骨灰安置所位置圖(由建築署提供) - 剖面圖 E - E

TENTATIVE LAYOUT OF COLUMBARIUM AT SANDY RIDGE CEMETERY (PROVIDED BY ARCHITECTURAL SERVICES DEPARTMENT) - SECTION E - E

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2/7/2017

A4 210 x 297

758CL (Part) – Site formation and associated infrastructural works for development of columbarium at Sandy Ridge Cemetery

Breakdown of the estimates for consultants' fees and resident site staff costs (in September 2016 prices)

			Estimated man-months	Average MPS* salary point	Multiplier (Note 1)	Estimated fees ($ million)
(a)	Consultants' fees for contract administration (Note 2)	Professional	--	--	--	6.0
		Technical	--	--	--	1.5
					Sub-total	7.5
(b)	Consultants' fees for environmental monitoring and audit programme (Note 3)	Professional	26	38	2.0	4.0
		Technical	8	14	2.0	0.4
					Sub-total	4.4
(c)	Resident site staff (RSS) costs (Note 4)	Professional	561	38	1.6	69.4
		Technical	2 401	14	1.6	102.6
					Sub-total	172.0
	Comprising -					
	(i) Consultants' fees for management of RSS				6.6	
	(ii) Remuneration of RSS				165.4	
					Total	183.9

* MPS = Master Pay Scale

Notes

1. A multiplier of 1.6 is applied to the average MPS salary point to estimate the cost of RSS supplied by the consultants. A multiplier of 2.0 is applied to the average MPS salary point to estimate the full staff cost including the consultants' overheads and profit for the staff employed in the consultants' offices (as at now, MPS salary point 38 = $77,320 per month and MPS salary point 14 = $26,700 per month).

2. The consultants' staff cost for contract administration is calculated in accordance with the existing consultancy agreement for the design and construction of **758CL**. The construction phase of the assignment will only be executed upon Finance Committee's approval to upgrade part of **758CL** to Category A.

3. The actual man-months and actual costs will only be known after selection of the consultants through the usual competitive lump-sum bid system.

4. The actual man-months and actual costs will only be known after completion of the construction works.

758CL (Part) – Site formation and associated infrastructural works for development of columbarium at Sandy Ridge Cemetery

Breakdown of the land resumption and clearance cost

			$ million
(I)	**Estimated resumption cost**		**5.98**
(a)	Agricultural land ex-gratia compensation	5.98	
	Two agricultural lots [with a total area of 1 289.2 m² (13 877 square foot (ft^2))] will be resumed 13 877 ft^2 x $431 per ft^2 (Zone C) (please see Notes below)		
(II)	**Estimated clearance cost**		**1.46**
(a)	Ex-gratia allowance for crop compensation	0.33	
(b)	Ex-gratia allowance for farm structures and miscellaneous permanent improvements to farms	0.05	
(c)	Ex-gratia allowances for miscellaneous indigenous villager matters e.g. "Tun Fu"	0.08	
(d)	Ex-gratia allowance for business undertakings	1.00	
(III)	**Contingency Payment**		**0.76**
		Total	**8.20**

Notes

1. There are four ex-gratia compensation zones, namely Zones A, B, C and D, for land resumption in the New Territories as approved by the Executive Council in 1985 and 1996. The boundaries of these zones are shown on the Zonal Plan for Calculation of Compensation Rates. The land to be resumed is agricultural land within Compensation Zone D which is proposed to be upgraded to Zone C (subject to clearance of government procedures). If the upgrading is unsuccessful, the item (I) Estimated resumption cost will be decreased from $5.98 million to $3.59 million.

2. In accordance with G.N. 5535 dated 21 September 2016 on the revised ex-gratia compensation rates for resumed land, the ex-gratia compensation rate of agricultural land for Zone C is 50 % of the Basic Rate at $862 per ft^2, i.e. $431 per ft^2.

758CL(Part) - Site formation and associated infrastructural works for development of columbarium at Sandy Ridge Cemetery

Tree No.[1]	Species		Measurements			Amenity Value[2]	Form	Health	Structural condition	Suitability for Transplanting[3]		Conservation Status[4]	Recommen-dation (Retain / Fell / Transplant)	Department to provide expert advice to LandsD	Additional Remarks
	Scientific Name	Chinese Name	Height (m)	DBH[5] (m)	Crown Spread (m)	(Good / Fair / Poor)				(High / Medium / Low)	Remarks				
T-0150	*Bombax ceiba*	木棉	18	1.02	10	Good	Fair	Fair	Fair	Low	• Due to large size of the tree, heavy pruning is needed to facilitate transplant. It would lead to permanent deformation of natural shape. • As the tree is mature, its transplant survival rate is low.	-	Fell	LCSD	• The tree is in conflict with the alignment of the widened Sha Ling Road. • If the proposed road is to be realigned to avoid affecting the tree, substantial land resumption is required. • Even if the tree could be retained in-situ, it will be very close to the widened Sha Ling Road and the proposed footpath. It will impose high risk to the safety of pedestrian and motorists. • The tree species is common in Hong Kong. • Since retention of the tree is considered impracticable and the survival rate after transplanting is low, the tree is proposed to be felled.
T-2928	Aquilaria sinensis	土沉香	10	0.27	4	Good	Fair	Fair	Fair	Medium	-	RPPHK; Cap.586; IUCN:VU	Transplant	AFCD	• The tree is of rare species. • The tree is located on the proposed fill slope for the proposed site formation. • Since retention of the tree is considered impracticable and the survival rate after transplanting is medium, the tree is proposed to be transplanted.

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1 The trees are not in the Register of Old and Valuable Trees.

2 Amenity value of the tree is assessed by its functional values for shade, shelter, screening, reduction of pollution and noise and also its fung shui significance, and classified into the following categories.

Good : important trees which should be retained by adjusting the design layout accordingly.
Fair : trees that are desirable to be retained in order to create a pleasant environment, which includes healthy specimens of lesser importance than “Good” trees.
Poor : trees that are dead, dying or potentially hazardous and should be removed.

3 Assessment has taken into account conditions of the 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).

4 Conservation status is based on the rarity and protection status of the species under relevant ordinances in Hong Kong, such as Rare and Precious Plants of Hong Kong, the International Union for Conservation of Nature (IUCN) Red List of Threatened Species and the Forests and Countryside Ordinance.

IUCN:NT – “Near Threatened" under IUCN Red List of Threatened Species
IUCN:VU – “Vulnerable" under IUCN Red List of Threatened Species
RPPHK – Species included in AFCD publication "Rare and Precious Plants of Hong Kong (2003)"
Cap.586 – Native plants listed in Protection of Endangered Species of Animals and Plants Ordinance, Cap. 586.

5 Diameter at Breast Height (DBH) of a tree refers to its trunk diameter at breast height (i.e. measured at 1.3m above ground level).