

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 703 – BUILDINGS

Education – Secondary

244ES – Secondary school in Area 38A, Sha Tin

Education – Primary

297EP – Primary school in Area 38A, Sha Tin

Members are invited to recommend to Finance Committee the upgrading of **244ES** and **297EP** to Category A at an estimated cost of \$89 million and \$81.8 million respectively in money-of-the-day prices for the construction of one secondary school and one primary school in Area 38A, Sha Tin.

PROBLEM

We do not have enough secondary schools to meet the increase in demand for secondary school places by the school year 2007/08. We also need to facilitate primary and secondary schools to link together as “through-train schools” to provide students with coherent learning experience and inject diversity to our school system.

PROPOSAL

2. The Director of Architectural Services (D Arch S), with the support of the Secretary for Education and Manpower (SEM), proposes to upgrade the following projects to Category A at an estimated total cost of \$170.8 million in money-of-the-day (MOD) prices –

/(a)

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	Project estimate \$ million (MOD)
(a) 244ES – Secondary school in Area 38A, Sha Tin	89.0
(b) 297EP – Primary school in Area 38A, Sha Tin	81.8
Total	<u>170.8</u>

PROJECT SCOPE AND NATURE

3. The two proposed schools are located in Area 38A, Sha Tin. The facilities for the two schools will include –

	244ES	297EP
(a) classrooms	30	30
(b) special rooms, including a computer-assisted learning room and a language room	14	6
(c) small group teaching rooms	7	4
(d) guidance activity room	1	1
(e) interview rooms	6	2
(f) staff room	1	1
(g) staff common room	1	1
(h) student activity centre	0	1
(i) conference room	1	1
(j) multi-purpose area	0	1

/(k)

	244ES	297EP
(k) green corner ¹	1	1
(l) ancillary accommodation, including a lift and relevant facilities for the handicapped	Available	Available

Shared facilities

- (m) a large assembly hall (which, together with the basketball court at the rooftop of the assembly hall block, can be used for a wide range of physical activities such as badminton, gymnastics and table-tennis) and a small assembly hall
- (n) a library
- (o) a student activity centre
- (p) a multi-purpose area
- (q) two basketball courts (one at ground level and one at the rooftop of the assembly hall block)
- (r) a mini-football pitch-cum-two basketball courts
- (s) bus and car parking facilities

The two proposed schools will be operated by the same sponsor as a through-train school. The facilities in (m) to (s) above will be shared between the secondary and primary sections of the through-train school. In addition, both **244ES** and **297EP** will meet the planning target of providing two square metres of open space per student. A site plan is at Enclosure 1 and a computer rendering drawing of the school premises is at Enclosure 2. D Arch S plans to start the construction works for both projects in November 2003 for completion in July 2005.

/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. Education Commission in its report on Reform Proposals for the Education System in Hong Kong (September 2000) recommends that primary and secondary schools with the same ideology in the running of schools should be encouraged to link together as “through-train schools”. Under the through-train model, all pupils of the primary section can be directly promoted to their secondary section. This will help realise the advantages of providing an overall planning for basic primary and secondary education, and to provide students with a coherent learning experience. A through-train school can also strengthen the school’s understanding of and attention to its students and alleviate students’ adaptation problems upon their promotion to the secondary school. Co-location of the primary and secondary sections is a core concept in through-train school development.

5. For continuous improvement to our school system, we support the development of more through-train schools. To this end, one of the measures which we have undertaken is to earmark a number of new sites for new through-train school development. Projects involving seven through-train schools have been planned from now up to the 2008/09 school year and amongst these are **244ES** and **297EP**.

6. In addition, construction of this through-train school will help meet our shortfall of secondary school places. Our forecast is that 930 additional secondary school classes will be required in the territory between the 2003/04 and 2007/08 school years to meet the increase in demand for new school places. To date, Finance Committee has approved funding for 20 projects providing 588 classrooms, and two more secondary school projects involving 60 classrooms are pending approval². **244ES** will provide 30 classrooms. The shortfall of secondary school classes will therefore be reduced to 252 classrooms. Another 30-classroom secondary school project, covered in **258ES**, will also be considered by Members at this meeting (see paper referenced PWSC(2003-04)27). We plan to meet the rest of the projected shortfall through further school construction projects.

/7.

² At the Public Works Subcommittee meeting on 21 May 2003, Members agreed to recommend to Finance Committee the upgrading of **251ES** and **254ES** for the construction of two 30-classroom secondary schools. The Finance Committee will consider the recommendations on 13 June 2003.

7. The primary section will help ensure proper curriculum interface with the secondary section. It also helps build up a reasonable degree of surplus in our primary school facilities. This surplus provision is necessary to help introduce a market mechanism to the education system with a view to providing choices for parents and students and encouraging schools to pursue self-improvement. As a related point, the proposed through-train school will operate under the Direct Subsidy Scheme (DSS). For a DSS school, unlike an aided/government school, students will not be allocated unless they so choose the school. This will inject further market forces to our system, which will help drive schools to further improve their quality. Moreover, many parents would choose a through-train school so that their children could proceed to the secondary section.

FINANCIAL IMPLICATIONS

8. We estimate the capital cost of **244ES** and **297EP** to be \$89 million and \$81.8 million respectively in MOD prices (see paragraph 9 below), made up as follows –

	\$ million		
	244ES	297EP	
(a) Foundation/Piling	3.5	7.5	
(b) Building	52.9	43.8	
(c) Building services	15.6	14.0	
(d) Drainage and external works	11.3	11.3	
(e) Consultants' fees for –	3.6	3.3	
(i) Contract administration	2.9	2.6	
(ii) Site supervision	0.7	0.7	
(f) Contingencies	8.7	8.0	
Sub-total	95.6	87.9	(in September 2002 prices)
(g) Provision for price adjustment	(6.6)	(6.1)	
Total	89.0	81.8	(in MOD prices)

D Arch S proposes to engage consultants to undertake contract administration and site supervision of the projects. A detailed breakdown of the estimate for consultants' fees by man-months is at Enclosure 3. The construction floor areas (CFAs) of **244ES** and **297EP** are 12 608 square metres and 11 025 square metres respectively. The estimated construction unit costs of **244ES** and **297EP**, represented by the building and building services costs, are \$5,433 and \$5,243 respectively per square metre of CFA in September 2002 prices. D Arch S considers these unit costs comparable to those of similar school projects built by the Government. A comparison of the reference cost for a secondary school based on an uncomplicated site with no unusual environmental or geotechnical constraints with the estimated costs for **244ES** is at Enclosure 4. A similar comparison between a 30-classroom primary school and **297EP** is at Enclosure 5.

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

Year	\$ million (Sept 2002)		Price adjustment factor	\$ million (MOD)	
	244ES	297EP		244ES	297EP
2003 – 04	4.2	4.0	0.94300	4.0	3.8
2004 – 05	40.0	38.3	0.93003	37.2	35.6
2005 – 06	41.4	37.0	0.93003	38.5	34.4
2006 – 07	10.0	8.6	0.93003	9.3	8.0
	<u>95.6</u>	<u>87.9</u>		<u>89.0</u>	<u>81.8</u>

10. 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 2007. We will deliver the works through a fixed-price lump-sum contract covering both projects 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.

11. The cost of furniture and equipment³, estimated to be \$8.6 million for **244ES** and \$3.9 million for **297EP**, will be borne by the school sponsor. This is in line with the existing policy.

12. We estimate the annual recurrent expenditure for **244ES** to be \$37.7 million and that for **297EP** to be \$25 million.

PUBLIC CONSULTATION

13. We consulted the Sha Tin District Council on both projects in January 2002. Members of the Council supported both projects.

ENVIRONMENTAL IMPLICATIONS

14. We engaged consultants to conduct Preliminary Environmental Reviews (PERs) for **244ES** and **297EP** in May 2002. The PERs concluded that both schools 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 –

Project no.	Mitigation measures	Estimated cost \$ million (in Sept 2002 prices)
244ES	(a) Provision of insulated windows and air-conditioning to four classrooms from the 5/F to 6/F at the north-western façade of the classroom block	0.4
	(b) Provision of insulated windows and air-conditioning to eight special rooms and five small group teaching rooms from the 1/F to 5/F at the north-eastern façade of the special room block	1.8

/297EP

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

Project no.	Mitigation measures	Estimated cost \$ million (in Sept 2002 prices)
297EP	(c) Provision of insulated windows and air-conditioning to nine classrooms from the 2/F to 6/F at the north-western façade of the classroom block	0.9
	(d) Provision of insulated windows and air-conditioning to five classrooms, four special rooms and three small group teaching rooms from the 2/F to 5/F at the south-western façade of the special room block	1.5
	(e) Construction of a 2.5-metre high boundary wall at the south-western side of the school site	0.3

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

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 contracts. 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. 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 sites to minimise off-site disposal. In addition, we will require the contractors to use metal site hoardings and signboards so that these materials can be recycled or reused in other projects.

17. D Arch S will require the contractors to submit waste management plans (WMPs) for approval. The WMPs 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 WMPs. 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 contractors 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 the volume of C&D materials to be generated by each proposed project to be as follows –

Project no.	Total C&D materials generated	C&D materials reused/recycled at site		C&D materials to public filling areas ⁴		C&D materials to landfills	
		m ³	%	m ³	%	m ³	%
244ES	3 400	2 180	64.1	680	20.0	540	15.9
297EP	2 980	1 910	64.1	600	20.1	470	15.8

The notional cost of accommodating C&D waste at landfill sites is estimated to be \$67,500 for **244ES** and \$58,750 for **297EP** (based on a notional unit cost⁵ of \$125/m³).

LAND ACQUISITION

18. Both projects do not require land acquisition.

/BACKGROUND

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 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/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.

BACKGROUND INFORMATION

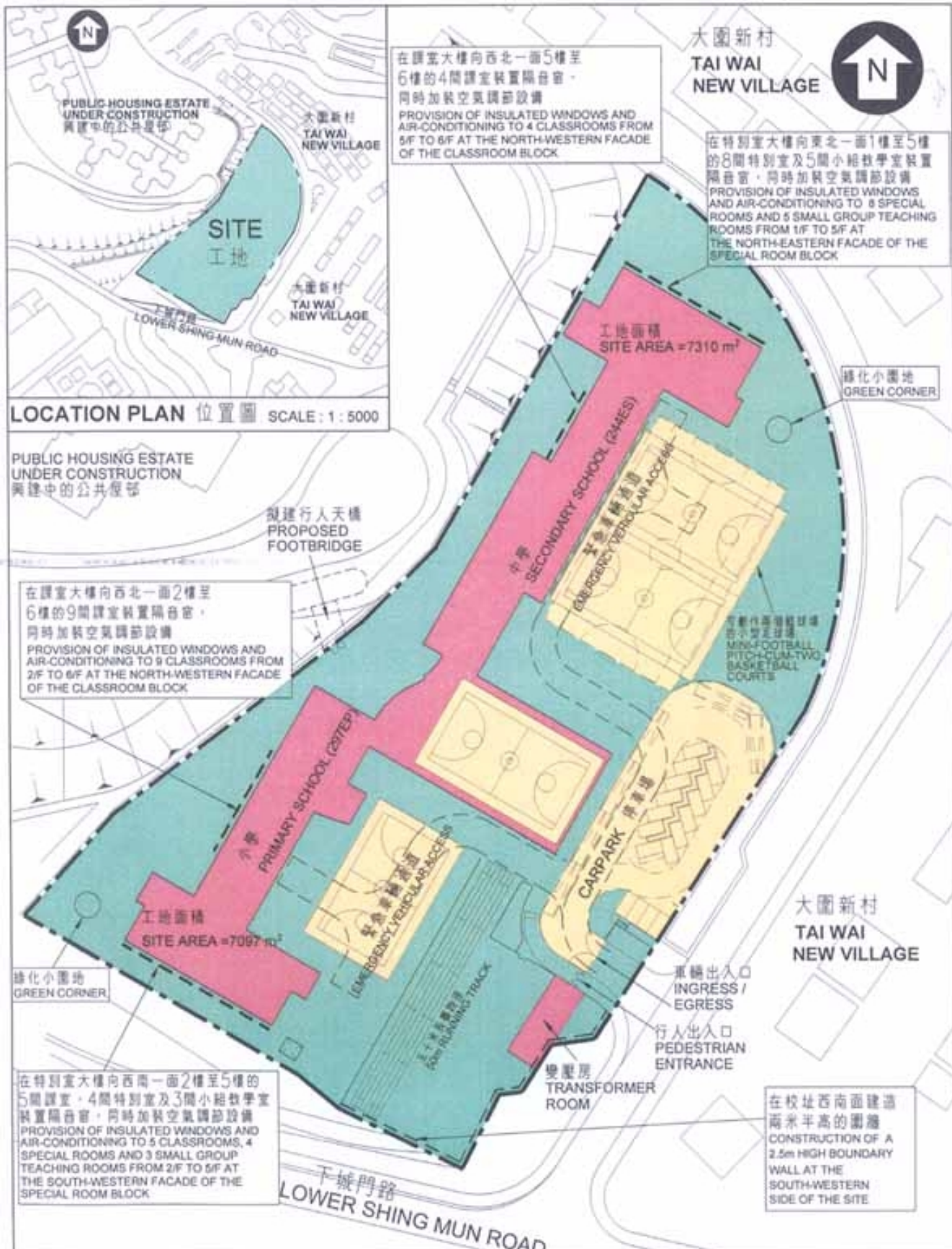
19. We consulted the Legislative Council Panel on Education on 20 January 2003 on our latest plan for building secondary and primary schools. This “through-train school” is one of the planned projects. The Panel has no objection to our proposed plan.

20. We upgraded **244ES** and **297EP** to Category B in September 2001. We engaged a term contractor to carry out site investigation in March 2003 and consultants to undertake the detailed design, PERs, topographical survey in May 2002 and tender documentation in April 2003 at a total cost of \$5 million. We 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 term contractor and consultants have completed the site investigation, detailed design, PERs and topographical survey for both projects. The consultants are finalising the tender documents.

21. We estimate that the projects will create the following job opportunities –

Project no.	Professional/ technical staff	Labourer	Total no. of staff	Total man-months
244ES	15	105	120	2 200
297EP	15	100	115	2 100

Education and Manpower Bureau
June 2003



LOCATION PLAN 位置圖 SCALE: 1:5000

PUBLIC HOUSING ESTATE UNDER CONSTRUCTION
興建中的公共屋邨

擬建行人天橋
PROPOSED FOOTBRIDGE

在課室大樓向西北一面2樓至6樓的9間課室裝置隔音窗，同時加裝空氣調節設備
PROVISION OF INSULATED WINDOWS AND AIR-CONDITIONING TO 9 CLASSROOMS FROM 2/F TO 6/F AT THE NORTH-WESTERN FACADE OF THE CLASSROOM BLOCK

綠化小園地
GREEN CORNER

在特別室大樓向西南一面2樓至5樓的5間課室，4間特別室及3間小組教學室裝置隔音窗，同時加裝空氣調節設備
PROVISION OF INSULATED WINDOWS AND AIR-CONDITIONING TO 5 CLASSROOMS, 4 SPECIAL ROOMS AND 3 SMALL GROUP TEACHING ROOMS FROM 2/F TO 5/F AT THE SOUTH-WESTERN FACADE OF THE SPECIAL ROOM BLOCK

下城門路
LOWER SHING MUN ROAD

title 244ES & 297EP
沙田第38A區
1所中學及1所小學
A SECONDARY SCHOOL AND
A PRIMARY SCHOOL
IN AREA 38A, SHA TIN

drawn by CHAN TIM	date 21-5-03
approved SIDNEY C.K.LAM	date 21-5-03
office ARCHITECTURAL BRANCH	

drawing no. AB/6355/XD101	scale 1:1000
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ARCHITECTURAL
SERVICES
DEPARTMENT



電腦繪製的工地模擬圖(東南面)

COMPUTER RENDERING DRAWING OF THE SITE (SOUTH-EASTERN VIEW)

title 244ES & 297EP 沙田第38A區 1所中學及1所小學 A SECONDARY SCHOOL AND A PRIMARY SCHOOL IN AREA 38A, SHA TIN	drawn by CINDY M.C. LAM	date 22-4-03	drawing no. AB/6355/XD101	scale 1:1000
	approved SIDNEY C.K.LAM	date 22-4-03	 ARCHITECTURAL SERVICES DEPARTMENT	
	office ARCHITECTURAL BRANCH			

244ES – Secondary school in Area 38A, Sha Tin
297EP – Primary school in Area 38A, Sha Tin

Breakdown of the estimate for consultants' fees

Consultants' staff costs		Estimated man-months		Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)	
		244ES	297EP			244ES	297EP
(a) Contract administration (Note 2)	Professional	–	–	–	–	2.0	1.8
	Technical	–	–	–	–	0.9	0.8
(b) Site supervision (Note 3)	Professional	7.6	7.6	38	1.6	0.7	0.7
	Total	3.6	3.3			3.6	3.3

* 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 **244ES** and **297EP**. The assignment will only be executed subject to Finance Committee's approval to upgrade **244ES** and **297EP** 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 secondary school project
with the estimated cost of 244ES**

\$ million (in Sept 2002 prices)				
		Reference cost*	244ES	
(a)	Foundation/Piling	9.0	3.5	(See note A)
(b)	Building	50.2	52.9	(See note B)
(c)	Building services	12.8	15.6	(See note C)
(d)	Drainage and external works	10.5	11.3	(See note D)
(e)	Consultants' fees	–	3.6	(See note E)
(f)	Contingencies	8.3	8.7	
	Total	90.8	95.6	
(g)	Construction floor area	12 238 m ²	12 608 m ²	
(h)	Construction unit cost {[(b) + (c)] ÷ (g)}	\$5,148/m ²	\$5,433/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 138 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 secondary school site area of 6 950 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. The foundation/piling cost is lower as strip foundations rather than piling are possible because of shallow rockhead in the secondary school section of the site.
- 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 drainage and external works cost is higher because of the larger site area for this school.
- E. Consultants’ fees are required for contract administration and site supervision.

**A comparison of the reference cost of
a 30-classroom primary school project
with the estimated cost of 297EP**

				\$ million (in Sept 2002 prices)		
				Reference cost*	297EP	
(a)	Piling		7.5	7.5		
(b)	Building		41.3	43.8		(See note A)
(c)	Building services		11.0	14.0		(See note B)
(d)	Drainage and external works		9.5	11.3		(See note C)
(e)	Consultants' fees		–	3.3		(See note D)
(f)	Contingencies		7.0	8.0		
		Total	76.3	87.9		
(g)	Construction floor area		10 727 m ²	11 025 m ²		
(h)	Construction unit cost {[(b) + (c)] ÷ (g)}		\$4,876/m ²	\$5,243/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 112 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 30-classroom primary school site area of 6 200 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. The building cost is higher because of the larger construction floor area.
- B. The building services cost is higher because of the larger construction floor area and the provision of air-conditioning as a noise mitigation measure.
- C. The drainage and external works cost is higher because of the larger site area for this school and the provision of a boundary wall as a noise mitigation measure.
- D. Consultants’ fees are required for contract administration and site supervision.