For discussion **PWSC(2006-07)72**
on 7 February 2007

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 703 – BUILDINGS
Education – Primary
332EP – A 24-classroom primary school in Sham Tseng, Tsuen Wan

Members are invited to recommend to Finance Committee the upgrading of **332EP** to Category A at an estimated cost of $111.2 million in money-of-the-day prices for the construction of a 24-classroom primary school in Sham Tseng, Tsuen Wan.

PROBLEM

We need to construct a primary school for the whole-day conversion of an existing bi-sessional school in Tsuen Wan.

PROPOSAL

2. The Director of Architectural Services, with the support of the Secretary for Education and Manpower (SEM), proposes to upgrade **332EP** to Category A at an estimated cost of $111.2 million in money-of-the-day (MOD) prices for the construction of a 24-classroom primary school in Sham Tseng, Tsuen Wan.

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PROJECT SCOPE AND NATURE

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

(a) 24 classrooms;

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

(c) four small group teaching rooms;

(d) a guidance activity room;

(e) two interview rooms;

(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) two basketball courts and a mini-football pitch at ground level;

(n) a 60-metre (m) running track[1];

(o) a green corner[2]; and

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[1] Making optimal use of the space of the campus, a 60-m running track will be provided.

[2] The green corner is a designated area inside the campus to enable students to develop an interest in horticulture and natural environment. The green corner may include a green-house, a weather station and planting beds.

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

The proposed school will meet the planning target of providing 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. We plan to start the construction works of the new school premises in November 2007 for completion in July 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.

5. Upon completion, **332EP** will provide 24 classrooms and other facilities for accommodating one session of an existing bi-sessional primary school in the same district, and in so doing enable both sessions to switch to whole-day operation. The school needs additional premises to turn whole-day, as it currently operates 47 classes in two sessions with an enrolment rate of 97% from a 24-classroom building. The project will not affect the planned supply of primary school places, both territory-wide and in the Tsuen Wan district.

FINANCIAL IMPLICATIONS

6. We estimate the capital cost of the project to be $111.2 million in MOD prices (see paragraph 7 below), made up as follows –

		$ million
(a)	Piling	14.0
(b)	Building	46.9
(c)	Building services	16.6
(d)	Drainage	2.5

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			$ million	
(e)	External works		9.5	
(f)	Furniture and equipment[3]		3.2	
(g)	Consultants' fees for –		4.7	
	(i) Contract administration	1.5		
	(ii) Site supervision	3.2		
(h)	Contingencies		9.4	
	Sub-total		106.8	(in September 2006 prices)
(i)	Provision for price adjustment		4.4	
	Total		111.2	(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 **332EP** is 9 790 m^2. The estimated construction unit cost, represented by the building and the building services costs, is $6,486 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 a 24-classroom primary school based on an uncomplicated site with no unusual environmental or geotechnical constraints with the estimated costs for **332EP** is at Enclosure 4.

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

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[3] Based on the standard furniture and equipment reference list prepared by the Education and Manpower Bureau for a new 24-classroom primary school adopting the standard schedule of accommodation.

Year	$ million (Sept 2006)	Price adjustment factor	$ million (MOD)
2007 – 08	8.0	1.01250	8.1
2008 – 09	38.0	1.02769	39.1
2009 – 10	39.0	1.04310	40.7
2010 – 11	12.0	1.05875	12.7
2011 – 12	9.8	1.08257	10.6
	106.8		111.2

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 2012. 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 $3.2 million, will be borne by the Government. This is in line with the existing policy.

10. The annual recurrent expenditure of one session of the existing primary school was $20.2 million in the 2005/06 school year. We estimate the annual recurrent expenditure for **332EP** to be $20.2 million.

PUBLIC CONSULTATION

11. We consulted the Tsuen Wan District Council on **332EP** on 28 November 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

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supported our recommendation to proceed with school projects for converting existing bi-sessional primary schools to whole-day operation, including **332EP** with a reduced scope from 30 classrooms to 24 classrooms. We circulated to the Panel an information paper on this primary school project on 22 December 2006. Members did not raise any objection to the proposal.

ENVIRONMENTAL IMPLICATIONS

13. We engaged a consultant to conduct a Preliminary Environmental Review (PER) for **332EP** in October 2004. The PER recommended the provision of boundary walls at suitable locations and 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 are as follows –

	Mitigation measures	**Estimated cost $ million (in Sept 2006 prices)**
(a)	insulated windows and air-conditioning for 24 classrooms, four special rooms and four small group teaching rooms from the 1/F to 4/F at the northern facade of the classroom block	3.2
(b)	a 3.5-m high solid fence wall along the northern side of the site abutting Castle Peak Road	0.5

With such mitigation measures in place, the project would not have long term environmental impacts. We have included the cost of the above mitigation measures as part of the building services and external works in the project estimate.

14. 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 contract. These include the use of silencers, mufflers, acoustic lining or shields for noisy construction activities, frequent cleaning and watering of the site, and the provision of wheel-washing facilities.

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15. 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[4]. 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.

16. 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.

17. We estimate that the project will generate about 10 200 tonnes of C&D materials. Of these, we will reuse about 5 600 tonnes (54.9%) on site and deliver 3 800 tonnes (37.3%) to public fill reception facilities for subsequent reuse. In addition, we will dispose of 800 tonnes (7.8%) at landfills. The total cost for accommodating C&D materials at public fill reception facilities and landfill sites is estimated to be $202,600 for this project (based on a unit cost of $27/tonne for disposal at public fill reception facilities and $125/tonne[5] at landfills).

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[4] 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.

[5] 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.

LAND ACQUISITION

18. The project does not require any land acquisition.

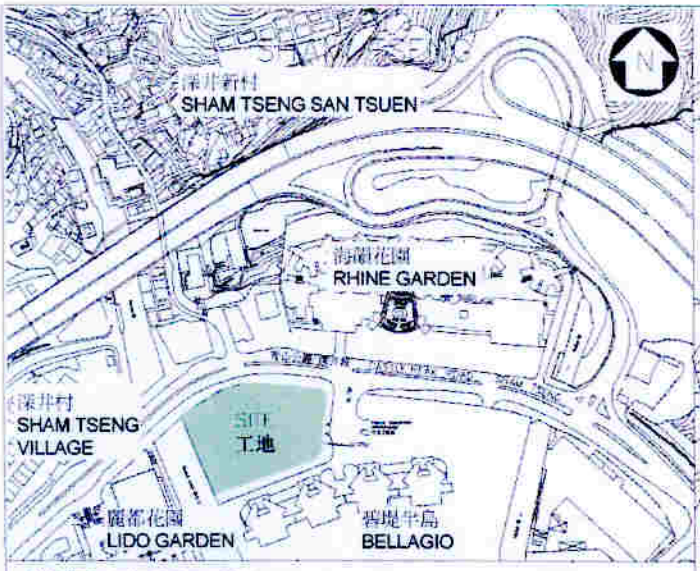
BACKGROUND INFORMATION

19. We engaged a term contractor to undertake site investigation for **332EP** in September 2001 at a cost of $100,000 before we upgraded **332EP** to Category B in October 2003. We engaged an architectural consultant in July 2004 to undertake the PER, topographical survey and detailed design. We engaged a quantity surveying consultant to prepare tender documents in December 2006. The total cost of these works is $2.3 million. We have charged this amount 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 term contractor have completed the site investigation, PER, topographical survey and detailed design. The quantity surveying consultant is finalising the tender documents.

20. The proposed works will not involve any removal of trees. We will incorporate planting proposals as part of the project, including estimated quantities of 75 trees, 6 364 shrubs and 296 m^2 of grassed area.

21. We estimate that the proposed works will create about 126 jobs (112 for labourers and another 14 for professional/technical staff) providing a total employment of 2 170 man-months.

Education and Manpower Bureau
February 2007



位置圖 LOCATION PLAN SCALE: 1:5000

INSULATED WINDOWS AND AIR-CONDITIONING FOR 24 CLASSROOMS, 4 SPECIAL ROOMS AND 4 SMALL GROUP TEACHING ROOMS FROM 1/F TO 4/F AT THE NORTHERN FACADE OF THE CLASSROOM BLOCK
在課室大樓向北面1至4樓的24間課室, 4間特別室和4間小組教學室裝置隔音窗和空調

A 3.5M HIGH SOLID FENCE WALL ALONG THE NORTHERN SIDE OF THE SITE
沿工地向北面建造一幅3.5米高實圍牆

青山公路-深井段 CASTLE PEAK ROAD (SHAM TSENG)

SECONDARY ENTRANCE
學校側門

GREEN CORNER
綠化小角地

PRIMARY SCHOOL
小學

SITE AREA : 6200 s.m.
工地面積 : 6200 平方米

MAIN ENTRANCE
學校正門

PUBLIC TRANSPORT INTERCHANGE
交通交匯處

EMERGENCY VEHICLE ACCESS
緊急車輛通道

VEHICULAR INGRESS/ EGRESS
車輛出入口

6m WIDE NON-BUILDING AREA
6米闊不可興建範圍

花園平台 (架在下)
LANDSCAPE DECK (NULLAH BELOW)

60m RUNNING TRACK 60米跑道

EXISTING FENCE WALL AS BOUNDARY WALL
現有圍牆

麗都花園
LIDO GARDEN

碧堤半島
BELLAGIO

TITLE 332EP A 24-CLASSROOM PRIMARY SCHOOL IN SHAM TSENG, TSUEN WAN 荃灣深井1所設有24間課室的小學	DRAWN BY 繪圖 PATRICK WONG	DATE 日期 DEC 2006	DRAWING NO. 編號 AB/5815/XA101	SCALE 比例 1:1000
	APPROVED 覆核 JOEL CHAN	DATE 日期 DEC 2006		
	OFFICE 辦事處 ARCHITECTURAL BRANCH 建築設計處		ARCHITECTURAL SERVICES DEPARTMENT 建築署	

從南面望向校舍的構思圖
VIEW OF THE SCHOOL PREMISES FROM SOUTHERN DIRECTION (ARTIST'S IMPRESSION)

從北面望向校舍的構思圖
VIEW OF THE SCHOOL PREMISES FROM NORTHERN DIRECTION (ARTIST'S IMPRESSION)

TITLE 332EP A 24-CLASSROOM PRIMARY SCHOOL IN SHAM TSENG, TSUEN WAN 荃灣深井1所設有24間課室的小學	DRAWN BY 繪圖 PATRICK WONG	DATE 日期 DEC 2006	DRAWING NO. 圖號 AB/5815/XA102	SCALE 比例 N.T.S.
	APPROVED 核准 JOEL CHAN	DATE 日期 DEC 2006		
	OFFICE 辦事處 ARCHITECTURAL BRANCH 建築設計處		ARCHITECTURAL SERVICES DEPARTMENT 建築署	

332EP – A 24-classroom primary school in Sham Tseng, Tsuen Wan

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	–	–	–	0.4
(b)	Site supervision (Note 3)	Professional	19	38	1.6	1.6
		Technical	55	14	1.6	1.6
					Total	4.7

* 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 **332EP**. The assignment will only be executed subject to Finance Committee's approval to upgrade **332EP** 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 a 24-classroom primary school project with the estimated cost of 332EP

		$ million (in Sept 2006 prices)		
		Reference cost*	**332EP**	
(a)	Piling	8.1	14.0	(See note A)
(b)	Building	42.6	46.9	(See note B)
(c)	Building services	11.4	16.6	(See note C)
(d)	Drainage	1.8	2.5	(See note D)
(e)	External works	7.4	9.5	(See note E)
(f)	Furniture and equipment	–	3.2	(See note F)
(g)	Consultants' fees	–	4.7	(See note G)
(h)	Contingencies	7.2	9.4	
	Total	78.5	106.8	
(i)	Construction floor area	9 129 m^2	9 790 m^2	
(j)	Construction unit cost {[(b) + (c)] ÷ (i)}	\$5,915/m^2	\$6,486/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 101 steel H-piles at an average depth of 30 m, 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 24-classroom primary school site area of 4 700 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. The piling cost is higher because of the close proximity of residential buildings which precludes the use of percussive piling system as excessive vibrations and noise will be generated by the percussive piling. It is estimated that this project will require the use of 122 non-percussive pre-bored socketted steel H-pile at an average depth of 22 metres.

B. The building cost is higher because of the larger construction floor area.

C. The building services cost is higher because of the larger construction floor area and the provision of air-conditioning as a noise mitigation measure.

D. The cost of drainage works is higher because of the larger site area.

E. The cost of external works is higher because of the larger site area and the construction of boundary walls as a noise mitigation measure.

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F. The cost of furniture and equipment, estimated to be $3.2 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.

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