For discussion **PWSC(2008-09)65**
on 21 January 2009

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 705 – CIVIL ENGINEERING
Civil Engineering – Land Development
729CL – Disposal of contaminated sediment – dredging, management and capping of sediment disposal facility at Sha Chau

Members are invited to recommend to Finance Committee the upgrading of **729CL** to Category A at an estimated cost of $770.9 million in money-of-the-day prices for the dredging, management and capping of a new sediment disposal facility at Sha Chau.

PROBLEM

The existing facilities for disposal of contaminated sediment do not have adequate capacity to meet contaminated sediment disposal demands arising from on-going and planned projects, regular harbour fairway maintenance dredging and river flood protection works in 2010.

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PROPOSAL

2. The Director of Civil Engineering and Development, with the support of the Secretary for Development, proposes to upgrade **729CL** to Category A at an estimated cost of $770.9 million in money-of-the-day (MOD) prices for the dredging, management and capping of a new sediment disposal facility at Sha Chau.

PROJECT SCOPE AND NATURE

3. The scope of works under **729CL** comprises-

(a) forming and capping of a new sediment disposal facility in the sea-bed at East of Sha Chau (ESC);

(b) on-site management of disposal activities; and

(c) implementing an Environmental Monitoring and Audit (EM&A) programme.

4. We plan to start the proposed works in June 2009 for completion in July 2016. A layout plan showing the proposed works and the existing pits at ESC is at Enclosure 1.

JUSTIFICATION

5. Infrastructure projects such as the Cruise Terminal and the regular dredging of the harbour fairway and rivers will generate contaminated sediment. Since 1992, we have been disposing of contaminated sediment in sea-bed pits at ESC. The latest information indicates that the existing disposal pit at ESC for contaminated sediment disposal will be filled up in 2010. We need to make available a new disposal facility in time to dispose of the contaminated sediment arising from various works within Hong Kong.

6. A territory-wide site search has been conducted for suitable sites in Hong Kong for the provision of a contaminated sediment disposal facility. Among the potential sites, most of them are found not suitable due to

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environmental, engineering and planning constraints. The site at ESC is found most preferred and can be developed almost immediately due to a proven track record of environmental performance of the existing disposal pits in the ESC area.

7. The proposed facility comprises four disposal pits each of which is about 2 million cubic metres in capacity giving an aggregate design capacity of about 8 million cubic metres. The facility is planned to be put into service for contaminated sediment disposal in stages from 2010 to 2014.

FINANCIAL IMPLICATIONS

8. We estimate the capital cost of the project to be $770.9 million in MOD prices (see paragraph 9 below), made up as follows:

			$ million	
(a)	Formation and capping of a new disposal facility[1]		363.4	
(b)	On-site management of disposal activities		58.7	
(c)	Environmental Monitoring and Audit programme[2]		183.9	
	(i) Consultants' fees	14.8		
	(ii) Sampling and testing	169.1		
(d)	Contingencies		60.5	
	Sub-total		666.5	(in September 2008 prices)
(e)	Provision for price adjustment		104.4	
	Total		770.9	(in MOD prices)

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[1] Item (a) is for the formation and capping of the disposal pits. The works involve dredging of existing sea-bed sediments to the required depth according to design, capping the filled pits of the existing and proposed facilities in sequence by using the dredged clean sediments, and disposing of any surplus dredged clean sediments to other suitable designated facilities.

[2] Item (c) is for the implementation of the EM&A programme. The EM&A programme involves field measurement, sampling, and laboratory testing works for monitoring of the chemistry and toxicity of the marine sediment, the water quality and the biota of both benthic and demersal fisheries in the vicinity of the facilities.

We propose to engage consultants for implementing the EM&A programme. A breakdown of the estimates for the consultants' fees by man-months is at Enclosure 2.

9. Subject to approval, we will phase expenditure as follows-

Year	$ million (Sept 2008)	Price adjustment factor	$ million (MOD)
2009 - 10	43.0	1.04000	44.7
2010 - 11	136.0	1.08160	147.1
2011 - 12	149.2	1.12486	167.8
2012 - 13	175.0	1.16986	204.7
2013 - 14	81.5	1.21665	99.2
2014 - 15	30.1	1.26532	38.1
2015 - 16	28.2	1.31593	37.1
2016 - 17	23.5	1.36857	32.2
	666.5		770.9

10. We have derived the MOD estimate on the basis of the Government's latest forecast of the trend rate of change in the prices of public sector building and construction output for the period from 2009 to 2017. We will tender the proposed forming of the pits and on-site control of disposal activities, and sampling and laboratory testing works of the EM&A programme under standard remeasurement contracts to cater for the uncertainty of the rate for disposable sediment, the seabed conditions and the variance of EM&A requirements during the course of the operations; and the environmental monitoring consultancy on a lump-sum basis. We will provide for price adjustment in the contracts and consultancies.

11. The proposed works will not give rise to any recurrent expenditure.

PUBLIC CONSULTATION

12. Under the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO), we completed the Environmental Impact Assessment (EIA) report for the proposed facility, which was exhibited for public inspection from 27 May 2005 to 25 June 2005. The report was considered and endorsed without conditions by the Advisory Council on the Environment (ACE) on 11 July 2005. Having closely examined the public comments received on the EIA report and ACE's recommendation, the DEP approved the report without conditions on 1 September 2005.

13. We consulted the Tuen Mun District Council (TMDC) on 21 January 2008. Members of the TMDC objected to this project and requested for additional information on site selection and long term water quality monitoring results. We consulted TMDC again on 28 February 2008 with the requested supplementary information. Members of the TMDC did not object to Government proceeding with the gazettal procedures for the proposed works but requested the Government to report back the public opinions collected during the gazetting of this proposed works.

14. We gazetted the proposed works under the Foreshore and Sea-bed (Reclamations) Ordinance on 20 March 2008 and did not receive any objection or public opinions during the objection period. The gazette for authorization of this proposed works was published on 13 June 2008. We reported the outcome of gazettal to the members of the Environment, Hygiene and District Development Committee (EHDDC) of the TMDC in November 2008 by means of circulating an information paper. Members had no further comment on the proposed works except that the Chairman of the EHDDC reminded us to reserve adequate capacity of the new facility for the disposal of sediment arising from maintenance works of the Tuen Mun River.

15. We regularly attend the meetings of the Capture Fisheries Sub-Committee (CFS) and Aquaculture Fisheries Sub-committee (AFS) of the Advisory Committee on Agriculture and Fisheries for reporting on the latest situation about marine fill extraction and marine disposals within Hong Kong waters. We advised the CFS on 12 November 2007 and 25 February 2008 about the implementation of the proposed works. Members did not express any objection to the proposed works. We reported the progress of the proposed

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works to the AFS on 1 August 2008. Members requested for a briefing on the EIA for the proposed works, site selection and proposed disposal method. We briefed Members on the requested information on 5 December 2008 and 7 January 2009. Members did not express any objection to the proposed works.

16. We consulted the Legislative Council (LegCo) Panel on Development on the proposed works on 19 December 2008. Members did not object to the proposed works but requested that we report back to TMDC the public opinion collected since the February 2008 meeting with the DC; and submit to the Panel a supplementary note on the method of disposal and operation procedures, environmental monitoring of the ESC facility, key findings of environment impact assessment and the outcome of public consultation. Members also requested the LegCo Secretariat to invite views from stakeholder groups on the proposed works.

17. We reported to TMDC on 6 January 2009 that there was no objection received up to 31 December 2008 and EHDDC also reported its views. Members of TMDC endorsed the proposed works. We submitted an Information Note to the LegCo Secretariat on 13 January 2009, to provide the supplementary information requested.

18. We reviewed the letters received by LegCo Secretariat in response to the invitation for views on the proposed works. We have provided the LegCo Secretariat with response to the views for circulation with the letters to Members of the Panel.

ENVIRONMENTAL IMPLICATIONS

19. The proposed facility is a Designated Project under Schedule 2 of the EIAO and an environmental permit is required for the construction and operation of the facility. We have completed an EIA for the project which concluded that the proposed works would not cause long-term environmental impacts. The Director of Environmental Protection (DEP) approved the EIA report under the EIAO in September 2005 and granted the Environmental Permit for the proposed works in September 2008. We will implement the recommendations of the EIA study in the construction and operation stages of the project to minimize the environmental impacts of this proposed facility.

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20. For short-term impacts during construction, we will control noise and sediment dispersion due to dredging and disposal to levels within the established standards and guidelines through the implementation of mitigation measures and good construction practices including the control of maximum weekly dredging rate of 100 000 cubic metres as set out in the Environmental Permit.

21. The proposed works will not generate any construction waste.

22. We will reuse the clean sediment generated from this project for capping all the filled pits of the existing facility at ESC and the first two pits of this proposed new facility after they are fully filled. Surplus clean sediments will be disposed of at designated facilities suitable for disposal of clean sediment. In this connection, we estimate that there will be about 6.2 million cubic metre of dredged clean sediment to be disposed of off site. We will cap the last two pits by clean sediment generated from other projects.

23. We will exercise on-site management of the disposal operation and adopt the current "drift disposal" method for regulating the disposal operations within the facility. Under this method, the site staff will check the water current speed and direction upon arrival of a dumping barge and determine from the computer modeling the best disposal location at the upstream boundary of the disposal facility such that the disposed sediments under the action of the water current direction will settle within the pit boundary. This will prevent uncontrolled contamination of the adjacent waters due to the drifting of the disposed sediments before they settle into the mud pits. We will also regulate the marine activity at the site to ensure its impacts are not significant. We will request the contractor to submit a method statement describing the full details of the on-site management of disposal operations. No works will be allowed on site until we have approved this method statement.

24. We will implement an EM&A programme at an estimated cost of $183.9 million (in September 2008 prices). We anticipate this programme will be adequate to safeguard that impacts arising from the proposed facility are kept within the established guidelines and the assumptions in the EIA. We have included this cost in the overall project estimate.

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25. The proposed EM&A programme of this project, which is similar to the programmes for all the existing mud pits at ESC, will involve various field sampling and laboratory testing works to collect measurements for verifying that:

(a) the operation of the facility will not result in any exceedances of the water quality objectives of the water control zone at where the facility is situated;

(b) the operation of the facility will not increase sediment contaminant concentrations over time at individual stations or a trend of increasing concentrations with proximity to the active pit;

(c) the operation of the facility will not increase sediment toxicity over time at individual stations or a trend of increasing toxicity with proximity to the pit;

(d) the operation of the facility will not affect the abundance of the fisheries resources and will not increase the tissue or whole body contaminant concentration over time in selected target species, and

(e) recolonisation is occurring at the capped pits such that the affected seabed will return to its pre-dredged state for marine organisms.

26. Our recent review on the monitoring results collected since 1993 on all existing mud pits at ESC indicates that there is no evidence of any adverse impacts caused by disposal activities at the ESC, and the operation of the facilities has been proceeded in an environmentally acceptable manner. We engaged a Chinese White Dolphin expert to review in 2007 the impact of the proposed ESC facility on Chinese White Dolphins. The expert reviewed observation records of Chinese White Dolphins between 2001 and 2007 at the north of Lantau and the contaminants concentration of the tissue of Chinese White Dolphins. The results confirm that the facility will not cause unacceptable impacts to Chinese White Dolphins, and the risk that Chinese White Dolphins will be exposed to contaminants due to the facility is low.

/**HERITAGE** .....

HERITAGE IMPLICATIONS

27. The 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 ACQUISTION

28. The proposed works does not require land acquisition.

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BACKGROUND INFORMATION

29. We upgraded **729CL** in Category B in April 2007. We engaged a contractor to carry out site investigation in July 2007. We have charged the cost of about $4.1 million to block allocation **Subhead 5101CX** "Civil engineering works, studies and investigations for items in Category D of the Public Works Programme". We have completed the site investigation.

30. The proposed facility at ESC, which is of about 5 to 6 metre water depth and comprising four mud pits of about 20 metre deep beneath sea bed, will be formed by the conventional dredging method. After each pit is backfilled with contaminated sediment, we will provide a capping layer of clean sediment to seal off the dumped contaminated sediment from the adjoining environment. This capping layer is designed with sufficient thickness to sustain natural scouring effects, and to prevent the deep burrowing animals to take up contaminated sediments, and thus providing a route for contaminants to be released into the environment.

31. We have substantially completed the detailed design and tender documents using in-house staff resources. We schedule to commence works in June 2009 in order that this new facility will be available for receiving contaminated sediment by 2010.

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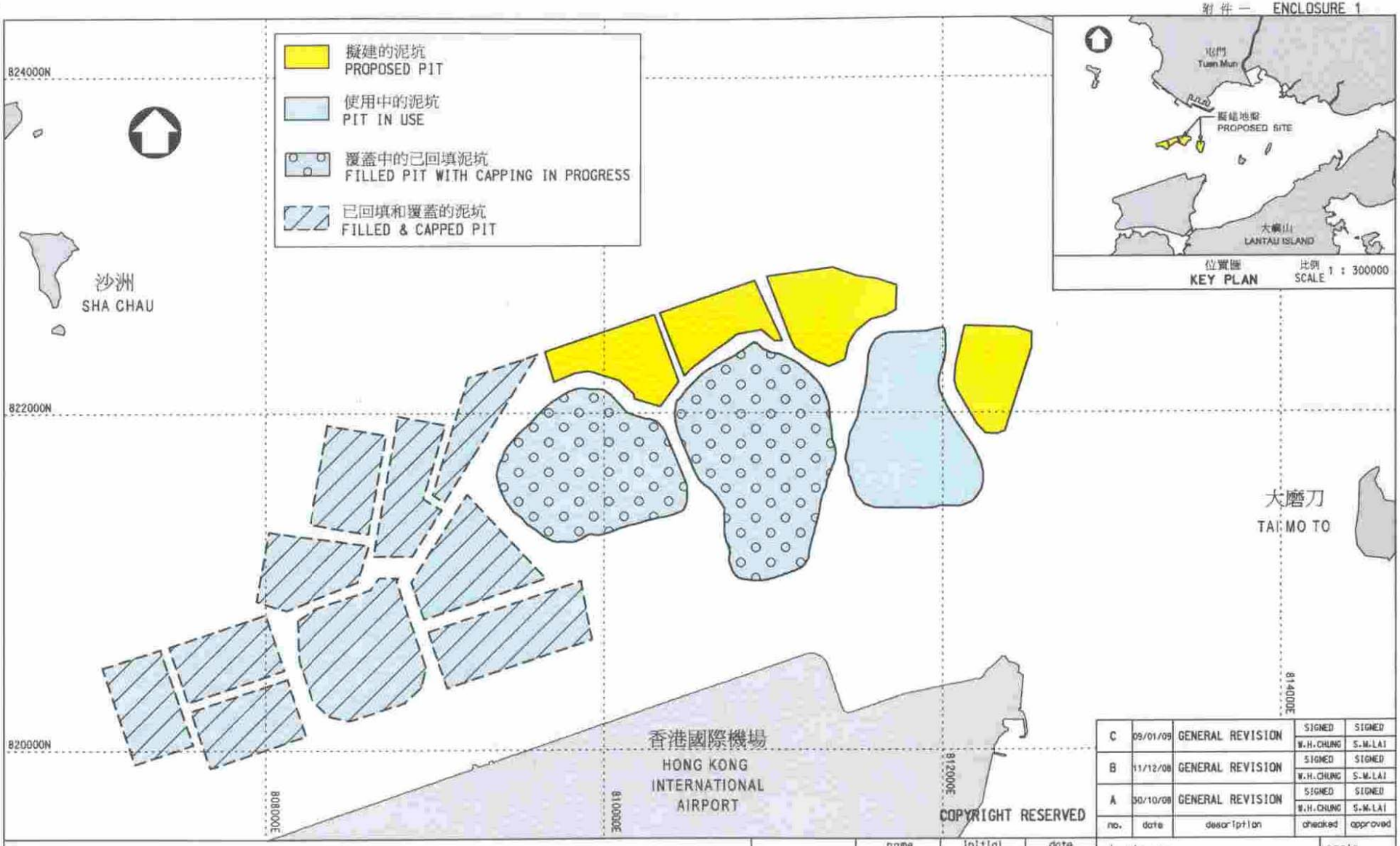
32. The proposed works will not involve any tree removal or planting proposals.

33. We estimate that the proposed works will create about 69 jobs (54 for labourers and another 15 for professional/technical staff) providing a total employment of 4 700 man-months.

Development Bureau
January 2009

附件一 ENCLOSURE 1



no.	date	description	checked	approved
C	09/01/09	GENERAL REVISION	SIGNED W.H.CHUNG	SIGNED S.M.LAI
B	11/12/08	GENERAL REVISION	SIGNED W.H.CHUNG	SIGNED S.M.LAI
A	30/10/08	GENERAL REVISION	SIGNED W.H.CHUNG	SIGNED S.M.LAI

title

卸置污染泥料 -
沙洲污染泥卸置設施的挖掘、管理及覆蓋工程

DISPOSAL OF CONTAMINATED SEDIMENT - DREDGING, MANAGEMENT AND CAPPING OF SEDIMENT DISPOSAL FACILITY AT SHA CHAU

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designed	W.H.CHUNG	SIGNED	3-10-2008
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checked	W.H.CHUNG	SIGNED	3-10-2008
approved	S.M.LAI	SIGNED	3-10-2008

office FILL MANAGEMENT DIVISION
CIVIL ENGINEERING OFFICE

drawing no. FM10052-3C

scale 1:30000 OR AS SHOWN

CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

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729CL – Disposal of Contaminated Sediment – Dredging, Management and Capping of Sediment Disposal Facility at Sha Chau

Breakdown of estimates for consultants' fees (in September 2008 prices)

Consultants' staff costs		Estimated man-months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee ($ million)
Environmental Monitoring and Audit programme (Note 2)	Professional	65	38	2.0	7.9
	Technical	174	14	2.0	6.9
				Total consultants' staff costs	14.8

* MPS = Master Pay Scale

Notes

1. A multiplier of 2.0 is applied to the average MPS point to arrive at the full staff costs including the consultants' overheads and profits as the staff will be employed in the consultants' offices. (At 1 April 2008, MPS pt. 38 = $60,535 per month and MPS pt. 14 = $19,835 per month)

2. The figures given above are only estimates prepared by the Director of Civil Engineering and Development. We will know the actual man months and actual fees only after we have selected the consultants through the usual competitive lump-sum fee bid system.