

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 703 – BUILDINGS

Education – Primary

305EP – Two 36-classroom primary schools at Eastern Harbour Crossing site, Yau Tong

Members are invited to recommend to Finance Committee the upgrading of **305EP** to Category A at an estimated cost of \$222.7 million in money-of-the-day prices for the construction of two 36-classroom primary schools at Eastern Harbour Crossing site, Yau Tong.

PROBLEM

We need to provide additional primary schools to implement the whole-day primary schooling policy.

PROPOSAL

2. The Director of Architectural Services (D Arch S), with the support of the Secretary for Education and Manpower (SEM), proposes to upgrade **305EP** to Category A at an estimated cost of \$222.7 million in money-of-the-day (MOD) prices for the construction of two 36-classroom primary schools at Eastern Harbour Crossing site, Yau Tong.

PROJECT SCOPE AND NATURE

3. Each of the proposed primary schools will have the following facilities –

/(a)

- (a) 36 classrooms;
- (b) nine special rooms including two computer-assisted learning rooms and a language room;
- (c) four small group teaching rooms;
- (d) a guidance activity room;
- (e) two interview rooms;
- (f) a staff room and a staff common room;
- (g) a student activity centre;
- (h) a conference room;
- (i) a library;
- (j) an assembly hall (which, together with the roof of the assembly hall block, can be used for a wide range of physical activities such as badminton, gymnastics and table-tennis);
- (k) a multi-purpose area;
- (l) two basketball courts (on ground level);
- (m) a rooftop sitting-out area on the assembly hall block;
- (n) a green corner¹;
- (o) ancillary accommodation including a lift and relevant facilities for the handicapped; and

Shared facilities

- (p) bus and car parking facilities.

/Both

¹ 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.

Both schools will meet the planning target of providing two square metres of open space per student. A site plan is at Enclosure 1 and computer rendering drawings of the school premises are at Enclosure 2. D Arch S plans to start the construction works for both schools in October 2003 for completion in July 2005.

JUSTIFICATION

4. The Government has achieved the interim target of enabling 60% of our primary school students to study in whole-day schools in the 2002/03 school year. The Government is further committed to enabling virtually all primary school students to study in whole-day schools by the 2007/08 school year. To this end, SEM plans to construct another 56² new schools between the 2003/04 and the 2007/08 school years. To date, 19 new school projects have already been upgraded to Category A. **305EP** will help achieve this policy target.

5. The Kwun Tong District, in which **305EP** is located, currently has 43 public sector primary schools providing 759 classrooms. SEM forecasts that 197 additional classrooms will be required for full implementation of whole-day primary schooling in the district by the 2007/08 school year. To meet this requirement, three primary school projects providing 90 classrooms have already been upgraded to Category A and are planned for completion in the 2003/04 school year. **305EP** will help reduce the shortfall further by 72 classrooms to 35 in this district and enable two existing bi-sessional primary schools to convert into whole-day operation. We plan to meet the projected shortfall in this district through further school construction projects.

FINANCIAL IMPLICATIONS

6. We estimate the capital cost of **305EP** to be \$222.7 million in MOD prices (see paragraph 7 below), made up as follows –

/(a)

² Based on previous population projection, 48 schools were originally planned to be completed between 2003 to 2007 to achieve 100% whole-day primary schooling. We have revised the plan having regard to the latest population demand and other factors, such as parental choice, project cost and popularity of schools, and have suspended seven originally planned projects. Of these seven projects, **289EP** “A 36-classroom primary school at Pokfield Road, Kennedy Town”, has been upgraded to Category A on 15 July 2002. The project is suspended because the tender outturn is \$32 million above the Approved Project Estimate and exceeds the reference cost for a 36-classroom primary school by about 120%. We consider it not cost-effective to proceed with this project at this level of cost. On the other hand, due to upsurge of population in five districts as revealed in the latest population projection, we plan to build 15 additional new primary schools in these districts by 2007. This makes up our target of building a total of 56 schools between 2003 and 2007.

	\$ million			
	School 1	School 2	Total	
(a) Site formation	6.2	6.2	12.4	
(b) Piling	7.2	7.2	14.4	
(c) Building	55.6	55.6	111.2	
(d) Building services	17.8	18.4	36.2	
(e) Drainage and external works	13.1	13.1	26.2	
(f) Furniture and equipment ³	4.6	4.6	9.2	
(g) Consultants' fees for –	4.2	4.2	8.4	
(i) Contract administration	3.4	3.4	6.8	
(ii) Site supervision	0.8	0.8	1.6	
(h) Contingencies	10.4	10.5	20.9	
Sub-total	119.1	119.8	238.9	(in September 2002 prices)
(i) Provision for price adjustment	(8.1)	(8.1)	(16.2)	
Total	111.0	111.7	222.7	(in MOD prices)

/D Arch S

³ Based on a standard furniture and equipment list prepared by the Education and Manpower Bureau for "Year 2000 design" schools.

D Arch S proposes 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) for each school under **305EP** is about 13 040 square metres. The estimated construction unit costs of School 1 and School 2, represented by the building and building services costs, are \$5,629 and \$5,675 respectively per square metre of CFA in September 2002 prices. D Arch S considers these comparable to similar school projects built by the Government. A comparison of the reference cost of a 36-classroom primary school based on an uncomplicated site with no unusual environmental or geotechnical constraints with the estimated cost of each school under **305EP** is at Enclosure 4.

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

Year	\$ million (September 2002)			Price adjustment factor	\$ million (MOD)		
	Sch 1	Sch 2	Total		Sch 1	Sch 2	Total
2003 – 04	9.1	9.1	18.2	0.94300	8.6	8.6	17.2
2004 – 05	61.4	62.0	123.4	0.93003	57.1	57.7	114.8
2005 – 06	35.0	35.0	70.0	0.93003	32.6	32.6	65.2
2006 – 07	11.5	11.6	23.1	0.93003	10.7	10.8	21.5
2007 – 08	2.1	2.1	4.2	0.93003	2.0	2.0	4.0
	<u>119.1</u>	<u>119.8</u>	<u>238.9</u>		<u>111.0</u>	<u>111.7</u>	<u>222.7</u>

8. 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 2008. We will deliver the works through a fixed-price lump-sum contract because the contract period will be less than 21 months and we can clearly define the scope of works in advance, leaving little room for uncertainty.

9. The cost of furniture and equipment, estimated to be \$4.6 million for each school, will be borne by the Government as the proposed schools will enable two existing bi-sessional schools to convert into whole-day operation. This is in line with the existing policy.

10. We estimate the annual recurrent expenditure for each school under **305EP** to be \$26.6 million.

PUBLIC CONSULTATION

11. We consulted the Kwun Tong District Council on 21 January 2003. Members of the Council supported the project.

ENVIRONMENTAL IMPLICATIONS

12. We engaged a consultant to conduct a Preliminary Environmental Review (PER) for **305EP** in December 2002. The PER concluded that the two schools under **305EP** would not be subject to adverse environmental impacts provided that we implement the following environmental mitigation measures to keep the road traffic noise impact within the limits recommended in the Hong Kong Planning Standards and Guidelines –

School	Mitigation measures	Estimated cost \$ million (in Sept 2002 prices)
(a) Schools 1 and 2	Construction of a 2-metre high boundary wall along the north-western and northern boundary of the site	0.6
(b) School 1	Provision of insulated windows and air-conditioning to 28 classrooms from 1/F to 5/F at the northern façade of the classroom block; three special rooms on the upper ground floor at the north-western façade of the assembly hall block; four small group teaching rooms on 3/F and three special rooms on lower ground floor, 3/F and 4/F at the southern façade of the special room block	4.2
(c) School 2	Provision of insulated windows and air-conditioning to 36 classrooms from 1/F to 6/F at the northern façade of the classroom block; two special rooms on 1/F at the eastern façade of the assembly hall block; and four small group teaching rooms on 4/F and three special rooms on 1/F, 4/F and 5/F at the southern façade of the special room block	4.8

/We

We have included the costs of the above mitigation measures as part of the building services and external works in the project estimate.

13. 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 contracts. 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.

14. At the planning and design stages, we have considered measures to reduce the generation of construction and demolition (C&D) materials. D Arch S has introduced more prefabricated building elements into the school designs to reduce temporary formwork and construction waste. These include dry-wall partitioning and proprietary fittings and fixtures. We will use suitable excavated materials for filling within the site to minimise off-site disposal. In addition, we will require the contractor to use metal site hoardings and signboards so that these materials can be recycled or reused in other projects.

15. D Arch S will 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. D Arch S will ensure that the day-to-day operations on site comply with the approved WMP. D Arch S will control the disposal of public fill and C&D waste to designated public filling facilities and landfills respectively through a trip-ticket system. D Arch S will require the contractor to separate public fill from C&D waste for disposal at appropriate facilities. We will record the disposal, reuse and recycling of C&D materials for monitoring purposes. We estimate that the project will generate about 8 100 cubic metres (m³) of C&D materials. Of these, we will reuse about 4 440 m³ (55%) on site, 2 580 m³ (32%) as fill in public filling areas⁴, and dispose of 1 080 m³ (13%) at landfills. The notional cost of accommodating C&D waste at landfill sites is estimated to be \$135,000 for this project (based on a notional unit cost⁵ of \$125/m³)

/LAND

⁴ A public filling area is a designated part of a development project that accepts public fill for reclamation purposes. Disposal of public fill in a public filling area requires a licence issued by the Director of Civil Engineering.

⁵ This estimate has taken into account the cost for developing, operating and restoring the landfill 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 are likely to be more expensive) when the existing ones are filled. The notional cost estimate is for reference only and does not form part of this project estimate.

LAND ACQUISITION

16. The project does not require land acquisition.

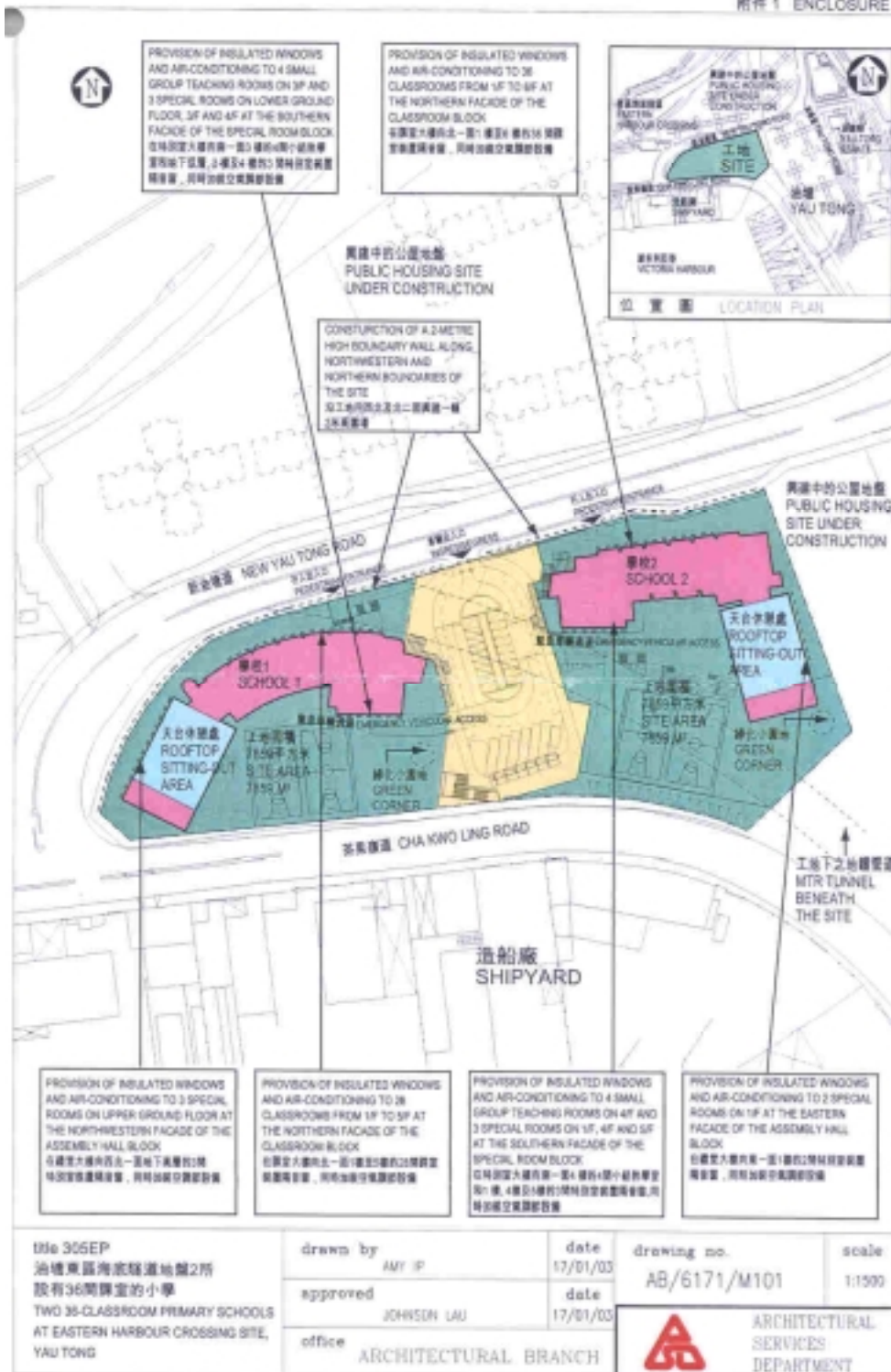
BACKGROUND INFORMATION

17. We consulted the Legislative Council Panel on Education on 20 January 2003 on our latest plan for building secondary and primary schools. This project is one of the planned projects. The Panel has no objection to our proposed plan.

18. We upgraded **305EP** to Category B in January 2002. We employed a term contractor to carry out site investigations for the two schools under **305EP** in September 1998 and February 2003 respectively at a total cost of \$2.9 million. We also engaged consultants to carry out topographical survey, PER, detailed design and tender documentation for the project at a total cost of \$7.9 million. We 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 term contractor and consultants have completed the site investigations, topographical survey, PER and detailed design. The consultant is finalising the tender documents.

19. We estimate that the proposed works will create some 295 jobs comprising 20 professional/technical staff and 275 labourers, totalling 5 350 man-months.

Education and Manpower Bureau
April 2003



Site 305EP
油蔴地新油蔴地地盤2所
設有36間課室的小學
TWO 36-CLASSROOM PRIMARY SCHOOLS
AT EASTERN HARBOUR CROSSING SITE,
YAU TONG

drawn by AMY IP	date 17/01/03
approved JOHNSON LAU	date 17/01/03
office ARCHITECTURAL BRANCH	

drawing no. AB/6171/M101	scale 1:1500
 ARCHITECTURAL SERVICES DEPARTMENT	



學校1的南面電腦效果圖
SOUTHERN-VIEW COMPUTER RENDERING DRAWING OF SCHOOL 1



學校2的南面電腦效果圖
SOUTHERN-VIEW COMPUTER RENDERING DRAWING OF SCHOOL 2

Use 305EP 油塘東區海濱陸運地盤2所 設有36間課室的小學 TWO 36-CLASSROOM PRIMARY SCHOOLS AT EASTERN HARBOUR CROSSING SITE, YAU TONG	drawn by HOU SHING FU	date 17/01/03	drawing no. AB/6171/M102	scale N.T.S.
	approved JOHNSON LAU	date 17/01/03	 ARCHITECTURAL SERVICES DEPARTMENT	
	office ARCHITECTURAL BRANCH			

305EP – Two 36-classroom primary schools at Eastern Harbour Crossing site, Yau Tong

Breakdown of estimates for consultants' fees

Consultants' staff costs		Estimated man-months			Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)		
		Schl 1	Sch 2	Total			Schl 1	Sch 2	Total
(a) Contract administration (Note 2)	Professional	–	–	–	–	–	2.3	2.3	4.6
	Technical	–	–	–	–	–	1.1	1.1	2.2
(b) Resident site staff costs (Note 3)	Professional	8.7	8.7	17.4	38	1.6	0.8	0.8	1.6
						Total	4.2	4.2	8.4

* 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. (At 1 October 2002, MPS point 38 is \$57,730 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 **305EP**. The assignment will only be executed subject to Finance Committee's approval to upgrade **305EP** 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.

Enclosure 4 to PWSC(2003-04)14

**A comparison of the reference cost of
a 36-classroom primary school project
with the estimated cost of the two 36-classroom primary schools under 305EP**

\$ million (in Sept 2002 prices)

	Reference cost*	305EP		
		School 1	School 2	
(a) Site formation	–	6.2	6.2	(See note A)
(b) Piling	11.2	7.2	7.2	(See note B)
(c) Building	53.9	55.6	55.6	(See note C)
(d) Building services	12.7	17.8	18.4	(See note D)
(e) Drainage and external works	11.0	13.1	13.1	(See note E)
(f) Furniture and equipment	–	4.6	4.6	(See note F)
(g) Consultants' fees	–	4.2	4.2	(See note G)
(h) Contingencies	8.9	10.4	10.5	
Total	<u>97.7</u>	<u>119.1</u>	<u>119.8</u>	
(i) Construction floor area	12 770 m ²	13 040 m ²	13 040 m ²	
(j) Construction unit cost {[(c) + (d)] ÷ (i)}	\$5,215/m ²	\$5,629/m ²	\$5,675/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.
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 140 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 36-classroom primary school site area of 7 000 square metres[#] 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. D Arch S will review, and revise if necessary, the reference cost which should be adopted for future projects.

Notes

- A. Site formation is required to form level platforms on this sloping site, and to construct retaining structures to support the level differences between the site platforms and the surrounding roads.
- B. The piling cost is lower because of the shallow bedrock level.
- C. Building cost is higher because of larger construction floor area.
- D. The building services cost is higher due to larger construction floor area and the provision of air-conditioning as a noise mitigation measure. More classrooms in School 2 require air-conditioning than those in School 1.
- E. The drainage and external works costs are higher because of the high rock level, sloping ground conditions and the requirement for a boundary wall as a noise mitigation measure.
- F. The cost of furniture and equipment, estimated to be \$ 4.6 million, will be borne by the Government as the two premises have been allocated to existing bi-sessional schools for conversion into whole-day operation.
- G. Consultants’ fees are required for contract administration and site supervision.

[#] We do not have a standard building design for 36-classroom primary school. 7 000 square metres are calculated on a pro-rata basis having regard to the site area of a standard design 30-classroom primary school.