

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 703 – BUILDINGS

Education – Primary

274EP – A 36-classroom primary school in Area 65, Tseung Kwan O

Members are invited to recommend to Finance Committee the upgrading of **274EP** to Category A at an estimated cost of \$101.8 million in money-of-the-day prices for the construction of a 36-classroom primary school in Area 65, Tseung Kwan O.

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, proposes to upgrade **274EP** to Category A at an estimated cost of \$101.8 million in money-of-the-day (MOD) prices for the construction of a 36-classroom primary school in Area 65, Tseung Kwan O.

PROJECT SCOPE AND NATURE

3. The proposed primary school 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 room;
- (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) three basketball courts (two on ground level and one at the rooftop of the assembly hall block);
- (m) a green corner¹; and
- (n) ancillary accommodation including two lifts and relevant facilities for the handicapped.

————— The proposed school will meet the planning target of providing two square metres of open space per student. A site plan is at Enclosure 1. D Arch S plans to start the construction works in December 2002 for completion in July 2004.

/JUSTIFICATION

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.

JUSTIFICATION

4. The Government's interim target is to enable 60% of our primary school students to study in whole-day schools by the 2002/03 school year. To achieve this target, 78 new primary schools are required between the 1998/99 and the 2002/03 school years. To date, 55 schools have already been completed, and the remaining 23 are at various stages of construction.

5. 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, the Director of Education (D of E) plans to construct another 46² new schools between the 2003/04 and the 2007/08 school years. To date, 16 new school projects have already been upgraded to Category A. **274EP** will help achieve this policy target. Another 36-classroom and two other 24-classroom schools, covered in **289EP**, **301EP** and **312EP**, will also be considered by Members at this meeting (see paper referenced PWSC(2002-03)52 and PWSC(2002-03)56).

6. The Sai Kung District, in which **274EP** is located, currently has 25 public sector primary schools providing 650 classrooms. D of E forecasts that 79 additional classrooms will be required for full implementation of whole-day primary schooling in the District by the 2007/08 school year. **274EP** will help reduce the shortfall by 36 classrooms to 43 in this district. We plan to meet the projected shortfall in this district through further school construction projects.

FINANCIAL IMPLICATIONS

7. We estimate the capital cost of the project to be \$101.8 million in MOD prices (see paragraph 8 below), made up as follows –

/(a)

² The figure has not taken into account the primary school places provided by **8029EC** "A private independent school at Po Kong Village Road, Wong Tai Sin". We will further review the figure in due course.

	\$ million	
(a) Piling	15.6	
(b) Building	49.4	
(c) Building services	16.7	
(d) Drainage and external works	11.0	
(e) Consultants' fees for contract administration ³	1.4	
(f) Contingencies	9.4	
Sub-total	103.5	(in September 2001 prices)
(g) Provision for price adjustment	(1.7)	
Total	101.8	(in MOD prices)

Due to inadequate in-house staff resources, D Arch S proposes to engage consultants to undertake certain aspects of the contract administration for quantity surveying work of the project. The construction floor area (CFA) of **274EP** is about 12 770 square metres. The estimated construction unit cost, represented by the building and building services costs, is \$5,176 per square metre of CFA in September 2001 prices. D Arch S considers this 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 **274EP** is at Enclosure 2.

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

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³ The consultants' fees form an optional part of the lump-sum price quoted by the consultant selected to prepare tender documents of the project as mentioned in paragraph 18 of the paper. Subject to Members' approval to upgrade **274EP** to category A, D Arch S will direct the necessary works to be carried out.

Year	\$ million (Sept 2001)	Price adjustment factor	\$ million (MOD)
2002 – 03	6.0	0.98625	5.9
2003 – 04	42.4	0.98378	41.7
2004 – 05	44.5	0.98378	43.8
2005 – 06	9.4	0.98378	9.2
2006 – 07	1.2	0.98378	1.2
	103.5		101.8

9. We derived the MOD estimates on the basis of the Government's latest forecast of trend labour and construction prices for the period 2002 to 2007. 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.

10. The cost of furniture and equipment⁴, estimated to be \$5 million, will be borne by the school sponsor as the school will meet new demand for school places. This is in line with the existing policy.

11. We estimate the annual recurrent expenditure of the project to be \$26.6 million.

PUBLIC CONSULTATION

12. We consulted the Sai Kung District Council on 29 January 2002. Members of the Council supported the project.

/ENVIRONMENTAL

⁴ Based on a standard furniture and equipment list prepared by Education Department for "Year 2000 design" school.

ENVIRONMENTAL IMPLICATIONS

13. We engaged a consultant to conduct a Preliminary Environmental Review (PER) for **274EP** in January 2002. The PER concluded that the school 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 –

Mitigation measures	Estimated cost \$ million (in Sept 2001 prices)
(a) Provision of insulated windows and air-conditioning to 30 classrooms from the 1/F to 3/F at the northern and eastern façades of the classroom block	3.3
(b) Provision of insulated windows and air-conditioning to six special rooms and six classrooms from the 1/F to 4/F at the southern façade of the special room block	1.4

We have included the cost of the above mitigation measures as part of the building services 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 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.

15. 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 design 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.

16. 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. The contractor will be required 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 3 480 cubic metres (m³) of C&D materials. Of these, we will reuse about 2 220 m³ (63.8%) on site, 720 m³ (20.7%) as fill in public filling areas⁵, and dispose of 540 m³ (15.5%) at landfills. The notional cost of accommodating C&D waste at landfill sites is estimated to be \$67,500 for this project (based on a notional unit cost⁶ of \$125/m³)

LAND ACQUISITION

17. The project does not require land acquisition.

BACKGROUND INFORMATION

18. We upgraded **274EP** to Category B in September 1999. We engaged a consultant to carry out a PER in January 2002 and employed a term contractor to carry out site investigation in April 2002 at a total cost of \$910,000. We also engaged a consultant to prepare the tender documents at a cost of \$450,000. We charged these to block allocation **Subhead 3100GX** "Project feasibility studies, minor investigations and consultants' fees for items in Category D of the Public Works Programme". The consultant and the term contractor have completed the PER and site investigation respectively. D Arch S has completed the detailed design of the project with in-house staff resources. The consultant is preparing the tender documents.

/19.

⁵ 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.

⁶ 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.

19. We estimate that the proposed works under **274EP** will create 140 jobs with a total of 2 480 man-months comprising four professional staff, six technical staff and 130 labourers.

Education and Manpower Bureau
June 2002

**A comparison of the reference cost of
a 36-classroom primary school project
with the estimated cost of 274EP**

	\$ million (in Sept 2001 prices)		
	Reference cost*	274EP	
(a) Piling	11.2	15.6	(See note A)
(b) Building	53.9	49.4	(See note B)
(c) Building services	12.7	16.7	(See note C)
(d) Drainage and external works	11.0	11.0	
(e) Consultants' fees for contract administration	–	1.4	(See note D)
(f) Contingencies	8.9	9.4	
	Total	97.7	103.5
(g) Construction floor area	12 770 m ²	12 770 m ²	
(h) Construction unit cost {[(b) + (c)] ÷ (g)}	\$5,215/m ²	\$5,176/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 numbers of steel H-piles at an average depth of 30 metres, on the assumption 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 metres⁷ 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. The piling cost is higher because it is based on the use of 310 numbers of steel H-piles at an average depth of 53 metres instead of 140 numbers of steel H-piles at an average depth of 30 metres assumed for the reference cost. Additional piles are required because of the site being recently reclaimed where the presence of a thick layer of marine deposit and clay alluvium generates negative skin friction reducing the useful capacity of the piles significantly. The piles also have to be driven deeper because of the lower rock head level.
- B. The estimated building cost is lower taking into account lower tender returns for schools in the last two quarters.
- C. The building services cost is higher due to the provision of air-conditioning as a noise mitigation measure. Lower tender returns for schools in the last two quarters have also been accounted for.
- D. Consultants’ fees are required for contract administration for quantity surveying work.

⁷ We do not have a standard 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.