

## ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

### HEAD 705 – CIVIL ENGINEERING

#### Civil Engineering – Land Development

#### **660CL – Site formation, construction of associated infrastructure and provision of government, institution and community facilities for an international theme park on Lantau Island**

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **660CL**, entitled “Infrastructure for Penny’s Bay Development, Package 3 and Penny’s Bay Reclamation Stage 2”, to Category A at an estimated cost of \$2,375.9 million in money-of-the-day prices; and
- (b) the retention of the remainder of **660CL** in Category B.

### PROBLEM

We need to provide the necessary infrastructure and government, institution and community (GIC) facilities to support the development of Hong Kong Disneyland (HKD) Phase 1 at Penny’s Bay on Lantau Island. We also need to provide land for the future development of HKD Phase 2.

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## PROPOSAL

2. The Director of Civil Engineering (DCE), with the support of the Secretary for Economic Services, proposes to upgrade part of **660CL** to Category A at an estimated cost of \$2,375.9 million in money-of-the-day (MOD) prices for the construction of infrastructure and GIC facilities to serve HKD Phase 1 and the reclamation works for the future development of HKD Phase 2.

## PROJECT SCOPE AND NATURE

3. The scope of the part of **660CL** which we now propose to upgrade to Category A comprises -

- (a) construction of a section of Road P2 about 1.8 kilometres (km) in length;
- (b) decommissioning of the former Cheoy Lee Shipyard (the Shipyard);
- (c) formation of about 20 hectares (ha) of land over the Shipyard area and the associated drainage and slope stabilisation works;
- (d) construction of the remaining part of public water recreation centre including the provision of irrigation network, an arboretum, a tree farm, about 3 ha of woodland planting and other landscaping works;
- (e) construction of sewerage works from Yam O to Siu Ho Wan Sewerage Treatment Works including the laying of a sewage rising main about 5 km in length and associated works;
- (f) construction of a salt water main from Siu Ho Wan to Yam O Tuk about 2.6 km in length and associated works;
- (g) construction of the raw water main from Ta Pang Po to Yam O about 1.8 km in length and associated works;
- (h) construction of a police post at Penny's Bay;
- (i) construction of a fire station with ambulance depot at Penny's Bay;

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- (j) reclamation works for the formation of about 60 ha of land at Penny's Bay including 1.6 km of permanent sloping seawall and associated works;
- (k) environmental monitoring and mitigation measures for the proposed works; and
- (l) employment of consultants for construction supervision and completion certification of the works.

— A site plan covering the proposed works is at Enclosure 1. We plan to start the proposed infrastructure works and GIC facilities in July 2002 for completion in phases by July 2005 and to start the Penny's Bay Reclamation Stage 2 (PBR2) in February 2003 for completion in December 2008.

4. The remaining works of **660CL** to be retained in Category B include –
- (a) investigation, design and construction of the remaining works for the development of HKD Phase 2;
  - (b) construction of the remaining part of the salt water supply system;
  - (c) environmental monitoring and mitigation measures for the remaining works; and
  - (d) construction supervision and completion certification of the works.

## JUSTIFICATION

5. Government entered into an agreement with The Walt Disney Company and Hongkong International Theme Parks Limited in December 1999 for the development of HKD Phase 1. To implement the development of HKD Phase 1, Government has to provide a fully formed and serviced site on reclaimed land at Penny's Bay including associated and supporting infrastructure and GIC facilities. According to the implementation programme for the project, we need to commence the proposed infrastructure works in July 2002 in order to enable HKD Phase 1 to open in 2005. Failure to commence the works on time will put the project timetable at risk and delay the economic benefits to be derived from the operation of HKD.

6. We need to decommission the Shipyard as part of the road access to the theme park and part of the public water recreation centre fall within the Shipyard site. Decommissioning of a shipyard is a designated project under the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and an environmental permit for the decommissioning works is required. In December 2001, we completed the EIA study on decommissioning of the Shipyard. The study revealed the existence of hazardous substances in the soil at the site and recommended a comprehensive and effective remediation and clean up plan in line with international practice. We will carry out the decontamination work in accordance with the recommendations of the EIA report and all the conditions of the relevant environmental permit.

7. HKD Phase 1 will attract a large number of local visitors as well as tourists. It is essential to construct a police post near HKD Phase 1 to serve as a reporting centre. In case of emergencies, the police post will serve as a command post in providing and coordinating responses to major incidents within HKD Phase 1. The nearest fire station-cum-ambulance depot is currently located at Tung Chung, which is about 14 km away. Fire appliances and ambulances from Tung Chung will take more than 16 minutes to reach Penny's Bay. This does not meet the fire services performance standard<sup>1</sup> nor the approved response time for emergency ambulance services<sup>2</sup>. To ensure provision of adequate emergency services to HKD Phase 1, we need to construct a fire station with ambulance depot adjacent to the police post.

8. The land formed under the PBR2 is designated for the future development of HKD Phase 2. To maximize the use of inert construction and demolition (C&D) material (also referred to as public fill) in reclamation and land formation and minimize disposal at landfills, we have earmarked PBR2 as an outlet for public fill. PBR2 can accommodate 13 million cubic metres (m<sup>3</sup>) of public fill. At present, we have only two public filling areas<sup>3</sup>, one at Pak Shek Kok and the other at Tuen Mun Area 38. These two public filling areas will be completely filled up by end 2002. The commencement of the reclamation works under PBR2 will provide a much-needed outlet for the large quantity of public fill generated by the local construction industry. This large quantity of public fill, if not delivered to public filling areas, would have to be disposed of at landfills taking up valuable capacities.

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<sup>1</sup> According to the prevailing performance standard, any fire calls arising from the catchment area of this fire station should be met within a response time of six minutes.

<sup>2</sup> The emergency ambulance service adopts a 12-minute response time as its performance target.

<sup>3</sup> A public filling area is a designated part of a development project that accepts public fill for reclamation purpose. Disposal of public fill in a public filling area requires a licence issued by the Director of Civil Engineering.

**FINANCIAL IMPLICATIONS**

9. We estimate the capital cost of the project to be \$2,375.9 million in MOD prices (see paragraph 10 below), made up as follows –

	<b>\$ million</b>
(a) Construction of a section of Road P2	91.6
(b) Decommissioning of the former Cheoy Lee Shipyard	450.0
(c) Land formation over the Shipyard area	146.0
(d) Construction of the remaining part of public water recreation centre	144.0
(e) Construction of sewerage works from Yam O to Siu Ho Wan sewage treatment works	34.0
(f) Construction of a salt water main from Siu Ho Wan to Yam O Tuk	12.7
(g) Construction of a raw water main from Ta Pang Po to Yam O	12.0
(h) Construction of a police post	23.0
(i) Construction of a fire station with ambulance depot	176.9
(j) Reclamation works for PBR2	881.2
(k) Environmental monitoring and mitigation measures for the proposed works	49.7

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(l)	Employment of consultants for construction supervision and certifying completion	164.6	
(m)	Contingencies	228.4	
	Sub-total	2,414.1	(in September 2001 prices)
(n)	Provision for price adjustment	(38.2)	
	Total	2,375.9	(in MOD prices)

Owing to insufficient in-house resources, DCE proposes to engage consultants for construction supervision and completion certification. A breakdown by man-months of the estimates for consultants' fees is at Enclosure 2.

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

Year	\$ million (Sept 2001)	Price adjustment factor	\$ million (MOD)
2002 – 2003	379.2	0.98625	374.0
2003 – 2004	696.4	0.98378	685.1
2004 – 2005	614.6	0.98378	604.6
2005 – 2006	291.6	0.98378	286.9
2006 – 2007	286.1	0.98378	281.5
2007 – 2008	127.1	0.98378	125.0
2008 – 2009	19.1	0.98378	18.8
	2414.1		2375.9

11. We have derived the MOD estimates on the basis of Government's latest forecast of trend labour and construction prices for the period 2002 to 2009. We plan to carry out the works under four contracts comprising three civil engineering contracts and one building contract. We will tender the three civil engineering contracts, namely "Water mains and sewerage works from Siu Ho Wan to Yam O", "Infrastructure for Penny's Bay development, Contract 2" and "Penny's Bay Reclamation Stage 2", as remeasurement contracts because the quantities of major items such as foundation works, drainage works and dredging works cannot be accurately determined at the design stage. The building contract for police post and fire station with ambulance depot will be tendered as a fixed-price lump-sum contract as the quantity of majority of the works can be clearly defined at the design stage. The contracts "Infrastructure for Penny's Bay development, Contract 2" and "Penny's Bay Reclamation Stage 2" will provide for price adjustment as the duration of these two contracts will exceed 21 months. We will not apply price adjustment to the other two contracts because their contract period will not exceed 21 months.

12. We estimate the annually recurrent expenditure upon full completion of this project to be \$63.7 million.

## **PUBLIC CONSULTATION**

13. The project is based on the Recommended Outline Development Plan for the Theme Park and Northshore Lantau Development which was generally supported by the Tsuen Wan District Council (TWDC) and Islands District Council (IsDC) during consultation in March 2000. We presented the proposed roadworks to IsDC on 22 May 2000 and circulated an information paper on the proposed roadworks to TWDC in June 2000. Members of the two District Councils did not have any comment on the proposal. We consulted IsDC and TWDC on 25 and 26 September 2000 respectively on the proposed sewerage scheme and land resumption for Penny's Bay Development. Members supported the proposed sewerage scheme and land resumption.

14. We gazetted the proposed roadworks under the Roads (Works, Use and Compensation) Ordinance on 21 July 2000. We received three objections, only one of which was related to the roads now being proposed. This objection was related to the resumption of land affected by the roadworks. We met the objector to try to resolve the objection. However, it remained unresolved. We obtained the Chief Executive in Council's authorization of the proposed road schemes in January 2001 and gazetted the authorization on 23 January 2001.

15. We gazetted the reclamation at Penny's Bay including the Penny's Bay Reclamation Stage 2, under the Foreshore and Sea-bed (Reclamations) Ordinance, on 15 October 1999. Eight objections were received. Although we met the objectors to try to resolve the objections, none of them withdrew their objections. We obtained the Chief Executive in Council's authorization of the proposed reclamation in March 2000 and gazetted the authorization on 14 April 2000.

16. We gazetted the remaining section of reclamation works within the Shipyard area under the Foreshore and Sea-bed (Reclamations) Ordinance on 23 November 2001. No objection was received. Authorization of the proposed works was gazetted on 8 February 2002.

17. We gazetted the proposed sewerage works from Siu Ho Wan sewage treatment plant to Yam O under the Roads (Works, Use and Compensation) Ordinance as applied by section 26 of the Water Pollution Control (Sewerage) Regulation on 15 June 2001. No objection was received. The proposed sewerage scheme was authorized on 6 September 2001.

18. The decommissioning of a shipyard is a designated project under the EIA Ordinance and an environmental permit is required for the construction, operation and decommissioning of the relevant designated project. We completed the EIA study for the decommissioning of the Shipyard in December 2001 and the EIA report was published for public consultation on 21 February 2002. During the one-month public consultation period, we briefed the IsDC, the Environmental and Health Affairs Committee of TWDC and Kwai Tsing District Council (KTDC) on the proposed decommissioning works on 25 February, 14 March and 21 March 2002 respectively. While IsDC and TWDC expressed no objection to the decommissioning works, KTDC objected to the use of the Chemical Waste Treatment Centre in Tsing Yi for the final stage of the proposed decontamination works, i.e., incineration of 600 m<sup>3</sup> of oily residue arising from the thermal desorption process. We also briefed the Legislative Council Panel on Environmental Affairs (EA Panel) on 12 March, 19 March, 10 April and 19 April 2002 regarding the proposed decommissioning works and the Panel on Economic Services (ES Panel) on 20 March 2002 regarding the financial implications of the decommissioning works. Members were by and large concerned about the effectiveness and risk of the recommended treatment method, including the proposal for off-site treatment. Members of the EA Panel expressed that, in addition to the treatment method endorsed by the Advisory Council on the Environment (ACE), flexibility should be put in place in the tender document to allow tenderers to elect to submit other proven alternatives that might be cost-effective whilst

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meeting the technical and environmental requirements. At the ES Panel meeting held on 20 March 2002, Members requested the Administration to revert to the Panel in due course on whether we would take any legal action against the polluter of the Shipyard site.

19. We consulted the TWDC and IsDC on 26 March 2002 and 8 April 2002 respectively on the proposed works. The Councils did not express objection. We consulted the Aquaculture Sub-committee of the Advisory Committee on Agriculture and Fisheries, the Ma Wan Rural Committee and the Capture Fisheries Sub-committees of the Advisory Committee on Agriculture and Fisheries respectively on 20 March, 22 March and 26 March 2002 regarding the design, programme and construction method of PBR2. The committee members exchanged views with us on the mitigation measures but did not raise objection to the proposed reclamation works. We also consulted the Ma Wan Fisheries Rights Association Limited and Cheung Sha Wan Fisheries' representatives on 3 April 2002 on the proposed reclamation. The mariculturists' representatives were particularly concerned about the monitoring of water quality. We will liaise with them regarding the locations of additional monitoring stations, and will make arrangement for witnessing the monitoring process. We have also agreed to disseminate hard copies of monitoring data to their representatives on a monthly basis.

20. On 12 April 2002 we briefed the Legislative Council Panel on Planning, Lands and Works on the proposed works. Members did not express objection to the proposed works but requested additional information relating to some of the proposed items e.g. progress of the settlement of the concerned mariculturists' claims against fish kill allegedly caused by the reclamation works during Penny's Bay Reclamation Stage 1 and the location of the proposed fire depot. We have provided the requested information to the Panel on 2 May 2002.

## **ENVIRONMENTAL IMPLICATIONS**

21. The proposed works include designated projects under Cap. 499. An environmental permit is required for the construction, operation and decommissioning of the relevant designated projects. We completed two EIA studies in March 2000 for the "Construction of an International Theme Park in Penny's Bay of North Lantau and its Essential Associated Infrastructures" and the "Northshore Lantau Development Feasibility Study (NLDFS)" and an EIA study in December 2001 for the "Decommissioning of Cheoy Lee Shipyard at Penny's Bay". In essence, the EIA studies concluded that the proposed works would meet established environmental standards and legislation after the implementation of the

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recommended mitigation measures in construction and operation stages. The first two EIA reports were endorsed with conditions by ACE on 17 April 2000 and approved by the Director of Environmental Protection (DEP) on 28 April 2000 under the EIA Ordinance. The EIA report for the decommissioning of the Shipyard was endorsed by ACE with conditions on 26 March 2002 and approved by DEP on 24 April 2002.

22. We will comply with all of the conditions in the relevant environmental permits for the designated projects. We will implement the recommended environmental mitigation measures by incorporating them into the works contract. The key measures include control on the rates and methods of reclamation, a silt curtain system for PBR2, land remediation works for about 87,000 m<sup>3</sup> of contaminated soil at the Shipyard site and its associated controls on air emissions and contaminated runoff, protection and transplantation of restricted/protected plant species and re-creation of habitat for Rice Fish. We will incorporate into the works contract standard measures to control pollution arising during construction. We have also established an Environmental Project Office (ENPO) to monitor the cumulative environmental effects of all concurrent construction projects in the North-East Lantau area. We have included the cost of implementing the environmental monitoring and mitigation measures in the capital cost of the decommissioning works (paragraph 9(b) above). The costs of implementing the environmental monitoring and mitigation measures for the rest of the proposed works (\$49.7 million) has also been included in the project estimate.

23. At the planning and design stages of the project, we have given due consideration to minimizing the generation of C&D materials. To further minimize the generation of C&D materials, we will encourage the contractors to use steel instead of timber in formwork and temporary works.

24. We estimate that about 313 000 m<sup>3</sup> of C&D materials will be generated by this project. Of these, about 160 000 m<sup>3</sup> (51%) will be reused within the project site, about 150 000 m<sup>3</sup> (48%) will be reused as public fill in the PBR2 and 3 000 m<sup>3</sup> (1%) of C&D waste will be disposed of at landfills. The PBR2 works will receive sorted public fill of about 13 million m<sup>3</sup>. We will require the contractors to submit waste management plans to Environmental Protection Department for approval. The waste management plans will describe the arrangements for avoidance, reuse, recovery and recycling, storage, collection, treatment and disposal of different categories of waste generated from the construction activities and the decommissioning of the Shipyard, and will include recommended mitigation measures for construction waste management, including designation of areas for segregation and temporary storage of reusable and

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recyclable materials. We will ensure that the day-to-day operations on site comply with the approved waste management plans. We will implement a trip-ticket system to control the proper disposal of C&D materials and will record the reuse, recycling and disposal of C&D materials for monitoring purposes. We will require the contractor to separate public fill from C&D waste for reuse. The notional cost of accommodating C&D waste at landfill sites is estimated to be \$375,000 for this project (based on a notional unit cost<sup>4</sup> of \$125/m<sup>3</sup>).

25. We estimate that the PBR2 works will produce 4.0 million m<sup>3</sup> of uncontaminated marine mud. There will be sufficient capacity in the designated areas at South Cheung Chau, East Ninepin and East Tung Lung Chau for disposal of this mud. We also estimate that no contaminated mud will be generated by the project.

## LAND ACQUISITION

26. We have acquired about 18.7 ha of land of the Shipyard by voluntary surrender of the shipyard site. We have paid the land acquisition and clearance cost at \$1,506 million under **Head 701** – Land Acquisition.

## BACKGROUND INFORMATION

27. We upgraded **660CL** to Category B in November 1999. On 26 November 1999, Finance Committee agreed to accept in principle the financial implications, estimated at \$13.569 billion in September 1999 prices, for the site formation, construction of associated infrastructure and the provision of GIC facilities in connection with the development of an international theme park on Lantau Island. The proposed works are part of the \$13.569 billion mega project.

28. We funded the EIA study under “Northshore Lantau Development Feasibility Study” under PWP item **108AP** at a cost of \$7.0 million and the EIA study for “Construction of an international theme park in Penny’s Bay of North Lantau and its essential associated infrastructures” under block allocation **Subhead 5101CX** “Civil engineering works, studies and investigations for items in Category D of the Public Works Programme” at a cost of \$7.8 million.

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<sup>4</sup> 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/m<sup>3</sup>) 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.

29. On 17 December 1999, Finance Committee approved the upgrading of part of **660CL** to Category A as **662CL** entitled “Reclamation of Penny’s Bay Stage 1 works, design of site formation at Yam O and design of associated infrastructure and GIC facilities for the development of Hong Kong Disneyland Phase 1 on Lantau Island” at an estimated cost of \$6,923.9 million in MOD prices. We commenced the reclamation works in May 2000 for completion in phases from October 2001 to January 2003. We also commenced the EIA study for the decommissioning of the Shipyard in September 2000. The study was completed in December 2001.

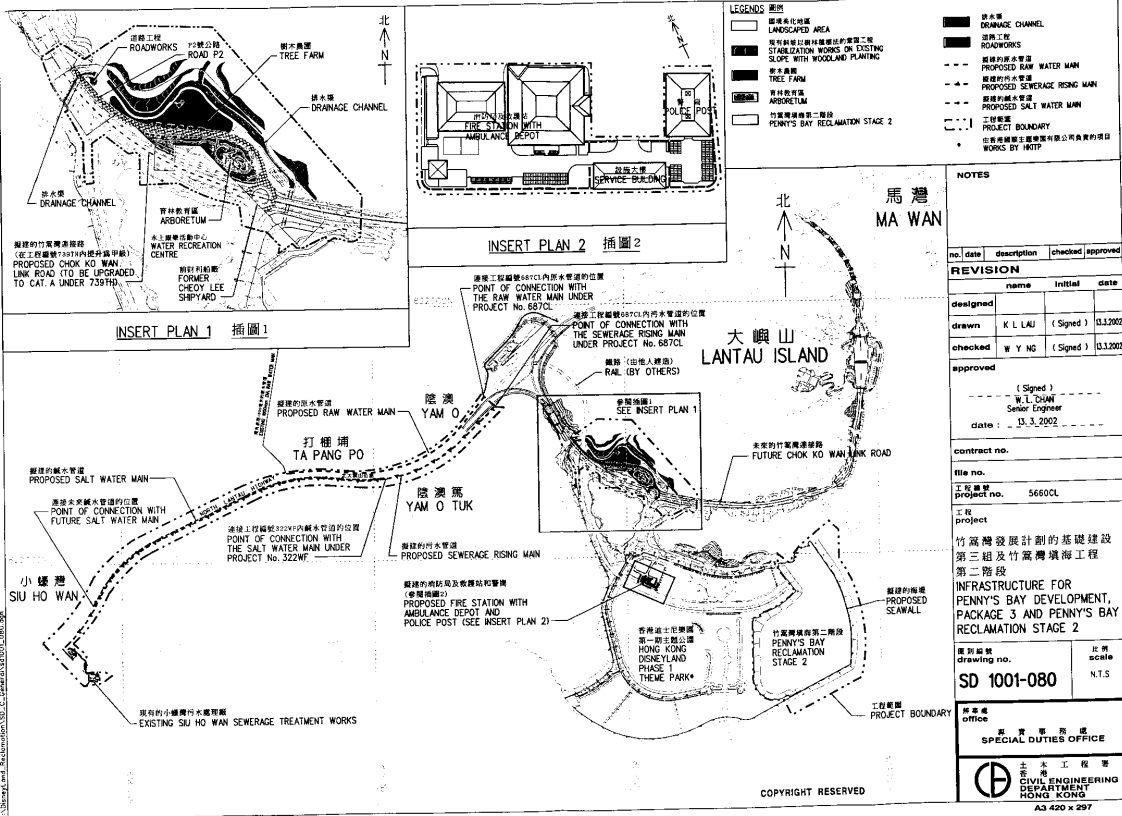
30. On 27 April 2001, Finance Committee approved the upgrading of another part of **660CL** to Category A as **322WF** entitled “Infrastructure for Penny’s Bay Development, Package 1 – Yam O Tuk fresh water service reservoir and associated works” at an estimated cost of \$165 million in MOD prices. We commenced the construction works on 9 August 2001.

31. On 22 June 2001, Finance Committee approved the upgrading of another part of **660CL** to Category A as **687CL** entitled “Infrastructure for Penny’s Bay Development, Package 2” at an estimated cost of \$3,917 million in MOD prices. We commenced the construction works of the first infrastructure contract on 24 October 2001.

32. We estimate that the project will create some 947 new jobs comprising 164 professional/technical staff and 783 labourers, totalling 29 178 man-months.

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Tourism Commission  
Economic Services Bureau  
May 2002




- LEGENDS 圖例**
- 排水渠 DRAINAGE CHANNEL
  - ▬ 道路工程 ROADWORKS
  - ▬ 現有斜坡及現有綠化地帶之穩定工程 STABILIZATION WORKS ON EXISTING SLOPE WITH WOOLAND PLANTING
  - 樹木農圃 TREE FARM
  - ▬ 樹木農圃 APPROXIMATE
  - ▬ 竹篙灣填海第二階段 PENNY'S BAY RECLAMATION STAGE 2
  - ▬ 排水渠 PROPOSED DRAINAGE CHANNEL
  - ▬ 道路工程 PROPOSED ROADWORKS
  - ▬ 現有排水渠 PROPOSED RAW WATER MAIN
  - ▬ 現有污水渠 PROPOSED SEWERAGE RISING MAIN
  - ▬ 現有鹹水管 PROPOSED SALT WATER MAIN
  - ▬ 工程範圍 PROJECT BOUNDARY
  - 由香港測量師學會註冊之測量師測量之界址 WORKS BY M&P

**NOTES**

no.	date	description	checked	approved
<b>REVISION</b>				
designed				
drawn				
checked				
approved				

(Signed) \_\_\_\_\_  
 K. L. LAU  
 Senior Engineer  
 date: 13.3.2002

contract no. \_\_\_\_\_  
 file no. \_\_\_\_\_  
 工程編號 project no. 5660CL  
 工程 project  
 竹篙灣發展計劃的基礎建設  
 第三組及竹篙灣填海工程  
 第二階段  
 INFRASTRUCTURE FOR  
 PENNY'S BAY DEVELOPMENT,  
 PACKAGE 3 AND PENNY'S BAY  
 RECLAMATION STAGE 2  
 圖則編號 drawing no. SD 1001-080  
 比例 scale N.T.S.

專業工程師  
 office  
 香港測量師學會  
 SPECIAL DUTIES OFFICE  
  
 土木工程署  
 CIVIL ENGINEERING  
 DEPARTMENT  
 HONG KONG  
 A3 420 x 297

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**Enclosure 2 to PWSC(2002-03)20**

**660CL – Site formation, construction of associated infrastructure and provision of government, institution and community facilities for an international theme park on Lantau Island**

**Breakdown of estimate for consultants' fees**

<b>Consultants' staff costs</b>		<b>Estimated man- months</b>	<b>Average MPS * salary point</b>	<b>Multiplier</b>	<b>Estimated fee (\$ million)</b>
<b>(a) Consultants' fees for construction stage</b>					
(i) Contract administration and completion certification	Professional	58.5	38	2.4	8.5
	Technical	68.0	14	2.4	3.2
<b>(b) Resident site staff costs</b>					
	Professional	570.0	38	1.7	58.5
	Technical	2 846.0	14	1.7	94.4
<b>Total consultants' staff costs</b>					164.6

\* MPS = Master Pay Scale

**Note**

1. A multiplier of 2.4 is applied to the average MPS point to estimate the full staff costs including the consultants' overheads and profit, as the staff will be employed in the consultant's offices. A multiplier of 1.7 is applied in the case of resident site staff supplied by the consultants. (At 1.4.2001, MPS pt. 38 = \$60,395 per month and MPS pt. 14 = \$19,510 per month)
2. The figures given above are based on estimates prepared by the Director of Civil Engineering. The consultancy works in relation to contract administration and provision of resident site staff for this project have been included as part of the agreements for the design and construction of infrastructure for Penny's Bay development. These assignments will only be executed subject to Finance Committee's approval to upgrade part of **660CL** to Category A.