

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 705 - CIVIL ENGINEERING

Civil Engineering – Land Development

236CL – Tai O development, package 4, stage II engineering works

Members are invited to recommend to Finance Committee the upgrading of **236CL**, retitled “Tai O Development – Sheltered Boat Anchorage”, to Category A at an estimated cost of \$287.5 million in money-of-the-day prices for the construction of a sheltered boat anchorage area and provision of a mangrove replanting area at Tai O.

PROBLEM

We need to construct a sheltered boat anchorage (SBA) area at Tai O to provide a safe shelter for fishing vessels during typhoons. We also need to provide a replacement mangrove replanting area.

PROPOSAL

2. The Director of Civil Engineering (DCE), with the support of the Secretary for Housing, Planning and Lands, proposes to upgrade **236CL** to Category A at an estimated cost of \$287.5 million in money-of-the-day (MOD) prices for the construction of an SBA area and provision of a mangrove replanting area at Tai O.

/PROJECT

PROJECT SCOPE AND NATURE

3. The scope of **236CL** comprises –
- (a) construction of an SBA area of about four hectares including a breakwater of about 350 metres and associated marine access channels;
 - (b) construction of a promenade of about 0.2 hectare on pile deck structure with landing steps;
 - (c) formation of about 7 hectares of inter-tidal area and implementation of associated engineering works for mangrove replanting;
 - (d) restoration of the existing historic seawall of about 630 metres with provision of a pedestrian link;
 - (e) formation of about 0.2 hectare of land for a future bus terminus adjacent to Tai O Road;
 - (f) implementation of environmental monitoring and mitigation measures;
 - (g) employment of an Independent Environmental Checker (IEC) to audit the environmental monitoring works; and
 - (h) employment of consultants for construction supervision and completion certification.

———— A site plan showing the proposed works is at Enclosure 1. We plan to commence construction in February 2003 for completion in August 2005.

JUSTIFICATION*Construction of a sheltered boat anchorage*

4. Tai O is a historical base for fishing boats in the western approaches of Lantau Island and Pearl River Estuary. Tai O Rural Committee and local villagers have long expressed their need for an SBA area in Tai O. In the boat survey conducted in March 2001, we found 103 fishing vessels homing at Tai O.

/These

These vessels require a safe shelter, especially during typhoons. Provision of an SBA area in Tai O is essential on marine safety grounds. The proposed SBA area of about four hectares will provide a sheltered basin for about 110 fishing vessels which comprise mainly small to medium-sized vessels from three to 28 metres in length. We will also provide a promenade of about 0.2 hectare on pile deck structure with landing steps near the proposed SBA.

Provision of mangrove replanting area

5. In accordance with the recommendations made by the New Airport Master Plan Study completed in 1991, we need to provide a mangrove replanting area to compensate for the loss of mangroves as a result of the construction of the Chek Lap Kok airport and the associated development on the north shore of Lantau. Subsequently, we conducted a study on mangrove stands in Hong Kong and confirmed the feasibility of converting Tai O salt pan to a created habitat for mangrove planting. The mangrove habitat to be created will enhance the ecology of the area by providing feeding and nursery grounds for a wide range of inter-tidal animals, which in turn will benefit other terrestrial and aquatic wildlife.

Restoration of historic seawall

6. The existing seawall built before 1920 has suffered considerable damage due to wave action. We will reconstruct the seawall to protect the mangrove area from direct attack by waves and pollutants. We will also make use of the opportunity to install railings on the seawall so that the public could safely walk on the seawall through the promenade linking the bus terminus. In order to preserve the original outlook of the historic seawall, we will salvage the old seawall blocks for use as facing stones. The restored seawall together with the mangrove habitat will become valuable attributes of Tai O for visitors who are interested in eco-tourism and cultural heritage.

FINANCIAL IMPLICATIONS

7. We estimate the capital cost of the project to be \$287.5 million in MOD prices (see paragraph 8 below), made up as follows –

/(a)

	\$ million	
(a) SBA including a breakwater and associated marine access channels	63.2	
(b) Promenade on pile deck structure with landing steps	68.1	
(c) Formation of inter-tidal area and associated engineering works for mangrove planting area	1.2	
(d) Restoration of the existing historic seawall with a pedestrian link	94.7	
(e) Land formation for a future bus terminus	10.2	
(f) Environmental monitoring and mitigation measures	2.1	
(g) Consultants' fees	25.8	
(i) contract administration and completion certification	2.7	
(ii) independent audit of environmental monitoring	1.8	
(iii) site staff costs	21.3	
(h) Contingencies	24.5	
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Sub-total	289.8	(in September 2002 prices)
(i) Provision for price adjustment	(2.3)	
	<hr/>	
Total	287.5	(in MOD prices)
	<hr/>	

/Due

Due to insufficient in-house resources, DCE proposes to engage consultants to conduct independent audit of the environmental monitoring, construction supervision and completion certification. A breakdown by man-months of the estimates for consultants' fee is at Enclosure 2.

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

Year	\$ million (Sept 2002)	Price Adjustment Factor	\$ million (MOD)
2003 - 2004	88.8	0.99250	88.1
2004 - 2005	153.5	0.99250	152.3
2005 - 2006	34.4	0.99250	34.1
2006 - 2007	13.1	0.99250	13.0
	289.8		287.5

9. We have derived the MOD estimates on the basis of the Government's latest forecast of trend labour and construction prices for the period 2003 to 2007. We will tender the proposed works under a standard remeasurement contract because the quantities of dredging, filling and piling works may vary according to the actual ground conditions. The contract will provide for price adjustments because the contract period will exceed 21 months.

10. We estimate the annual recurrent expenditure arising from the project to be \$2.5 million.

PUBLIC CONSULTATION

11. We gazetted the project under the Foreshore and Seabed (Reclamations) Ordinance (FS(R)O) on 1 December 2000. A total of 21 objections, including eight objectors with no contact details, were received mainly on grounds of the size and location of the proposed SBA area and its impacts on the nearby mangrove planting. We met with some of the objectors and revised the

/scheme

scheme of the project with a view to resolving the objections. Ten objectors subsequently withdrew their objections. The other three objections remained unresolved. On 12 March 2002, the Chief Executive in Council overruled the objections and authorised the revised scheme.

12. We consulted the Tai O Rural Committee (TORC) and the Island District Council (IsDC) on 21 September 2001 and 15 October 2001 respectively. Members of TORC and IsDC supported the revised scheme.

13. On 6 December 2002, the LegCo Panel on Planning, Lands and Works discussed and supported the proposed works.

ENVIRONMENTAL IMPLICATIONS

14. The project is designated under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance and an environmental permit is required for the construction and operation of the project. In July 2000, the EIA report for the project was approved under the EIA Ordinance. The EIA report concluded that the environmental impact arising from the project could be controlled to within established standards and guidelines through the implementation of the recommended mitigation measures. The key measures include the use of quiet plant for noise control, restricting the number of grab dredgers and the potential use of silt curtain for water quality control. We shall implement measures recommended in the approved EIA report and implement environmental monitoring and audit programme to ensure compliance with the EIA recommendations. We estimate the cost of implementing the environmental monitoring and mitigation measures to be \$2.1 million. We have included this cost in the overall project estimate.

15. At the planning and design stages of the project, we have given due consideration to minimising the generation of construction and demolition (C&D) materials. We will require the contractor to reuse the excavated material as filling material on site. To further minimise the generation of C&D materials, we will encourage the contractors to use steel instead of timber in formwork and temporary works.

16. We estimate that about 10 000 cubic metres (m³) of C&D materials will be generated by the project. Of these, about 9 960 m³ (99.6%) will be reused on site and about 40 m³ (0.4%) will be disposed of at landfills. The notional cost of accommodating C&D waste at landfill sites is estimated to be \$5,000 for this project (based on a notional unit cost¹ of \$125/m³).

17. We will require the contractors to submit waste management plans for approval. The waste management plans will include appropriate mitigation measures to avoid, reuse and recycle C&D materials. We will require the contractor to designate areas for segregation and temporary storage of reusable and recyclable materials. We will ensure that the day-to-day operations on site comply with the approved waste management plans. We will control the disposal of C&D waste at landfills through a trip-ticket system. We will record the disposal, reuse and recycling of C&D materials for monitoring purposes.

18. We have adopted measures to minimise dredging by the use of piled foundations instead of the conventional dredging and filling method for construction of the seawall and promenade. Out of the 1.3 million m³ of dredged mud, we estimate that about 0.3 million m³ (23%) are contaminated materials. They will be disposed of at the contaminated mud pit at East Sha Chau. For the remaining 1.0 million m³ (77%) of uncontaminated materials, they will be disposed of at the designated pit of East Sha Chau.

LAND ACQUISITION

19. The proposed works do not require land acquisition.

BACKGROUND INFORMATION

20. We completed the Tai O Development Strategy Review in 1987. We upgraded **236CL** to Category B in October 1994. In April 1998, we engaged consultants to undertake the EIA and the ground investigation under block allocation **Subhead 7100CX** “New towns and urban area works, studies and investigations for items in Category D of the Public Works Programme” at an

/estimated

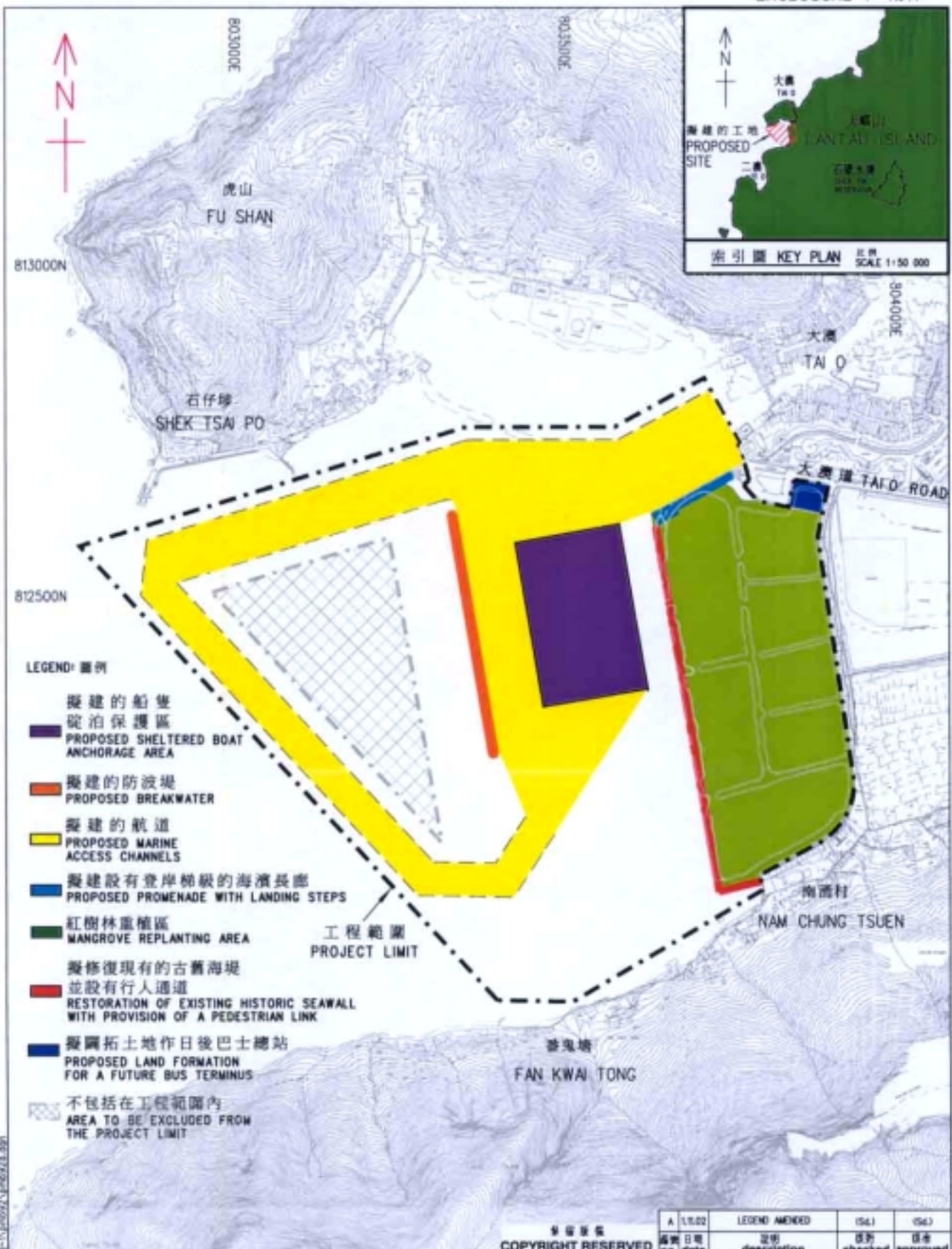
¹ This estimate has taken into account the cost of developing, operating and restoring the landfills after they are filled, and the aftercare required. It does not include the land opportunity cost for existing landfill sites (which is estimated at \$90/m³) nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled up. The notional cost estimate is for reference only and does not form part of this project estimate.

estimated cost of \$13.26 million. In February 2002, we carried out additional ground investigation and employed consultants to undertake the detailed design at an estimated cost of \$9.5 million. In April 2002, we started the advance dredging works to improve the existing marine access for navigation of vessels at an estimated cost of \$2.0 million. We funded the additional ground investigation, design consultancy and advance dredging works under block allocation **Subhead 5101CX** "Civil Engineering works, studies and investigations for items in Category D of the Public Works Programme".

21. The consultants substantially completed the detailed design and works drawings in August 2002.

22. We estimate that the proposed works will create some 130 new jobs, comprising 24 professional/technical staff and 106 labourers, totalling 3 150 man-months.

Housing, Planning and Lands Bureau
December 2002



LEGEND 圖例

- 擬建的船隻
駁泊保護區
PROPOSED SHELTERED BOAT
ANCHORAGE AREA
- 擬建的防波堤
PROPOSED BREAKWATER
- 擬建的航道
PROPOSED MARINE
ACCESS CHANNELS
- 擬建設有登岸梯級的海濱長廊
PROPOSED PROMENADE WITH LANDING STEPS
- 紅樹林重植區
MANGROVE REPLANTING AREA
- 擬修復現有的古舊海堤
並設有行人通道
RESTORATION OF EXISTING HISTORIC SEAWALL
WITH PROVISION OF A PEDESTRIAN LINK
- 擬闢拓土地作日後巴士總站
PROPOSED LAND FORMATION
FOR A FUTURE BUS TERMINUS
- 不包括在工程範圍內
AREA TO BE EXCLUDED FROM
THE PROJECT LIMIT

工程範圍
PROJECT LIMIT

姜鬼塘
FAN KWAI TONG

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A	1/15/02	LEGEND AMENDED	(54)	(54)
編號 no.	日期 date	說明 description	核對 checked	核實 approved

drawing no. 圖號		scale 比例
PMB 92A		1:7500 OR AS SHOWN
		CIVIL ENGINEERING 土 DEPARTMENT 工 HONG KONG 務 總 署

title 圖則名稱
工務計劃項目第 236CL 號
PWP ITEM No. 236CL
大澳發展第四組第二期工程
TAI O DEVELOPMENT, PACKAGE 4,
STAGE II ENGINEERING WORKS

	name 姓名	initial 簽字	date 日期
designed 設計	Y. W. NG	SIGNED	4-7-2002
drawn 繪圖	K. H. TONG	SIGNED	4-7-2002
checked 核對	Y. W. NG	SIGNED	4-7-2002
approved 核實	K. S. HONG	SIGNED	4-7-2002
office	土木工程處 工程管理科 PROJECT MANAGEMENT BRANCH CIVIL ENGINEERING OFFICE		

236CL – Tai O development, package 4, stage II engineering works

Breakdown of the estimate for consultants' fees

Consultants' staff costs		Estimated man-months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)
(a) Consultants' fees for construction stage					
(i) Contract administration and completion certification (Note 2)	Professional	15	–	–	2.1
	Technical	15	–	–	0.6
(ii) Independent audit of environmental monitoring (Note 3)	Professional	12	38	2.0	1.4
	Technical	10	14	2.0	0.4
(b) Resident site staff costs (Note 3)	Professional	117	38	1.6	10.8
	Technical	342	14	1.6	10.5
Total consultants' staff costs					25.8

*MPS = Master Pay Scale

Note

1. A multiplier of 2.0 is applied to the average MPS point to estimate the full staff costs including the consultants' overheads and profit, as the staff for independent audit of environmental monitoring will be employed in the consultant's offices. A multiplier of 1.6 is applied in the case of resident site staff supplied by the consultants. (At 1.10.2002, MPS pt. 38 = \$57,730 per month and MPS pt. 14 = \$19,195 per month)
2. The consultants' staff cost for contract administration and completion certification is calculated in accordance with the existing consultancy agreement for the design and construction of Tai O development package 4 stage II engineering works. The assignment will only be executed subject to Finance Committee's approval to upgrade **236CL** to Category A.
3. The consultants' staff cost for independent audit of environmental monitoring and site supervision is based on estimates prepared by the Director of Civil Engineering. We will only know the actual man-months and actual costs after completion of the construction works.