

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 703 – BUILDINGS

Support – Boundary facilities (other than road works)

12GB – Construction of a secondary boundary fence and new sections of primary boundary fence and boundary patrol road – phase 2

Members are invited to recommend to Finance Committee the upgrading of **12GB** to Category A at an estimated cost of \$285.0 million in money-of-the-day prices for phase 2 construction of a secondary boundary fence and a new section of primary boundary fence and boundary patrol road.

PROBLEM

In order to implement the reduced coverage of the Frontier Closed Area (FCA) while maintaining the integrity of the boundary, we need to construct a secondary boundary fence (SBF) along the boundary patrol road (BPR), and new BPR and primary boundary fence (PBF) at a section along the boundary between Hong Kong Special Administrative Region (HKSAR) and the Mainland.

PROPOSAL

2. The Director of Architectural Services, with the support of the Secretary for Security, proposes to upgrade **12GB** to Category A at an estimated cost of \$285.0 million in money-of-the-day (MOD) prices for the phase 2 construction of an SBF and a new section of the PBF and BPR, and the

/demolition

demolition of certain existing structures and associated facilities in order to take forward the phased implementation of the reduced coverage of the FCA.

PROJECT SCOPE AND NATURE

Implementation of Reduced FCA through 15GB and 12GB

3. To take forward the phased implementation of the reduced coverage of the FCA, we need to construct an SBF along the southern edge of the existing BPR (approximately 21.7 kilometres) from Pak Hok Chau in the west to Sha Tau Kok in the east, and to construct new sections of the PBF and the BPR (approximately 9.6 kilometres in total) along Shenzhen River near Lok Ma Chau Loop and Hoo Hok Wai, Pak Fu Shan and Lin Ma Hang. To facilitate early implementation of the reduced FCA coverage, the construction works are divided into four sections (see site plan at Enclosure 1). Phase 1 of the construction works, which commenced in December 2009 under **15GB**¹, covers three of the four sections, namely “Mai Po to Lok Ma Chau Control Point Section”, “Lok Ma Chau Control Point to Ng Tung River Section” and “Lin Ma Hang to Sha Tau Kok Section”. We now propose to upgrade to Category A the Phase 2 construction works (now referred to as project **12GB**), which comprises –

- (a) the construction works for the remaining section, i.e. “Ng Tung River to Lin Ma Hang Section”; and
- (b) the demolition works for certain existing structures and associated facilities at the above-mentioned four sections which will become obsolete upon the reduction of the FCA.

Proposed Upgrading of 12GB to Category A

(a) Phase 2 construction works - “Ng Tung River to Lin Ma Hang Section”

4. Construction works for the “Ng Tung River to Lin Ma Hang Section” involves –

- (a) the construction of SBF from Lo Wu to Lin Ma Hang (approximately 9.7 kilometres (km)); and

/(b)

¹ Phase 1 construction works were part-upgraded from 12GB to Category A in June 2009 and referred to as project **15GB** “Construction of a Secondary Boundary Fence and new sections of Primary Boundary Fence and Boundary Patrol Road – phase 1”.

- (b) the construction of a new section of the BPR and PBF (with the Fence Protection System) along the Shenzhen River to the northwest of Lin Ma Hang (approximately 0.8 km).

_____ The site plan is at Enclosure 2. Artist's impression on the SBF, PBF and BPR is
_____ at Enclosure 3.

5. Subject to funding approval of the Finance Committee (FC), we plan to start the construction works for **12GB** in 1st quarter of 2012 for completion by 1st quarter of 2015.

6. The existing PBF is installed with the Fence Protection System, the slanted portion and barbed wire. The Fence Protection System comprises Video Motion Detectors, a sensor alarm system and closed-circuit television cameras, which are connected to a Centralized Monitoring and Control System for monitoring round the clock at the Boundary Command Centre situated at Man Kam To Police Operational Base. The SBF will be constructed along the southern side of the BPR, to the same standard of the PBF but without the Fence Protection System, the slanted portion and barbed wire.

7. The construction works for a portion of SBF within the "Ng Tung River to Lin Ma Hang Section" will need to dovetail with the re-provision of BPR and PBF arising from the Shenzhen River improvement works under **13GB** (i.e. "Liantang/Heung Yuen Wai Boundary Control Point (BCP) and associated works"). The Liantang/Heung Yuen Wai BCP is located within the works area of **12GB**. As the river improvement works will encroach into the land occupied by the existing BPR and associated PBF along the Shenzhen River between Ping Yuen River and Pak Fu Shan, it is necessary to re-provide under **13GB** the BPR and the PBF on a shifted alignment to make way for the river improvement works. The cost of the new SBF along the re-provisioned BPR has been budgetted for under **12GB**. In order to minimise project interface problems, the construction of the SBF between Ping Yuen River and Pak Fu Shan along the re-provisioned BPR and PBF will be implemented in conjunction with **13GB** to be undertaken by the Drainage Services Department (DSD). The project **13GB** will also be discussed at the meeting of the Public Works Subcommittee on 14 December 2011 vide PWSC(2011-12)37. Subject to funding approval of the FC, DSD plans to commence the construction works of **13GB** in February 2012 for completion in February 2015.

/(b)

(b) Demolition of existing structures and associated facilities

8. In addition to the construction of the SBF, PBF and BPR, we need to remove some of the existing structures and associated facilities at the four construction sections, which will become obsolete upon the reduction of the FCA. The scope of the demolition works under Phase 2 covers the following –

Section	Demolition Works
(1) Mai Po to Lok Ma Chau Control Point Section	<ul style="list-style-type: none"> ● existing FCA warning signs
(2) Lok Ma Chau Control Point to Ng Tung River Section	<ul style="list-style-type: none"> ● the check point at Lok Ma Chau ● the original PBF and associated facilities to the south of Lok Ma Chau Loop and Hoo Hok Wai ● existing police posts and the associated facilities and FCA warning signs
(3) Ng Tung River to Lin Ma Hang Section	<ul style="list-style-type: none"> ● the check point at Sha Ling and Ping Che ● the original PBF and associated facilities to the north of Pak Fu Shan and to the northwest of Lin Ma Hang ● existing police posts and the associated facilities and FCA warning signs
(4) Lin Ma Hang to Sha Tau Kok Section	<ul style="list-style-type: none"> ● the check point at Shek Chung Au ● existing FCA warning signs

Subject to funding approval of the FC, the demolition works are expected to start in 2nd quarter of 2012 for completion by 3rd quarter 2015. The implementation programme for the construction and demolition works under the entire project (i.e. **15GB** and **12GB**) is set out below –

/Section

	Section	Implementation Period for Construction Works	Timetable for Demolition Works
(1)	Mai Po to Lok Ma Chau Control Point Section	1 st quarter 2010 – 3 rd quarter 2011 (under Phase 1)	2 nd quarter 2012 (under Phase 2)
(2)	Lok Ma Chau Control Point to Ng Tung River Section	1 st quarter 2010 – 4 th quarter 2012 (under Phase 1)	1 st quarter 2013 – 4 th quarter 2013 (under Phase 2)
(3)	Ng Tung River to Lin Ma Hang Section	1 st quarter 2012 1 st quarter 2015 (under Phase 2)	1 st quarter 2015 – 3 rd quarter 2015 (under Phase 2)
(4)	Lin Ma Hang to Sha Tau Kok Section	4 th quarter 2009 – 3 rd quarter 2011 (under Phase 1)	2 nd quarter 2012 – 4 th quarter 2012 (under Phase 2)

9. Owing to security considerations and the extensive scale of the demolition works involved, all of the demolition works will only commence upon the completion of construction works and the reduction of the FCA coverage. Interim measures will be implemented to ensure that the demolition works will not affect the timetable for the reduction of the FCA.

JUSTIFICATION

10. In order to implement the reduced coverage of the FCA while maintaining the integrity of the boundary, we need to construct an SBF along the existing BPR and new BPR and PBF at certain sections along the boundary between HKSAR and the Mainland, thereby enclosing the road and ensuring that the PBF and BPR would be protected from deliberate or inadvertent interference. The PBF and SBF will be erected along the northern and southern curbs of the re-aligned BPR respectively.

FINANCIAL IMPLICATIONS

11. We estimate the capital cost of the project to be \$285.0 million in MOD prices (please see paragraph 12 below), broken down as follows –

/(a)

	\$ million	
(a) Site works	4.3	
(b) External services, including builder works	17.0	
(c) Security fence ²	125.0	
(d) Road works	17.5	
(e) Soft landscaping	4.6	
(f) Drainage	6.8	
(g) Demolition works	15.4	
(h) Furniture and equipment ³	6.0	
(i) Additional energy conservation measures	0.2	
(j) Consultants' fees	12.3	
(i) contract administration	11.0	
(ii) management of resident site staff	1.3	
(k) Remuneration of resident site staff	15.1	
(l) Contingencies	19.1	
Sub-total	243.3	(in September 2011 prices)

/(m)

² The works involve steelworks of steel mesh, construction of steel posts and reinforced concrete footing.

³ The estimated cost of furniture and equipment is based on an indicative list of items including the Fence Protection System for the new section of the PBF along the Shenzhen River to the northwest of Lin Ma Hang.

	\$ million
(m) Provision for price adjustment	41.7
Total	<u>285.0⁴</u> (in MOD prices)

We propose to engage consultants to undertake contract administration and site supervision of the project, except for the part of the project to be implemented under **13GB**⁵. A detailed breakdown of the estimate for the consultants' fees and resident site staff costs by man-months is at Enclosure 4. We consider the estimated project cost reasonable as compared with similar projects undertaken by the Government.

12. Subject to FC's approval, we will phase the expenditure as follows –

Year	\$ million (Sept 2011)	Price adjustment factor	\$ million (MOD)
2012 – 13	30.0	1.05375	31.6
2013 – 14	85.0	1.11171	94.5
2014 – 15	65.0	1.17285	76.2
2015 – 16	25.0	1.23736	30.9
2016 – 17	20.0	1.30541	26.1
2017 – 18	11.0	1.37721	15.1
2018 – 19	7.3	1.45296	10.6
	<u>243.3</u>		<u>285.0</u>

/13.

⁴ The total project cost has included the estimated cost for constructing the portion of SBF between Ping Yuen River and Pak Fu Shan (\$47.8 million in MOD prices) to be implemented under **13GB**.

⁵ As the contract administration and site supervision works under **13GB** will be carried out by in-house staff of DSD, no consultancy fee will be incurred for the portion of SBF between Ping Yuen River and Pak Fu Shan to be implemented under **13GB**.

13. 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 2012 to 2019. We will award the contract on a lump-sum basis because we can clearly define the scope of the works in advance. The contract will provide for price adjustments.

14. We estimate that the annual recurrent expenditure of the SBF, PBF and BPR under **12GB** will be \$1.6 million.

PUBLIC CONSULTATION

15. We consulted the Legislative Council Panel on Security (the Panel) and other relevant parties, including Heung Yee Kuk (HYK), Town Planning Board, Advisory Council on the Environment, North District Council (NDC), Yuen Long District Council, Ta Kwu Ling Rural Committee (RC), Sha Tau Kok RC, Sheung Shui RC, and San Tin RC, on the results of the FCA review in 2006. In February 2008, we consulted the Panel on the finalized coverage of the reduced FCA. We further consulted HYK and the relevant RCs in April 2009 and the Panel in May 2009 on the construction works arising from **15GB**.

16. As for the "Ng Tung River to Lin Ma Hang Section" (i.e. **12GB**), we consulted HYK, NDC and the Ta Kwu Ling RC and Sha Tau Kok RC, in January and February 2010 on the construction works concerned. We consulted the Panel on 3 May 2011 on the proposed construction works. The local communities and the Panel raised no objection to the proposed works.

17. We gazetted the proposed construction works for the SBF and the new section of BPR and PBF to the northwest of Lin Ma Hang under the Road (Works, Use and Compensation) Ordinance (Cap.370) on 14 May 2010. We received no objection.

ENVIRONMENTAL IMPLICATIONS

18. The entire project (i.e. **15GB** and **12GB**) is a designated project under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and an Environmental Permit (EP) is required for the construction and operation of the project. The EIA report has concluded that the environmental impact arising from the project can be controlled to within the criteria under the

/EIA

EIA Ordinance and the Technical Memorandum on EIA Process. The Director of Environmental Protection (DEP) approved the EIA report with conditions on 8 April 2009 and granted the EP for the entire project on 5 June 2009.

19. The EIA report has pointed out that the large aggregation of wintering waterbirds at the Mai Po Nature Reserve, the fishponds in the Wetland Conservation Area and nearby areas are sensitive to disturbance, especially during winter when a large number of waterbirds are present. To minimise the potential disturbance to this area of high ecological value, the EIA report concludes that construction works using powered mechanical equipment during wintering periods (i.e. from mid-November to mid-March) should be avoided. Hence, we will avoid construction and demolition works for the “Mai Po to Lok Ma Chau Control Point Section” and the “Lok Ma Chau Control Point to Ng Tung River Section” during wintering periods.

20. We will implement the mitigation measures and the environmental monitoring and audit programme during the construction and operation stages of the project as set out in the approved EIA report, such as landscape planting, watering of the site, covering of materials on trucks, and use of silenced construction plant. Two individuals of flora species of interest were identified in the works area and we will provide in-situ preservation and protective fencing to avoid potential impact on these plants. We estimate the cost of the mitigation measures to be \$6.3 million (in September 2011 prices). We have included this cost in the overall project estimate.

21. At the planning and design stages, we have considered using metal site hoardings and signboards so that these materials can be recycled or reused in other projects to reduce the generation of construction waste where possible. In addition, we will require the contractor to reuse inert construction waste (e.g. use of excavated materials for filling within the site) 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 facilities⁶. We will encourage the contractor to maximise the use of recycled / recyclable inert construction waste, and the use of non-timber formwork to further reduce the generation of construction waste.

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⁶ 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.

22. At the construction stage, we will require the contractor to submit for approval a plan setting out the waste management measures, which will include appropriate means of mitigation 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 the inert portion from 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 at public fill reception facilities and landfills respectively through a trip-ticket system.

23. We estimate that the project **12GB** will generate in total about 28 084 tonnes of construction waste. Of these, we will reuse about 8 845 tonnes (31.5%) of inert construction waste on site and deliver 18 541 tonnes (66%) of inert construction waste to public fill reception facilities for subsequent reuse. We will dispose of the remaining 698 tonnes (2.5%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at public fill reception facilities and landfill sites is estimated to be about \$588,000 for this project (based on a unit cost of \$27 per tonne for disposal at public fill reception facilities and \$125 per tonne⁷ at landfills).

HERITAGE IMPLICATIONS

24. This project will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites/buildings, sites of archaeological interest and Government historic sites identified by the Antiquities and Monuments Office.

LAND ACQUISITION

25. The construction of the “Ng Tung River to Lin Ma Hang Section” under project **12GB** will involve resumption of about 7 763 square metres (m²) of private agricultural land and clearance 68 800 m² of government land. The land resumption and clearance will not affect any household or temporary domestic structures. We will charge the cost of land resumption and clearance estimated at \$32.64 million to **Head 701 – Land Acquisition**. A breakdown of the land resumption and clearance costs is at Enclosure 5.

/ENERGY

⁷ This estimate has taken into account the cost for developing, operating and restoring the landfills after they are filled and the aftercare required. It does not include the land opportunity cost for existing landfill sites (which is estimated at \$90 per m³), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.

ENERGY CONSERVATION MEASURES

26. **12GB** has adopted various forms of energy efficient features, including energy efficient luminaries with electronic ballast and lighting control by photosensors for the lighting system to be installed along the new BPR. For renewable energy technologies, we will adopt a small-scale photovoltaic system for environmental benefits. The total estimated additional cost for the adoption of the above features is around \$244,000 (including about \$144,000 for energy efficient features), which has been included in the cost estimate of this project. The energy efficient features will achieve 13.0% energy savings in the annual energy consumption with a payback period of about 5.7 years.

BACKGROUND INFORMATION

27. Following a review of the coverage of the FCA in 2006, the Administration announced in January 2008 that the coverage of the FCA would be substantially reduced from about 2 800 hectares to about 400 hectares. The reduced FCA will comprise a narrow strip of land covering the re-aligned BPR and areas to its north, together with crossing points along the boundary (i.e. the Boundary Control Points and Sha Tau Kok town).

28. The current coverage of the FCA is specified in the Frontier Closed Area Order pursuant to section 36(1) of the Public Order Ordinance (Cap. 245). We shall amend the Frontier Closed Area Order to stipulate the commencement of the reduced FCA boundary in phases to tie in with the completion of the construction works for the four sections.

29. We upgraded the original **12GB** to Category B in November 2003. We engaged consultants to carry out the detailed design in October 2004, an EIA in October 2007, and topographical surveys in September 2008. We upgraded part of **12GB** under Phase 1 of the project (i.e. **15GB**) to Category A in June 2009 for the construction works of the three sections, namely “Mai Po to Lok Ma Chau Control Point Section”, “Lok Ma Chau Control Point to Ng Tung River Section” and “Lin Ma Hang to Sha Tau Kok Section”. The works commenced in December 2009 for completion by December 2012. As for Phase 2 works for the remaining “Ng Tung River to Lin Ma Hang Section” (i.e. **12GB**), we engaged a contractor to carry out site investigations in June 2010 and a quantity surveying consultant for preparation of tender documents in January 2011. The total cost of the above-mentioned services is \$13.5 million. We charged the amount to block allocation **Subhead 3100GX** “Project feasibility studies, minor investigations and

/consultants’

consultants' fees in Category D of the Public Works Programme". The consultants and the contractor have completed these services, except for the preparation of tender documents which are being finalized.

30. Of the 133 trees within the project boundary, 72 trees will be preserved. The construction for the "Ng Tung River to Lin Ma Hang Section" will involve felling of 61 trees, including two dead trees. All trees to be felled are not important tree⁸. We will incorporate planting proposals as part of the project, including estimated quantities of 337 trees, 13 200 shrubs, 15 200 groundcovers, and 1.2 hectares of grassed area.

31. We estimate that the project under **12GB** will create about 90 jobs (78 for labourers and 12 for professional/technical staff) providing a total employment of 3 310 man-months.

Security Bureau
December 2011

⁸ An "important tree" refers to trees in the Register of Old and Valuable trees, or any 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 or exceeding 1.0 metre (m) (measured at 1.3m above ground level), or with height/canopy spread equal or exceeding 25m.

12GB – Construction of a secondary boundary fence and new sections of primary boundary fence and boundary patrol road – phase 2

Breakdown of the estimates for consultants' fees and resident site staff costs (in September 2011 prices)

		Estimated man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$million)
(a)	Consultants' fees for contract administration ^(Note 2)	Professional	--	--	11.0
				Sub-total	<u>11.0</u>
(b)	Resident site staff costs ^(Note 3)	Technical	484	1.6	16.4
				Sub-total	<u>16.4</u>
Comprising -					
(i)	Consultants' fee for management of resident site staff				1.3
(ii)	Remuneration of resident site staff				15.1
				Total	<u>27.4</u>

* 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 14 = \$21,175 per month).
2. The consultants' staff cost for contract administration is calculated in accordance with the existing consultancy agreement. The construction phase of the assignment will only be executed subject to Finance Committee's approval to upgrade **12GB** to Category A.
3. The actual man-months and actual costs will only be known after completion of the construction works.

**12GB - Construction of a secondary boundary fence and new sections
of primary boundary fence and boundary patrol road – phase 2**

Breakdown of the land resumption and clearance costs

	\$ million		
(I) Estimated resumption cost	28.70		
(a) Agricultural land ex-gratia compensation	28.70		
<p>22 agricultural lots (with a total area of 7 762.9 square metres (m²) or 83 558 square feet (ft²)) will be resumed</p> <p>83 558 square feet (ft²) x \$343.5 per ft² (please see Notes below)</p>			
(II) Estimated clearance cost	0.97		
(a) Ex-gratia allowance of crop compensation	0.90		
(b) Ex-gratia allowance for farm structures and miscellaneous permanent improvements to farms	0.03		
(c) Ex-gratia allowances for miscellaneous indigenous villager matters e.g. removal of graves and shrines	0.04		
(III) Interest and Contingency Payment	2.97		
(a) The interest payment on various ex-gratia compensation for private land	0.001		
(b) Contingency on the above costs	2.97		
	<table border="0"> <tr> <td>Total</td> <td align="right"><u>32.64</u></td> </tr> </table>	Total	<u>32.64</u>
Total	<u>32.64</u>		

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 ExCo 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 in the project **12GB** is agricultural land within Compensation Zone "C".
- In accordance with G.N. 6195 dated 9 September 2011 on the revised ex-gratia compensation rates for 22 lots of land to be resumed under **12GB**, the ex-gratia compensation rate of agricultural land for "Zone C" is 50% of the Basic Rate at \$687 per square foot, i.e. \$343.5 per square foot.