

For discussion
(date to be confirmed)

PWSC(2015-16)22

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 706 – HIGHWAYS

Transport – Roads

703TH – Dualling of Hiram’s Highway between Clear Water Bay Road and Marina Cove and Improvement to Local Access to Ho Chung

Members are invited to recommend to the Finance Committee the upgrading of **703TH** to Category A at an estimated cost of \$1,774.4 million in money-of-the-day prices.

PROBLEM

The traffic flow in some sections of Hiram’s Highway has exceeded their design capacity, leading to traffic congestion.

PROPOSAL

2. The Director of Highways, with the support of the Secretary for Transport and Housing, proposes to upgrade **703TH** to Category A at an estimated cost of \$1,774.4 million in money-of-the-day (MOD) prices for dualling of Hiram’s Highway between Clear Water Bay Road and Marina Cove and improvement works to local access to Ho Chung.

/ **PROJECT**

PROJECT SCOPE AND NATURE

3. The proposed scope of works under the project includes –
- (a) provision of an additional two-lane Sai Kung bound carriageway of approximately 720 metres (m) long alongside the existing Hiram's Highway between Clear Water Bay Road and New Hiram's Highway, and reconstruction of the existing Kowloon bound carriageway;
 - (b) widening of a section of Hiram's Highway of approximately 900 m long between Nam Pin Wai roundabout and Pak Wai from a single two-lane carriageway to a dual two-lane carriageway;
 - (c) provision of an approximately 47 m long vehicular bridge-cum-walkway of approximately 35 m wide across Ho Chung Channel and demolition of the existing vehicular bridge-cum-walkway;
 - (d) provision of an approximately 38 m long footbridge across the widened Hiram's Highway near Nam Pin Wai roundabout;
 - (e) improvement of a section of the existing Ho Chung Road of approximately 290 m long, including widening and reconstruction of the road as well as enhancement of the road drainage system;
 - (f) widening and realignment of the existing Luk Mei Tsuen Road of approximately 170 m long and extension of the road by approximately 300 m to connect with Ho Chung Road;
 - (g) provision of the following noise barriers –
 - (i) vertical noise barriers of approximately 435 m long (ranging from 2.5 m to 5 m high); and
 - (ii) single-leaf cantilever noise barriers of approximately 280 m long (5 m high with 2 m cantilever);
 - (h) demolition and reprovisioning of a village office, a public toilet and two refuse collection points (RCPs); and

- (i) associated civil and road works, slope and geotechnical works, public lighting facilities, drainage and waterworks, and landscaping works.

— The layout plan and cross-sections of the project are at Enclosure 1.

4. Subject to the funding approval of the Finance Committee (FC), the target project commencement and completion dates fall in the third quarter of 2015 and 2020 respectively.

JUSTIFICATION

5. Hiram's Highway is the only principal road linking Sai Kung to East Kowloon and Tseung Kwan O. There is traffic congestion along some sections of the road during morning peak hours on weekdays and during afternoon peak hours on weekends and public holidays. The volume/capacity (v/c) ratios¹ of the two sections of Hiram's Highway between Clear Water Bay Road and New Hiram's Highway, and between Nam Pin Wai roundabout and Pak Wai, have already reached 1.10 and 1.17 respectively during morning peak hours on weekdays, indicating that the traffic flow at these sections of the road has already exceeded their design capacity, and minor disruption on these sections will lead to substantial congestion. Upon the further development of Sai Kung, we anticipate that the traffic conditions of the abovementioned sections of Hiram's Highway will deteriorate during morning peak hours on weekdays. The estimated v/c ratios with and without the project are set out in table below –

	V/C ratio of Hiram's Highway			
	between Clear Water Bay Road and New Hiram's Highway		between Nam Pin Wai roundabout and Pak Wai	
	2021	2031	2021	2031
Without the project	1.23	>1.3	1.27	>1.3
With the project	0.4	0.5	0.5	0.6

/ 6.

¹ Volume/capacity (v/c) ratio is an indicator of the performance of a road. A v/c ratio equal to or less than 1.0 means that a road has sufficient capacity to cope with the volume of vehicular traffic and the traffic flow will be smooth. A v/c ratio above 1.0 indicates the onset of congestion. A v/c ratio above 1.2 indicates more serious congestion with traffic speeds deteriorating progressively as a result of further increase in traffic.

6. At present, the section of Hiram's Highway between Nam Pin Wai roundabout and Pak Wai is a single two-lane carriageway, with one Sai Kung bound lane and one Kowloon bound lane. It is vulnerable to traffic congestion as a result of unexpected incidents (such as vehicle breakdowns, traffic accidents or emergency road repairing works), resulting in temporary closure of one lane. In such circumstances, both Sai Kung bound and Kowloon bound traffic can only travel on the remaining lane, leading to serious traffic congestion.

7. In view of the above, we propose providing one additional lane for each of the Sai Kung bound and Kowloon bound for the two sections of Hiram's Highway between Clear Water Bay Road and New Hiram's Highway, and between Nam Pin Wai roundabout and Pak Wai, to relieve the current traffic congestion, accommodate the anticipated traffic growth and cope with unexpected incidents. For the road widening, we need to demolish and reconstruct an existing vehicular bridge-cum-walkway across Ho Chung Channel and re-provision a village office, a public toilet and two RCPs affected.

8. Furthermore, we will upgrade the design of the abovementioned two sections of Hiram's Highway, including constructing a new footbridge near Nam Pin Wai roundabout to facilitate pedestrians crossing the widened Hiram's Highway, straightening the section of Hiram's Highway between Nam Pin Wai roundabout and Pak Wai to provide better sight lines for road users and enhance road safety, and providing noise barriers to mitigate the noise impact on nearby residents, etc. We will also improve Ho Chung Road and Luk Mei Tsuen Road near Hiram's Highway to enhance the connectivity of Ho Chung area with Hiram's Highway.

9. Over the years, the Sai Kung District Council (SKDC) and locals have been urging for the early implementation of the project to relieve traffic congestion along Hiram's Highway. We consider it necessary to commence the related works as soon as possible to address their concerns.

/ FINANCIAL

FINANCIAL IMPLICATIONS

10. We estimate the cost of the proposed project to be \$1,774.4 million in MOD prices (please see paragraph 15 below), broken down as follows –

	\$ million	
(a) Roads, drains and waterworks	179.0	
(i) construction of carriageway	128.8	
(ii) drainage and waterworks	50.2	
(b) Geotechnical works	431.6	
(i) retaining walls	287.7	
(ii) slope works	143.9	
(c) Vehicular bridge-cum-walkway	269.1	
(d) Footbridge	29.8	
(e) Noise barriers	90.7	
(f) Public lighting facilities	10.5	
(g) Landscaping works	43.0	
(h) Reprovisioning of a village office, a public toilet and RCPs	13.8	
(i) Consultants' fee for	6.9	
(i) contract administration	2.1	
(ii) management of resident site staff (RSS)	4.1	
(iii) environmental monitoring and audit (EM&A) programme	0.7	
(j) Remuneration of RSS	156.7	
(k) Contingencies	115.4	
	<hr/>	
Sub-total	1,346.5	(in September 2014 prices)
(l) Provision for price adjustment	427.9	
	<hr/>	
Total	1,774.4	(in MOD prices)
	<hr/>	

11. The roads, drains and waterworks in item (a) of paragraph 10 above include those construction works mentioned in items (a), (b), (e), (f) and part of (i) of paragraph 3 above, as well as the related utilities diversion, road pavement, installation of street furniture, ancillary traffic facilities, drainage, waterworks and temporary traffic measures.

12. The geotechnical works in item (b) of paragraph 10 above include carrying out those works mentioned in part of item (i) of paragraph 3 above covering the slope works and retaining walls at the relevant locations along the section of Hiram's Highway between Clear Water Bay Road and Marina Cove, along Ho Chung Road and along Luk Mei Tsuen Road.

13. The vehicular bridge-cum-walkway in item (c) of paragraph 10 above includes the construction of a new bridge and demolition of the existing one mentioned in item (c) of paragraph 3 above. Both the demolition and construction works have to be well planned and implemented with regard to various constraints, including limited works space, and the need to maintain the existing number of traffic lanes along Hiram's Highway, the existing access between Hiram's Highway and Berkeley Bay Villa, as well as the flood relieving capacity of Ho Chung Channel.

14. A breakdown of the estimated consultants' fees and resident site staff costs by man-months is at Enclosure 2.

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

Year	\$ million (Sept 2014)	Price adjustment factor	\$ million (MOD)
2015 – 2016	67.7	1.05725	71.6
2016 – 2017	135.4	1.12069	151.7
2017 – 2018	189.5	1.18793	225.1
2018 – 2019	230.1	1.25920	289.7
2019 – 2020	228.6	1.33475	305.1
2020 – 2021	201.1	1.40483	282.5
2021 – 2022	147.4	1.47507	217.4
2022 – 2023	93.5	1.54882	144.8
2023 – 2024	53.2	1.62626	86.5
	1,346.5		1,774.4

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 2015 to 2024. Subject to funding approval, we will deliver the project under a standard re-measurement contract because the quantities of earthworks and foundation works of noise barriers, vehicular bridge and footbridge involved will vary depending on actual ground conditions. The contract will provide for price adjustments.

17. We estimate the annual recurrent expenditure arising from this project to be about \$6.7 million.

PUBLIC CONSULTATION

18. The Highways Department (HyD) consulted the Traffic and Transport Committee of SKDC on 14 August 2007 and the Sai Kung Rural Committee on 1 February 2008. Both committees indicated their support for the project. Subsequently, at the request of SKDC, HyD reported the progress of the project to SKDC every two months from March 2013 to January 2015. SKDC has been expecting an early commencement of the works.

19. We gazetted the road scheme for the proposed works of the project under the Roads (Works, Use and Compensation) Ordinance (Cap. 370) (the Ordinance) on 26 March and 1 April 2010. During the statutory objection period, 50 objections were received. Three of them were withdrawn unconditionally. The reasons for the objections were mainly related to the need for the project, environmental impacts, land resumption, access to land lots and impact on the objectors' businesses. In response to the issues raised in the objections, we amended the works limit and the road scheme. We gazetted the amendment scheme on 11 and 18 February 2011. Two objections were received during the statutory objection period and subsequently withdrawn unconditionally.

20. Having considered the 47 unresolved objections and the amendments, the Chief Executive-in-Council authorised the proposed works of the project under the Ordinance. The authorisation notice of the project was gazetted on 11 and 18 November 2011.

21. We have consulted the Advisory Committee on the Appearance of Bridges and Associated Structures (ACABAS)² on the proposed aesthetic design of the noise barriers, vehicular bridge, footbridge and retaining walls of the project. ACABAS accepted the proposed aesthetic design.

22. We consulted the Legislative Council Panel on Transport on the funding application for the project on 27 February 2015. Members supported the project and did not raise any objections to submitting the funding proposal to the Public Works Subcommittee for examination.

ENVIRONMENTAL IMPLICATIONS

23. The project is not a designated project under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499). We have conducted an Environmental Study (ES) and an Engineering Review (ER) to assess the environmental impacts of the project. The Environmental Protection Department accepted the ES report and related environmental impact sections in the ER report in September 2011 and January 2015 respectively.

24. According to the ES and ER reports, the environmental impacts of the project can be controlled to within the established guidelines and standards through implementation of mitigation measures (including the noise barriers shown at Enclosure 1). During construction, we will implement the mitigation measures and the EM&A programme according to the proposals in the ES and ER reports. These measures mainly include the use of quieter equipment and movable noise barriers to minimise construction noise impact, and regular watering of the works sites to minimise dust generation. We estimate the cost of implementing the environmental mitigation measures and the EM&A programme to be \$97.4 million (in September 2014 prices). We have included this cost in the overall project estimate.

/ 25.

² The Advisory Committee on the Appearance of Bridges and Associated Structures comprises representatives of the Hong Kong Institute of Architects, the Hong Kong Institution of Engineers, the Hong Kong Institute of Planners, an academic institution, the Architectural Services Department, the Highways Department, the Housing Department and the Civil Engineering and Development Department. It is responsible for vetting the design of bridges and other structures associated with the public highway system, including noise barriers and semi-enclosures, from the aesthetic and visual impact points of view.

25. At the planning and design stages, we have considered minimising the generation of construction waste as far as possible through the design of road alignment. In addition, we will require the contractor to reuse inert construction waste on site or in other suitable construction sites as far as possible, in order to minimise the disposal of inert construction waste at public fill reception facilities³. We will encourage the contractor to maximise the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork, to further minimise the generation of construction waste.

26. At the construction stage, we will require the contractor to submit for approval a plan setting out the waste management measures. The plan 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 contractor to separate inert construction waste from non-inert construction waste on site to facilitate their transportation to appropriate facilities for disposal. We will control the disposal of inert construction waste and non-inert construction waste at public fill reception facilities and landfills respectively for disposal through a trip-ticket system.

27. We estimate that the project will generate in total 157 460 tonnes of construction waste. Of these, we will reuse 62 370 tonnes (39.6%) of inert construction waste on site and deliver 94 980 tonnes (60.3%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of the remaining 110 tonnes (0.1%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at public fill reception facilities and landfill sites for the project is estimated to be \$2.58 million (based on a unit charge rate of \$27 per tonne for disposal at public fill reception facilities and \$125 per tonne at landfills as stipulated in the Waste Disposal (Charges for Disposal of Construction Waste) Regulation).

HERITAGE IMPLICATIONS

28. The project will not affect any heritage sites, i.e. all declared monuments, proposed monuments, graded historic sites or 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. Disposal of inert construction waste in public fill reception facilities requires a license issued by the Director of Civil Engineering and Development.

LAND ACQUISITION

29. About 9 687.9 square metres (m²) of private agricultural land has to be resumed and about 140 500 m² of government land need to be cleared for the project. It is estimated that the land resumption and clearance will affect five domestic structures, involving 40 persons of 12 families. Eligible owners of the lots to be resumed will be offered compensation in accordance with the prevailing policy, while the affected households will be offered public housing (including Interim Housing) or ex-gratia allowances, where eligible. There are 37 non-domestic structures on private agricultural land and 29 non-domestic structures on government land to be cleared. Issues arising from the clearance of these structures will be dealt with in accordance with the prevailing land policies. The project also requires the clearance of crops, cultivation and miscellaneous permanent items (such as fences and walls) on both private agricultural land and government land. Ex-gratia allowances will be paid to genuine cultivators. We will charge the cost of land resumption and clearance estimated at \$82.72 million to **Head 701** – Land Acquisition. A breakdown of the land clearance costs is at Enclosure 3.

TRAFFIC IMPLICATIONS

30. We have conducted traffic impact assessment for the project, covering the traffic impact during the construction period. According to the findings of the assessment, with the implementation of appropriate temporary traffic arrangement (TTA), the construction works will not cause significant impact on the traffic network in the area concerned.

31. We will implement TTA, involving lane closures, traffic diversions and other arrangements, to facilitate the construction works. To minimise the adverse traffic impact of the works on the existing road network in the area, we will maintain the same number of traffic lanes in each direction of the existing carriageway during peak hours of the construction period.

BACKGROUND

32. We upgraded **703TH** to Category B in September 2004, and have allocated an amount of about \$12.1 million under block allocation **Subhead 6100TX** “Highway works, studies and investigations for items in Category D of the Public Works Programme” to fund the investigation and detailed design works of the project. These works have been completed.

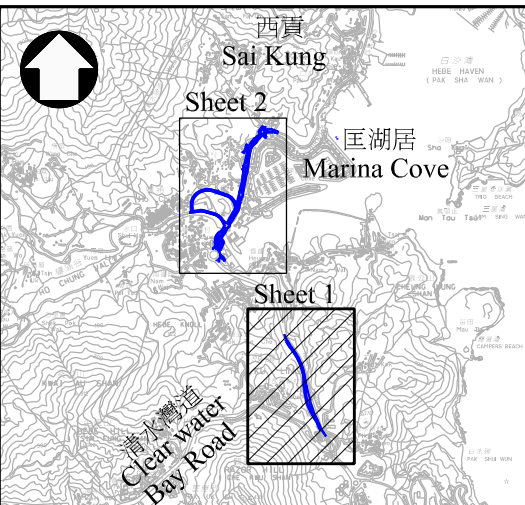
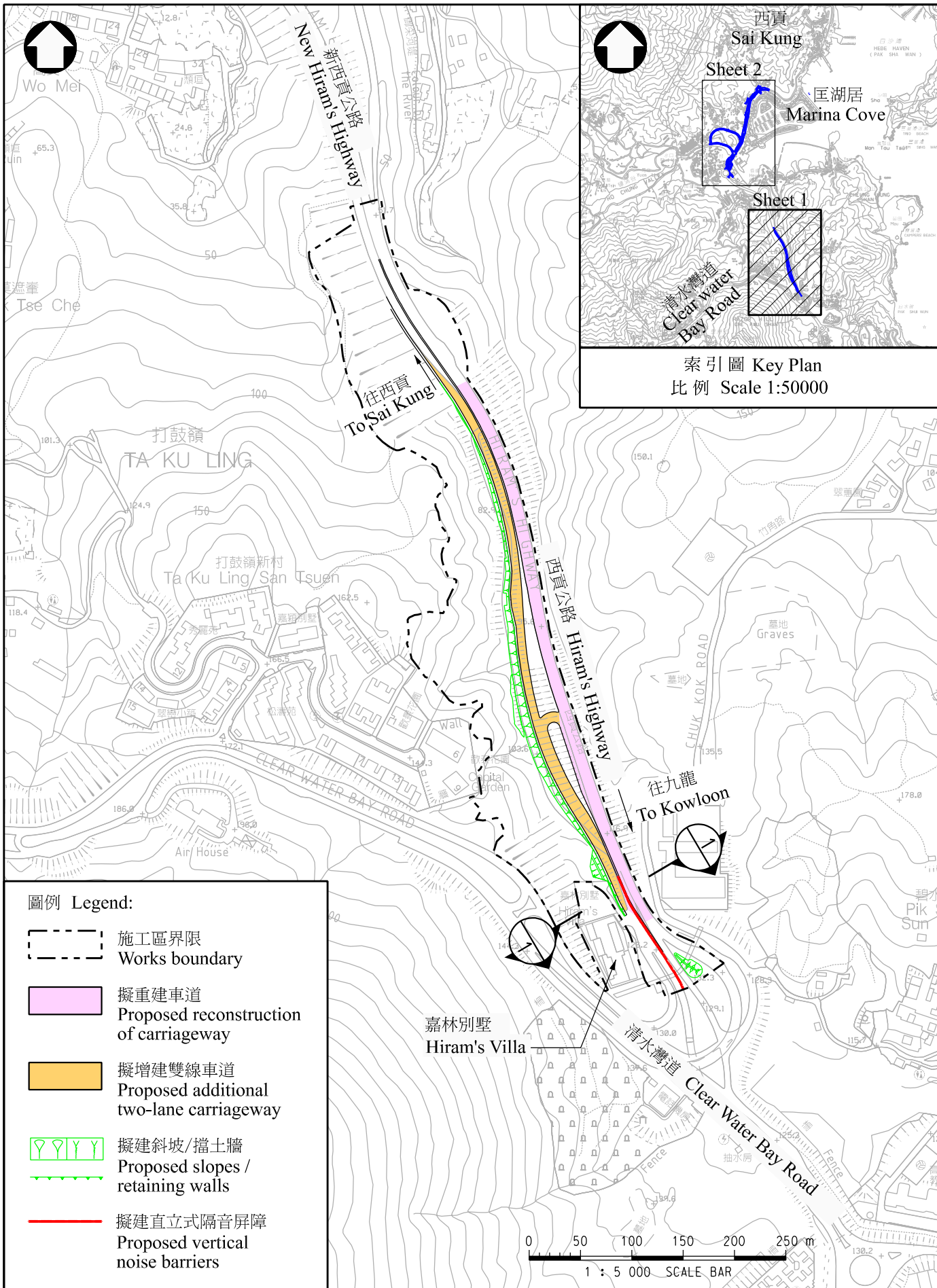
33. There are 1 417 trees including two Old and Valuable Trees (OVTs) within the project boundary. Among them, 259 trees including the two OVTs will be preserved. The project will require removal of 1 158 trees, including 1 082 trees to be felled and 76 trees to be transplanted within the project boundary. All trees to be removed are not important trees⁴. We will incorporate planting proposals into the project, including the planting of 277 heavy standard trees, 1 617 whips and 4 031 shrubs, covering a planting area of about 16 513 m².

34. We estimate that the proposed construction works will create about 350 jobs (70 for professional/technical staff and 280 for labourers) providing a total employment of about 19 800 man-months.

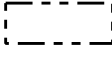
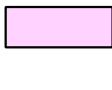

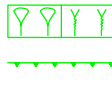

Transport and Housing Bureau
June 2015

⁴ An “important tree” 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 tree, tree 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 form (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 trunk diameter equal to or exceeding 1.0 m (measured at 1.3 m above ground level), or with height/canopy spread equal to or exceeding 25 m.



圖例 Legend:

-  施工區界限
Works boundary
-  擬重建車道
Proposed reconstruction of carriageway
-  擬增建雙線車道
Proposed additional two-lane carriageway
-  擬建斜坡/擋土牆
Proposed slopes / retaining walls
-  擬建直立式隔音屏障
Proposed vertical noise barriers

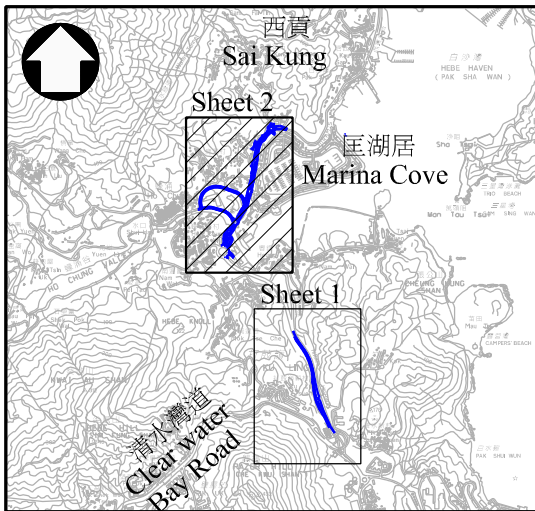
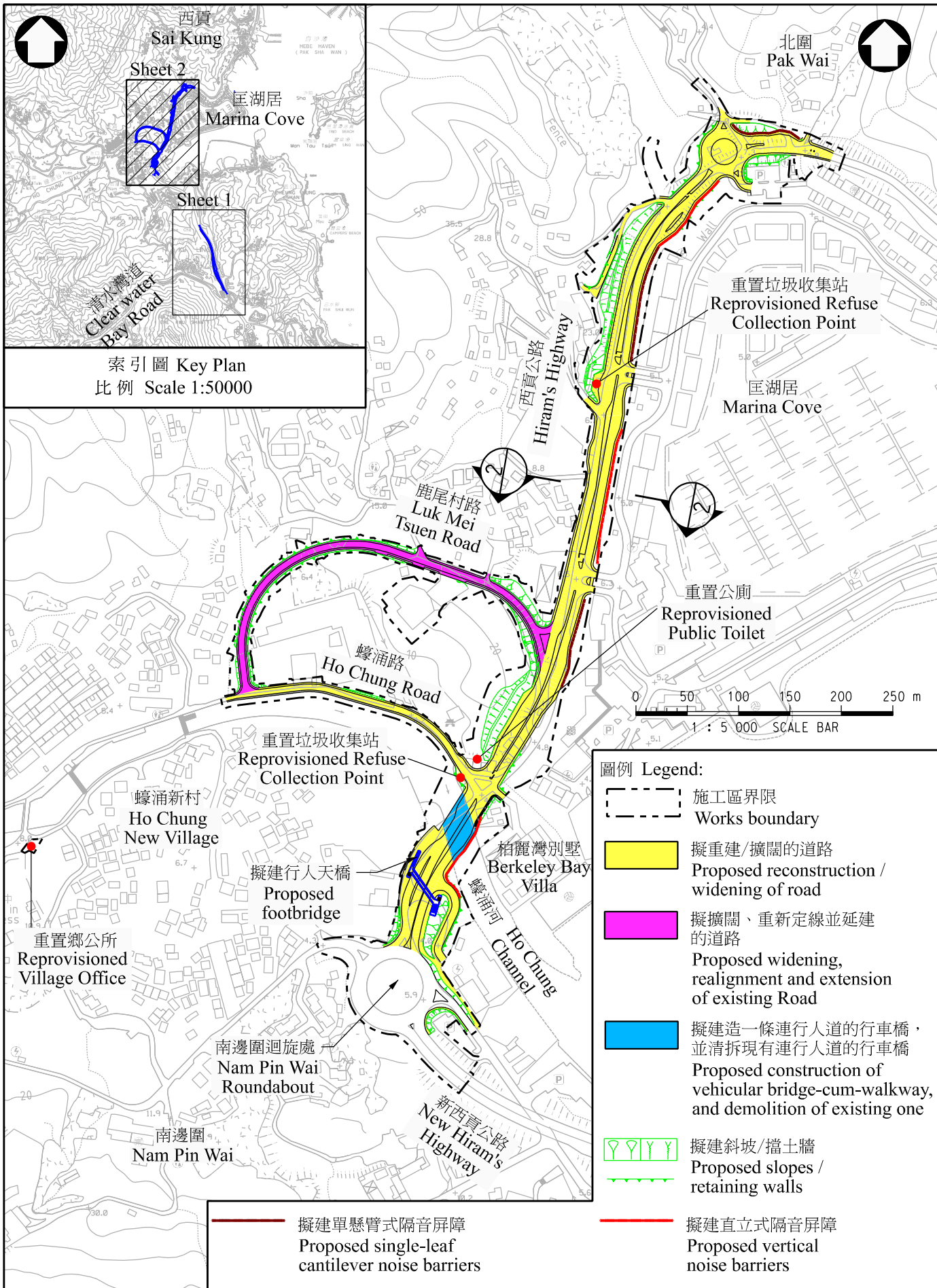
工務計劃項目第6703TH號
 清水灣道與匡湖居之間的一段西貢公路分隔車道工程及
 蠔涌區內通路改善工程 - 平面圖 (2張中的第1張)
 PWP Item No. 6703TH
 Dualling of Hiram's Highway between Clear Water Bay Road and Marina Cove
 and Improvement to Local Access to Ho Chung
 - Layout Plan (Sheet 1 of 2)

圖則編號 plan no.
 HMW6703TH-SK0042
 比例 scale
 1:5000 或圖示
 Or As Shown

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HIGHWAYS DEPARTMENT HONG KONG
 路政署



索引圖 Key Plan
比例 Scale 1:50000

- 圖例 Legend:
- 施工區界限
Works boundary
 - 擬重建/擴闊的道路
Proposed reconstruction / widening of road
 - 擬擴闊、重新定線並延建的道路
Proposed widening, realignment and extension of existing Road
 - 擬建造一條連行人道的行車橋，並清拆現有連行人道的行車橋
Proposed construction of vehicular bridge-cum-walkway, and demolition of existing one
 - 擬建斜坡/擋土牆
Proposed slopes / retaining walls
 - 擬建單懸臂式隔音屏障
Proposed single-leaf cantilever noise barriers
 - 擬建直立式隔音屏障
Proposed vertical noise barriers

工務計劃項目第 6703TH 號
清水灣道與匡湖居之間的一段西貢公路分隔車道工程及
蠔涌區內通路改善工程 - 平面圖 (2張中的第2張)

PWP Item No. 6703TH
Dualling of Hiram's Highway between Clear Water Bay Road and Marina Cove
and Improvement to Local Access to Ho Chung
- Layout Plan (Sheet 2 of 2)

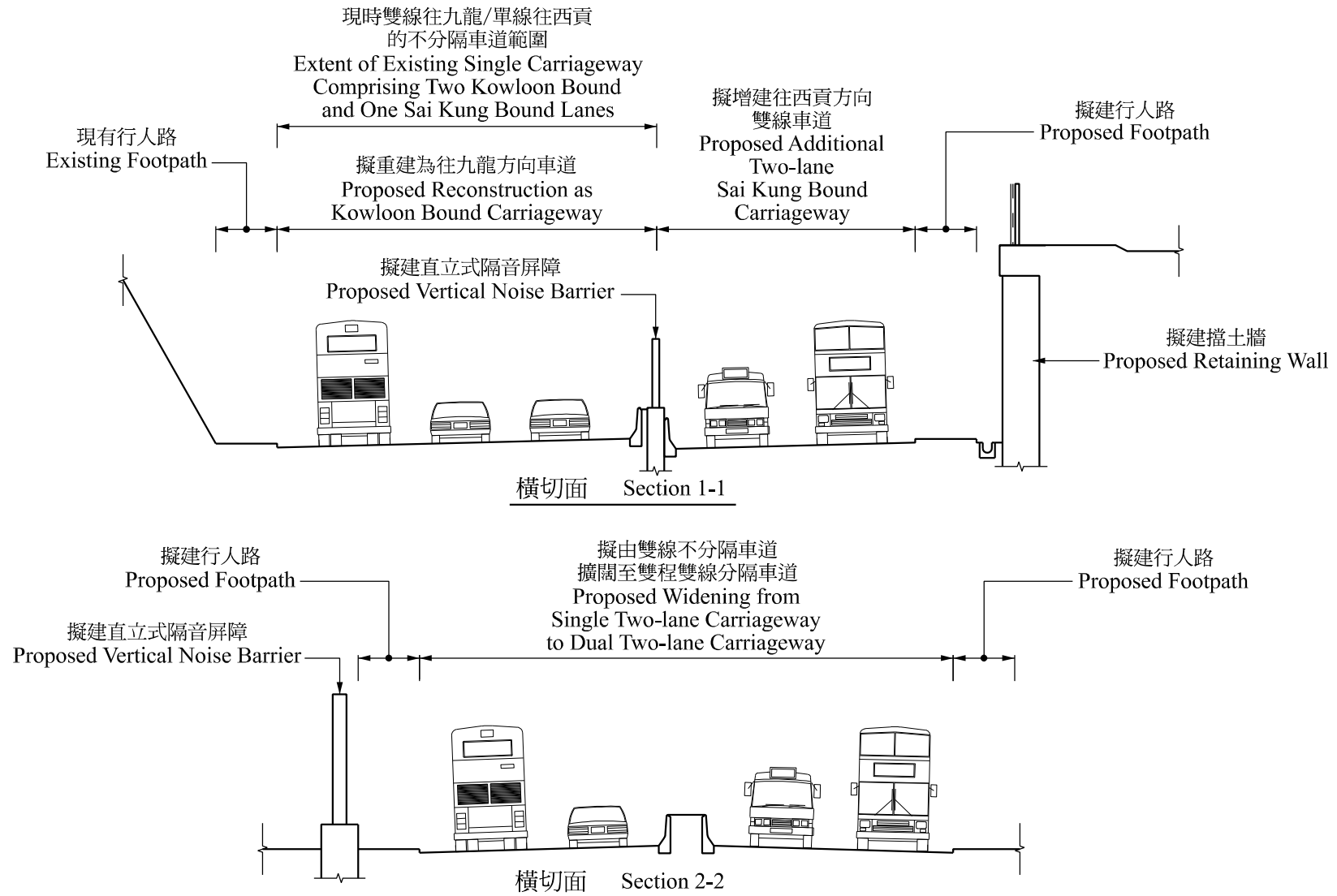
圖則編號 plan no.
HMW6703TH-SK0043

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HIGHWAYS DEPARTMENT HONG KONG

路政署



工務計劃項目第6703TH號
清水灣道與匡湖居之間的一段西貢公路分隔車道工程及蠔涌區內通路改善工程 - 橫切面圖
PWP Item No. 6703TH
Dualling of Hiram's Highway Between Clear Water Bay Road and Marina Cove
and Improvement to Local Access to Ho Chung - Cross-sections

圖則編號 plan no.
HMW6703TH-SK0044

比例 scale
示意圖
DIAGRAMMATIC

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703TH – Dualling of Hiram’s Highway between Clear Water Bay Road and Marina Cove and Improvement to Local Access to Ho Chung

**Breakdown of estimates for consultants’ fees and resident site staff costs
(in September 2014 prices)**

		Estimated man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)
(a)	Consultants’ fees for contract administration (Note 2)				
	Professional	-	-	-	1.6
	Technical	-	-	-	0.5
				Sub-total	2.1
(b)	Resident site staff (RSS) costs (Note 3)				
	Professional	719	38	1.6	82.1
	Technical	2 017	14	1.6	78.7
				Sub-total	160.8
Comprising –					
(i)	consultants’ fee for managing RSS				4.1
(ii)	remuneration of RSS				156.7
(c)	Environmental Monitoring and Audit programme				
	Professional	-	-	-	0.35
	Technical	-	-	-	0.35
				Sub-total	0.7
Total					163.6

* MPS = Master Pay Scale

Notes

1. A multiplier of 1.6 is applied to the average MPS point to estimate the cost of resident site staff supplied by the consultants (as at now, MPS salary point 38 = \$71,385 per month and MPS salary point 14 = \$24,380 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 the project. The construction phase of the assignment in respect of works will only be executed subject to FC’s approval to upgrade the project to Category A.
3. The actual man-months and actual costs will be only known after completion of the construction works.

703TH – Dualling of Hiram’s Highway between Clear Water Bay Road and Marina Cove and Improvement to Local Access to Ho Chung

Breakdown of land resumption and clearance cost

	(\$ million)
(I) Estimated resumption cost	58.64
(a) Agricultural land ex-gratia compensation 73 agricultural lots [with a total area of 104 282 square feet (ft ²) or 9 687.9 square metres (m ²)] 57 097 ft ² × \$662.25 per ft ² (Zone B) 47 185 ft ² × \$441.50 per ft ² (Zone C) (Please see Notes below)	58.64
(II) Estimated clearance cost	16.52
(a) Ex-gratia allowance of crop compensation	0.1
(b) Ex-gratia allowance for farm structures and miscellaneous permanent improvements to farms	0.1
(c) Ex-gratia allowance for miscellaneous indigenous villager matters, e.g. removal of graves and shrines and Tun Fu ceremonies	0.02
(d) Ex-gratia allowance for domestic occupiers and business undertakings	16.3
(III) Interest and contingency payment	7.56
(a) The interest payment on various ex-gratia compensation for private land @0.07%	0.04
(b) Contingency on the above costs @10%	7.52
	Total
	82.72

Notes

- 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 under the project is agricultural land currently within Compensation Zones B, C and D. As this project involves area improvement, upgrading of land currently within Zone D to Zone C is being considered in accordance with the established mechanism.
- In accordance with G.N. 2501 dated 18 March 2015 on the revised ex-gratia compensation rates for resumed land, the ex-gratia compensation rate of agricultural land for Zone B is 75% of the Basic Rate at \$883 per square foot, i.e. \$662.25 per square foot, and that for Zone C is 50% of the Basic Rate at \$883 per square foot, i.e. \$441.5 per square foot.