For discussion **PWSC(2006-07)47**
on 22 November 2006

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 703 – BUILDINGS
Education – Primary
307EP – An 18-classroom primary school at Tai Pak Tin Street, Kwai Chung

Members are invited to recommend to Finance Committee the upgrading of **307EP** to Category A at an estimated cost of $91.1 million in money-of-the-day prices for the construction of an 18-classroom primary school at Tai Pak Tin Street, Kwai Chung.

PROBLEM

We need to construct a new primary school premises for the whole-day conversion of an existing bi-sessional primary school in Kwai Chung.

PROPOSAL

2. The Director of Architectural Services, with the support of the Secretary for Education and Manpower (SEM), proposes to upgrade **307EP** to Category A at an estimated cost of $91.1 million in money-of-the-day (MOD) prices for the construction of an 18-classroom primary school at Tai Pak Tin Street, Kwai Chung.

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PROJECT SCOPE AND NATURE

3. The proposed primary school will have the following facilities[1] –

(a) 18 classrooms;

(b) six special rooms, including a computer-assisted learning room and a language room;

(c) three small group teaching rooms;

(d) a guidance activity room;

(e) an interview room;

(f) a staff room;

(g) a staff common room;

(h) a student activity centre;

(i) a conference room;

(j) a library;

(k) an assembly hall (which can be used for a wide range of physical activities such as badminton, gymnastics and table-tennis);

(l) a multi-purpose area;

(m) a basketball court on the roof top of the assembly hall block; and

(n) ancillary accommodation, including a lift and relevant facilities for the handicapped.

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The proposed school will meet the planning target of providing

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[1] A running track is not provided due to site constraints. The space on the ground floor only allows us to provide a running track of 20m, which is inadequate for proper running activities that require some distance for acceleration and deceleration. Besides, the space is also used for carpark and car lay-by which may impose danger to running activities.

two square metres (m^2) of open space per student. A site plan is at Enclosure 1 and views of the school premises (artist's impression) are at Enclosure 2. Subject to Members' approval, we plan to start the construction works in April 2007 for completion in January 2009.

JUSTIFICATION

4. It is Government's policy to implement whole-day primary schooling for virtually all primary school students by the 2007/08 school year. In the 2006/07 school year, 90% of primary school places are in whole-day mode. To facilitate implementation of the policy, we have included in our School Building Programme 16 school projects, including **307EP**.

5. Upon completion, **307EP** will provide 18 classrooms and other facilities for accommodating one session of an existing bi-sessional primary school in Kwai Tsing district, and in so doing enable both sessions to switch to whole-day operation. The School currently operates 47 bi-sessional classes from a 26-classroom premises.

FINANCIAL IMPLICATIONS

6. We estimate the capital cost of the project to be $91.1 million in MOD prices (see paragraph 7 below), made up as follows –

		$ million
(a)	Slope stablisiation	2.1
(b)	Piling	11.4
(c)	Building	39.5
(d)	Building services	14.0
(e)	Drainage	1.5
(f)	External works	5.1

/**$ million .....**

			$ million	
(g)	Furniture and equipment[2]		2.9	
(h)	Consultants' fees for –		4.6	
	(i) Contract administration	1.4		
	(ii) Site supervision	3.2		
(i)	Contingencies		7.8	
	Sub-total		88.9	(in September 2006 prices)
(j)	Provision for price adjustment		2.2	
	Total		91.1	(in MOD prices)

We propose to engage consultants to undertake contract administration and site supervision of the project. A detailed breakdown of the estimate for consultants' fees by man-months is at Enclosure 3. The construction floor area (CFA) of **307EP** is 8 550 m^2. The estimated construction unit cost, represented by the building and the building services costs, is $6,257 per m^2 of CFA in September 2006 prices. We consider this comparable to similar school projects built by the Government. A comparison of the reference cost for an 18-classroom primary school based on an uncomplicated site with no unusual environmental or geotechnical constraints with the estimated costs for **307EP** is at Enclosure 4.

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

Year	**$ million (Sept 2006)**	**Price adjustment factor**	**$ million (MOD)**
2007 – 08	26.5	1.01250	26.8

/Year .....

[2] Based on the standard furniture and equipment reference list prepared by the Education and Manpower Bureau for a new 18-classroom primary school adopting the standard schedule of accommodation.

Year	$ million (Sept 2006)	Price adjustment factor	$ million (MOD)
2008 – 09	50.5	1.02769	51.9
2009 – 10	9.4	1.04310	9.8
2010 – 11	2.5	1.05875	2.6
	88.9		91.1

8. We have derived the MOD estimates on the basis of the Government's latest forecast of trend rate of change in the prices of public sector building and construction output for the period 2007 to 2011. 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 not provide for price adjustment because the contract period will not exceed 21 months.

9. The cost of furniture and equipment, estimated to be $2.9 million, will be borne by the Government. This is in line with the existing policy.

10. We estimate the annual recurrent expenditure for **307EP** to be $15.3 million.

PUBLIC CONSULTATION

11. We consulted the Kwai Tsing District Council on **307EP** on 10 October 2006. Members of the Council supported the project.

12. We consulted the Legislative Council Panel on Education (the Panel) on 24 October 2005 on our review of the School Building Programme. Members generally supported our recommendation to proceed with school projects for converting existing bi-sessional primary schools to whole-day operation. Members noted then that **307EP** would proceed if the bi-sessional primary school in Kwai Tsing district allocated the school premises could maintain its student enrolment in the 2006/07 school year at least at the level in the previous school year. This condition has been fulfilled.

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13. We circulated to the Panel an information paper on this primary school project on 9 November 2006. We have not received any objection to the project.

ENVIRONMENTAL IMPLICATIONS

14. We engaged a consultant to conduct a Preliminary Environmental Review (PER) for **307EP** in July 2006. The PER recommended the installation of insulated windows and air-conditioning for rooms exposed to traffic noise exceeding the limits recommended in the Hong Kong Planning Standards and Guidelines. The recommended mitigation measures include the provision of insulated windows and air-conditioning for ten classrooms, one special room and three small group teaching rooms on 1/F to 6/F at south-eastern facade of the classroom block at a cost of $1.7 million. We will fund the cost of the above mitigation measures and have included it as part of the building services in the project estimate.

15. During construction, we will control noise, dust and site run-off nuisances to within established standards and guidelines through the implementation of mitigation measures in the relevant contract. These include the use of silencers, mufflers, acoustic lining or shields for noisy construction activities, frequent cleaning and watering of the sites, and the provision of wheel-washing facilities.

16. We have considered in the planning and design stages to reduce the generation of construction and demolition (C&D) materials where possible. In addition, we will require the contractor to reuse inert C&D materials on site or in other suitable construction sites as far as possible (e.g. use suitable excavated materials for filling within the site, use metal site hoardings and signboards so that these materials can be recycled or reused in other projects), in order to minimize the disposal of C&D materials to public fill reception facilities[3]. We will encourage the contractor to maximize the use of recycled or recyclable C&D materials, as well as the use of non-timber formwork to further minimize the generation of construction waste.

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[3] Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation. Disposal of public fill in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

17. We will also require the contractor to submit a waste management plan (WMP) for approval. The WMP will include appropriate mitigation measures to avoid, reduce, reuse and recycle C&D materials. We will ensure that the day-to-day operations on site comply with the approved WMP. We will also control the disposal of public fill, C&D materials and C&D waste to public fill reception facilities and landfills respectively through a trip-ticket system. We will require the contractor to separate public fill from C&D waste for disposal at appropriate facilities. We will also record the disposal, reuse and recycling of C&D materials for monitoring purposes.

18. We estimate that the project will generate about 10 000 tonnes of C&D materials. Of these, we will reuse about 5 400 tonnes (54.0%) on site and deliver 3 700 tonnes (37.0%) to public fill reception facilities for subsequent reuse. In addition, we will dispose of 900 tonnes (9.0%) at landfills. The total cost for accommodating C&D materials at public fill reception facilities and landfill sites is estimated to be $212,400 for this project (based on an unit cost of $27/tonne for disposal at public fill reception facilities and $125/tonne[4] at landfills).

LAND ACQUISITION

19. The project does not require land acquisition.

BACKGROUND INFORMATION

20. We upgraded **307EP** to Category B in October 2003. We engaged an architectural consultant in February 2005 for the topographical survey, detailed design and the PER. We appointed a term contractor in April 2005 to carry out site investigation. The total cost is $2.1 million. We engaged a quantity surveying consultant in September 2006 to prepare tender documents at a cost of $329,000. We have charged these amounts to block allocation **Subhead 3100GX** "Project feasibility studies, minor investigations and consultants' fees for items in Category D of the Public Works Programme". The architectural consultant and the term contractor have completed the topographical survey, detailed design, PER and site investigation. The quantity surveying consultant is finalising the tender documentation.

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[4] 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/m^3), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.

21. The proposed works will involve removal of 29 living trees, including 15 to be felled and 14 to be replanted within the project site. All trees to be removed are not important trees[5]. We will incorporate planting proposals as part of the project, including estimated quantities of 15 new trees and 500 shrubs.

22. We estimate that the proposed works will create about 110 jobs (97 for labourers and another 13 for professional/technical staff) providing a total employment of 1 800 man-months.

Education and Manpower Bureau
November 2006

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[5] "Important trees" refer 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 or exceeding 1.0 metre (measured at 1.3 metre above ground level), or with height/canopy spread equal or exceeding 25 metres.

位置圖
LOCATION PLAN
比例 SCALE: DIAGRAMMATIC

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ON CHIT STREET PLAYGROUND
安捷街遊樂場

TAI PAK TIN STREET
大白田街

中華電力分站
CLP POWER SUBSTATION

水務署供水水管儲備區
WATER SUPPLIES RESERVE AREA

位於禮堂大樓天台的籃球場
BASKETBALL COURT ON ROOF TOP OF THE ASSEMBLY HALL BLOCK

車輛出入口
VEHICULAR INGRESS/ EGRESS POINT

緊急車輛通道
EMERGENCY VEHICULAR ACCESS

大白田巷 TAI PAK TIN LANE

行人入口
PEDESTRIAN ENTRANCE

現有斜坡
EXISTING SLOPE

小學
PRIMARY SCHOOL

地盤面積
2 487 平方米
SITE AREA
2 487m²

行人入口
PEDESTRIAN ENTRANCE

在課室大樓向東南面1樓至6樓的10間課室、1間特別室及3間小組教學室裝置隔音窗和空調
INSULATED WINDOWS AND AIR-CONDITIONING FOR 10 CLASSROOMS, 1 SPECIAL ROOM AND 3 SMALL GROUP TEACHING ROOMS ON 1/F-6/F AT THE SOUTH-EASTERN FACADE OF THE CLASSROOM BLOCK

10m
0
5m

title 307 EP 英浦大白田街1所設有18間課室的小學 AN 18-CLASSROOM PRIMARY SCHOOL AT TAI PAK TIN STREET, KWAI CHUNG	drawn by PANCY TANG	date 10.10.06	drawing no. AB/6332/XA101	scale 1:500
	approved CHRIS WONG	date 10.10.06		
	office ARCHITECTURAL BRANCH		ARCHITECTURAL SERVICES DEPARTMENT	

從東面望向校舍的構思圖
VIEW OF THE SCHOOL PREMISES FROM EASTERN DIRECTION (ARTIST'S IMPRESSION)

從西北面望向校舍的構思圖
VIEW OF THE SCHOOL PREMISES FROM NORTH-WESTERN DIRECTION (ARTIST'S IMPRESSION)

title 307 EP 葵涌大白田街1所設有18間課室的小學 AN 18-CLASSROOM PRIMARY SCHOOL AT TAI PAK TIN STREET, KWAI CHUNG	drawn by PANCY TANG	date 10.10.06	drawing no. AB/6332/XA102	scale N.T.S.
	approved CHRIS WONG	date 10.10.06	ARCHITECTURAL SERVICES DEPARTMENT	
	office ARCHITECTURAL BRANCH			

307EP – An 18-classroom primary school at Tai Pak Tin Street, Kwai Chung

Breakdown of the estimate for consultants' fees

Consultants' staff costs			**Estimated man-months**	**Average MPS* salary point**	**Multiplier** (Note 1)	**Estimated fee ($ million)**
(a)	Contract administration (Note 2)	Professional	–	–	–	1.1
		Technical	–	–	–	0.3
(b)	Site supervision (Note 3)	Professional	20.7	38	1.6	1.8
		Technical	48.6	14	1.6	1.4
					Total	4.6

* 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 1 January 2006, MPS point 38 = $54,255 per month and MPS point 14 = $18,010 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 **307EP**. The assignment will only be executed subject to Finance Committee's approval to upgrade **307EP** to Category A.

3. The consultants' staff cost for site supervision is based on the estimate prepared by the Director of Architectural Services. We will only know the actual man-months and actual costs after completion of the construction works.

A comparison of the reference cost of an 18-classroom primary school project with the estimated cost of 307EP

		$ million (in Sept 2006 prices)		
		Reference cost*	**307EP**	
(a)	Slope stabilisation	–	2.1	(See note A)
(b)	Piling	7.6	11.4	(See note B)
(c)	Building	39.5	39.5	
(d)	Building services	10.6	14.0	(See note C)
(e)	Drainage	1.5	1.5	
(f)	External works	6.8	5.1	(See note D)
(g)	Furniture and equipment	–	2.9	(See note E)
(h)	Consultants' fees	–	4.6	(See note F)
(i)	Contingencies	6.6	7.8	
	Total	72.6	88.9	
(j)	Construction floor area	8 476 m^2	8 550 m^2	
(k)	Construction unit cost {[(c) + (d)] ÷ (j)}	\$5,910/m^2	\$6,257/m^2	

*** Assumptions for reference cost**

1. The estimation is based on the assumption that the school site is uncomplicated and without unusual environmental restrictions. No allowance is reserved for specific environmental restrictions such as the provision of insulated windows, air-conditioning and boundary walls to mitigate noise impacts on the school.

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2. No site formation works/geotechnical works are required as they are normally carried out by other government departments under a separate engineering vote before handing over the project site for school construction.

3. Piling cost is based on the use of 95 steel H-piles at an average depth of 30 metres, assuming that percussive piling is permissible. It also includes costs for pile caps, strap beams and testing. No allowance is reserved for the effect of negative skin friction due to fill on reclaimed land.

4. Cost for drainage and external works is for a standard 18-classroom primary school site area of 3 950 m^2 built on an average level site without complicated geotechnical conditions, utility diversions, etc. (i.e. a "green-field" site).

5. No consultancy services are required.

6. Furniture and equipment costs are excluded as they are usually borne by the sponsoring bodies of new schools.

7. The reference cost for comparison purpose is subject to review regularly. We will review, and revise if necessary, the reference cost which should be adopted for future projects.

Notes

A. Slope stabilisation is required because part of the school building is built on slope and the stability of the existing slope will be affected by construction activities.

B. The piling cost is higher because its estimate is based on a different piling system of 85 non-percussion H-piles at an average depth of 20 metres to suit the actual site condition. Percussive piling is not suitable for this site, as there is a 750mm diameter water mains running through the site and there are residential buildings nearby. In order to prevent the creation of nuisance to nearby residents as well as the burst of water mains caused by undue vibrations and settlements, excessive vibrations and noise generated by percussive piling should be avoided. Monitoring work will be required during piling work to ensure that vibrations and settlements, if any, are within acceptable limits.

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C. The building services cost is higher because of the addition of a generator. As the limited site areas require a taller building design, emergency generator is required for meeting fire safety requirement. Moreover, the provision of air-conditioning as a noise mitigation measure also accounts for a higher building services cost.

D. The cost of external works is lower because of the smaller site area.

E. The cost of furniture and equipment, estimated to be $2.9 million, will be borne by the Government as the school premises will be allocated to an existing bi-sessional school for conversion into whole-day operation.

F. Consultants' fees are required for contract administration and site supervision.