For discussion **PWSC(2004-05)4**
on 21 April 2004

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 703 – BUILDINGS
Education – Secondary
256ES – Secondary school at Site 10, West Kowloon Reclamation, Sham Shui Po

Education – Primary
319EP – A 36-classroom primary school at Site 10, West Kowloon Reclamation, Sham Shui Po

Members are invited to recommend to Finance Committee the upgrading of **256ES** and **319EP** to Category A at an estimated cost of $119.1 million and $104.3 million respectively in money-of-the-day prices for the construction of a secondary school and a primary school at Site 10, West Kowloon Reclamation, Sham Shui Po.

PROBLEM

We need to construct new secondary schools for the reprovisioning of existing secondary schools in sub-standard school premises. Also, we do not have enough primary schools to implement the whole-day primary schooling policy by the 2007/08 school year.

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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 $223.4 million in money-of-the-day (MOD) prices –

		Project estimate $ million (MOD)
(a)	**256ES** – Secondary school at Site 10, West Kowloon Reclamation, Sham Shui Po	119.1
(b)	**319EP** – A 36-classroom primary school at Site 10, West Kowloon Reclamation, Sham Shui Po	104.3
	Total	223.4

PROJECT SCOPE AND NATURE

3. The two proposed schools are located at Site 10, West Kowloon Reclamation, Sham Shui Po. The facilities for the two schools will include –

		256ES (Secondary school)	**319EP (Primary school)**
(a)	classrooms	30	36
(b)	special rooms, including a computer-assisted learning (CAL) room and a language room	16	9
(c)	small group teaching rooms	3	4
(d)	guidance activity room	1	1
(e)	interview rooms	2	2
(f)	staff room	1	1

/(g) …..

		256ES (Secondary school)	**319EP (Primary school)**
(g)	staff common room	1	1
(h)	student activity centre	1	1
(i)	conference room	1	1
(j)	library	1	1
(k)	assembly hall (which, together with the rooftop of the special room block, can be used for a wide range of physical activities such as badminton, gymnastics and table-tennis)	1	1
(l)	multi-purpose area	1	1
(m)	basketball court (at the rooftop of the special room block for each school)	1	1
(n)	green corner[1]	1	1
(o)	running tracks[2]	50 metres long	60 metres long
(p)	ancillary accommodation, including a lift and relevant facilities for the handicapped	Available	Available

Shared facilities

(q) a mini-football pitch-cum-four basketball courts; and

(r) bus and car parking facilities

/Both …..

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[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.

[2] Owing to the limited site area and the restricted building layout, 100-metre running tracks cannot be provided for both the secondary and the primary schools.

Both projects will meet the planning target of providing two square metres of open space per student. A site plan for **256ES** and **319EP** is at Enclosure 1 and views of the school premises (artist's impression) are at Enclosure 2. D Arch S plans to start the construction works for both projects in November 2004 for completion in July 2006.

JUSTIFICATION

256ES – Secondary school at Site 10, West Kowloon Reclamation, Sham Shui Po

4. Many existing schools were built to old planning standards and designs. Improvements to the physical facilities of these schools have been provided under the School Improvement Programme[3] (SIP) as far as it is practicable. However, owing to physical or technical constraints, such as lack of space, the extent of improvements is limited in many cases. Indeed, some 20 schools are considered SIP non-feasible altogether. Besides, the scope of the improvement works carried out for some 380 schools in phases 1 to 3 of the programme is much smaller than that for schools in the last two phases. A number of essential education facilities, such as CAL rooms and language rooms, are only included in the Year 2000 school design introduced a few years ago and adopted as a planning standard for the SIP since then. Against this background and subject to availability of funds and land, we plan to progressively redevelop or reprovision existing schools which are poorly equipped to the present day standard to ensure continual improvement to the physical environment for the provision of quality education. The school premises to be provided under **256ES** will be used to reprovision an existing secondary school through the normal school allocation process to be conducted later this year.

319EP – A 36-classroom primary school at Site 10, West Kowloon Reclamation, Sham Shui Po

5. It is Government policy to implement whole-day primary schooling for virtually all primary school students by the 2007/08 school year. At present, about 66% of primary school students are studying in whole-day primary schools. To facilitate implementation of the policy, SEM plans to construct 46 new schools between the 2004/05 and 2007/08 school years. To date, Finance Committee has approved funding for 16 of these 46 new schools. **319EP** will further help achieve this policy target.

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[3] The SIP involves some 850 existing schools to provide additional space and upgraded facilities to support teaching and learning. The majority of the improvement works will be completed by the end of the 2004/05 school year.

6. The Sham Shui Po District, in which **319EP** is located, currently has 25 public sector primary school premises providing 474 classrooms. SEM forecasts that 161 additional classrooms will be required for full implementation of whole-day primary schooling in the district by the 2007/08 school year. The Finance Committee has approved funding for one primary school project providing 36 additional classrooms for completion in the 2005/06 school year. **319EP** will provide 36 more classrooms for completion by the 2007/2008 school year in the district, reducing the shortfall to 89 classrooms. We plan to meet the rest of the requirement through further school construction projects. The School Allocation Committee[4] has recommended the allocation of **319EP** to Sheng Kung Hui Kei Wing Primary School (p.m. session) and Sheng Kung Hui St. Thomas Primary School (p.m. session) both under the sponsorship of the Church Body of the Hong Kong Sheng Kung Hui for whole-day conversion.

FINANCIAL IMPLICATIONS

7. We estimate the capital cost of **256ES** and **319EP** to be $119.1 million and $104.3 million respectively in MOD prices (see paragraph 8 below), made up as follows –

	$ million	
	256ES	**319EP**
(a) Piling	13.8	14.2
(b) Building	57.0	49.2
(c) Building services	19.8	16.7
(d) Drainage and external works	12.5	12.1
(e) Furniture and equipment (F&E)	7.8	4.3
(f) Consultants' fees for –	3.0	3.0
(i) Contract administration	1.5	1.5
(ii) Site supervision	1.5	1.5

/(g) …..

[4] The School Allocation Committee makes recommendations to SEM on the allocation of school premises/sites to suitable school sponsors. The Committee comprises an equal number of official and non-official members familiar with the Hong Kong education system.

	$ million		
	256ES	**319EP**	
(g) Contingencies	10.6	9.5	
Sub-total	124.5	109.0	(in September 2003 prices)
(h) Provision for price adjustment	(5.4)	(4.7)	
Total	119.1	104.3	(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 **256ES** and **319EP** are 13 237 square metres and 12 700 square metres respectively. The estimated construction unit costs of **256ES** and **319EP**, represented by the building and building services costs, are $5,802 and $5,189 per square metre of CFA in September 2003 prices respectively. 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 cost for **256ES** is at Enclosure 4. A similar comparison between a 36-classroom primary school and **319EP** is at Enclosure 5.

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

Year	**$ million (Sept 2003)**		**Price adjustment factor**	**$ million (MOD)**	
	256ES	**319EP**		**256ES**	**319EP**
2004 – 05	4.0	4.0	0.97150	3.9	3.9
2005 – 06	50.4	48.0	0.95450	48.1	45.8
2006 – 07	54.5	44.0	0.95450	52.0	42.0
2007 – 08	13.6	11.0	0.96643	13.1	10.6
2008 – 09	2.0	2.0	0.98455	2.0	2.0
	124.5	109.0		119.1	104.3

/9. …..

9. 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 2004 to 2009. We will deliver the works through a fixed-price lump-sum contract because the contract period of both projects 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 F&E for **256ES**, estimated to be $7.8 million[5], will be borne by Government as the school premises will be used to reprovision an existing secondary school. For **319EP**, the cost of F&E, estimated to be $4.3 million[6], will be borne by the Government as the school premises will enable two sessions of existing bi-sessional schools to convert into whole-day operation. These are in line with existing policies.

11. The annual recurrent expenditure of the secondary school to be reprovisioned to the new premises under **256ES** will be $39.8 million. The annual recurrent expenditure of Sheng Kung Hui Kei Wing Primary School (p.m. session with 23 classes) and Sheng Kung Hui St. Thomas Primary School (p.m. session with 18 classes) were $19.7 million and $14.6 million respectively in the 2002/03 school year. Upon whole-day conversion and reprovisioning to the new premises under **319EP**, the annual recurrent expenditure is estimated to be $28.2 million.

PUBLIC CONSULTATION

12. We consulted the Legislative Council Panel on Education on 30 January 2004 on the planning and provision of public sector school places and the various projects to be implemented in the School Building Programme in the next few years. The Panel on Education thoroughly discussed the Administration's policy and noted its plan to proceed with seeking funding approval from the Public Works Subcommittee for projects in the following three categories –

/(a) …..

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[5] Based on the F&E reference list prepared by the Education and Manpower Bureau for new schools adopting the standard schedule of accommodation. SEM will revise the estimate for F&E on the basis of the serviceability of the existing F&E of the school to be reprovisioned to the new premises under **256ES**.

[6] Based on the F&E reference list prepared by the Education and Manpower Bureau for new schools adopting the standard schedule of accommodation.

(a) whole-day primary schools;

(b) reprovisioning and redevelopment projects; and

(c) schools, including direct subsidy scheme and private independent schools, which have already been allocated to sponsoring bodies.

Members supported projects under categories (a) and (b). In respect of proposals under category (c), members asked that full background and justification, including the supply and demand balance of school places on both a territory-wide and district basis, be provided to facilitate consideration on a case-by-case basis.

13. We also consulted the Sham Shui Po District Council on 6 April 2004. Members of the Council supported both projects.

ENVIRONMENTAL IMPLICATIONS

14. We engaged a consultant to conduct Preliminary Environmental Reviews (PERs) for **256ES** and **319EP** in October 2003. The PERs 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 –

Project no.	**Mitigation measures**	**Estimated cost $ million (in Sept 2003 prices)**
256ES	(a) Classroom block	3.0
	Insulated windows and air-conditioning for 30 classrooms from the 2/F to 7/F at the northern facade	
	(b) Special room block	2.1
	Insulated windows and air-conditioning for ten special rooms from the 1/F to 2/F and the 4/F to 7/F at the western facade	

/(c) …..

Project no.	Mitigation measures	Estimated cost $ million (in Sept 2003 prices)
	(c) Assembly hall block Insulated windows and air-conditioning for three small group teaching rooms on the 5/F at the eastern facade	0.2
	(d) A two-metre high boundary wall at the western, northern and eastern sides of the site	1.2
319EP	(e) Classroom block Insulated windows and air-conditioning for 36 classrooms from the 2/F to 7/F at the southern facade	3.5
	(f) Assembly hall block Insulated windows and air-conditioning for a special room on the 4/F at the southern facade	0.1
	(g) Special room block Insulated windows and air-conditioning for three special rooms and four small group teaching rooms on the 2/F, 4/F and 5/F at the western facade	0.4
	(h) A two-metre high boundary wall at the western side of the site	0.8

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. …..

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. D Arch S will record the disposal, reuse and recycling of C&D materials for monitoring purposes.

18. We estimate that 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**[7]		**C&D materials to landfills**	
	m^3	m^3	%	m^3	%	m^3	%
256ES	3 560	2 290	64.3	710	20.0	560	15.7
319EP	3 480	2 220	63.8	720	20.7	540	15.5

The notional cost of accommodating C&D waste at landfill sites is estimated to be $70,000 for **256ES** and $67,500 for **319EP** (based on a notional unit cost[8] of $125/$m^3$).

/LAND …..

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[7] 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.

[8] 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 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

19. Both projects do not require land acquisition.

BACKGROUND INFORMATION

20. We upgraded **256ES** and **319EP** to Category B in November 2002. We engaged a term contractor to carry out site investigations in July 2003; and consultants to undertake topographical surveys in May 2003, PERs in October 2003, detailed design in December 2003 and tender documentation in February 2004 at a total cost of $6.4 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 the consultants have completed the site investigations, topographical surveys, PERs and detailed design respectively. The consultants are finalising the tender documents.

21. The proposed construction of the secondary and primary schools will involve removal of 17 trees which will all be replanted within the project sites. All trees to be removed are not important trees[9]. We will incorporate planting proposals as parts of the projects, including estimated quantities of 117 trees, 4 060 shrubs and 300 square metres of grassed area.

22. We estimate that the proposed works will create the following job opportunities –

/**256ES** …..

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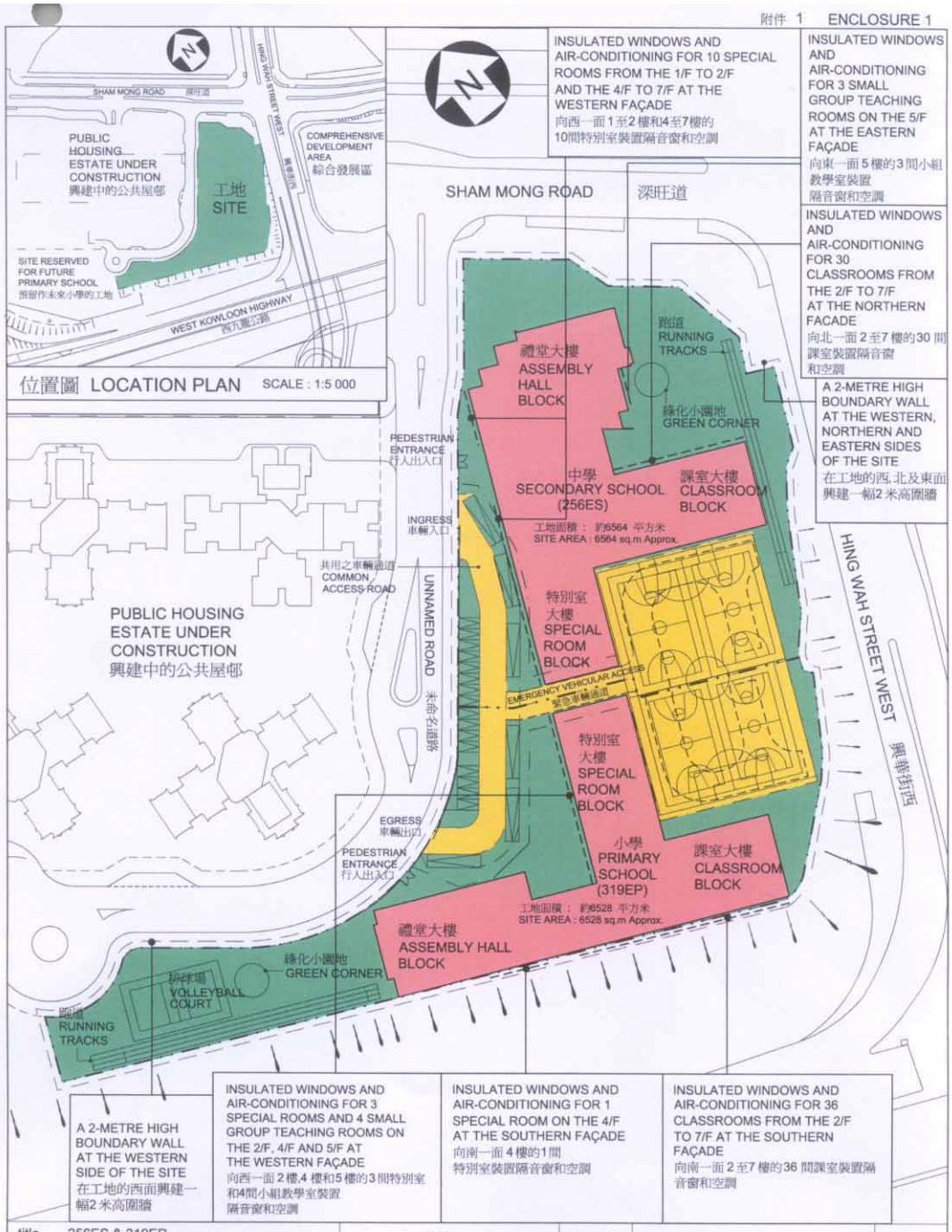
[9] Important trees include trees on the Register of Old and Valuable Trees, and any other trees which meet one or more of the following criteria –
(a) trees over 100 years old;
(b) trees of cultural, historical or memorable significance;
(c) trees of precious or rare species;
(d) trees of outstanding form; or
(e) trees with trunk diameter exceeding one metre (measured at one metre above ground level).

Project no.	Estimated no. of jobs			Estimated total man-months
	Total	**Labourer**	**Professional/ technical staff**	
256ES	130	118	12	2 200
319EP	120	110	10	1 950

Education and Manpower Bureau
April 2004

附件 1 ENCLOSURE 1



title 256ES & 319EP 深水埗西九龍填海區第10號地盤的1所中學和1所設有36間課室的小學 A SECONDARY SCHOOL AND A 36-CLASSROOM PRIMARY SCHOOL AT SITE 10, WEST KOWLOON RECLAMATION, SHAM SHUI PO	drawn by 繪圖 BILLY CHAN	date 日期 23.02.04	drawing no. 編號 AB/6630 & 6737 / XA101
	approved 覆核 JOEL CHAN	date 日期 23.02.04	scale 比例 1 : 1000
	office 辦事處 ARCHITECTURAL BRANCH 建築設計處		ARCHITECTURAL SERVICES DEPARTMENT 建築署

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

從東南面望向中學校舍的構思圖
VIEW OF THE SECONDARY SCHOOL PREMISES FROM SOUTH-EASTERN DIRECTION (ARTIST'S IMPRESSION)

title 256ES & 319EP 深水埗西九龍填海區 第10號地盤的1所中學和1所設有36間課室的小學 A SECONDARY SCHOOL AND A 36-CLASSROOM PRIMARY SCHOOL AT SITE 10, WEST KOWLOON RECLAMATION, SHAM SHUI PO	drawn by 繪圖 BILLY CHAN	date 日期 23.02.04	drawing no. 編號 AB/6630 & 6737 / XA102	scale 比例 N.T.S.
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256ES – Secondary school at Site 10, West Kowloon Reclamation, Sham Shui Po
319EP – A 36-classroom primary school at Site 10, West Kowloon Reclamation, Sham Shui Po

Breakdown of the estimate for consultants' fees

Consultants' staff costs		Estimated man-months		Average MPS* salary point	Multiplier (Note 1)	Estimated fee ($ million)	
		256ES	**319EP**			**256ES**	**319EP**
(a) Contract administration (Note 2)	Professional	–	–	–	–	1.1	1.1
	Technical	–	–	–	–	0.4	0.4
(b) Site supervision (Note 3)	Professional	8.9	8.9	38	1.6	0.8	0.8
	Technical	23.5	23.5	14	1.6	0.7	0.7
					Total	3.0	3.0

* 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 2004, MPS point 38 = $55,993 per month and MPS point 14 = $18,603 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 **256ES** and **319EP**. The assignment will only be executed subject to Finance Committee's approval to upgrade **256ES** and **319EP** 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 256ES

		$ million (in Sept 2003 prices)		
		Reference cost*	**256ES**	
(a)	Piling	9.5	13.8	(See note A)
(b)	Building	52.5	57.0	(See note B)
(c)	Building services	13.9	19.8	(See note C)
(d)	Drainage and external works	11.3	12.5	(See note D)
(e)	Furniture and equipment (F&E)	–	7.8	(See note E)
(f)	Consultants' fees	–	3.0	(See note F)
(g)	Contingencies	8.7	10.6	
	Total	95.9	124.5	
(h)	Construction floor area	12 238 m^2	13 237 m^2	
(i)	Construction unit cost {[(b) + (c)] ÷ (h)}	\$5,426/m^2	\$5,802/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. F&E 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 ground conditions require the use of 173 steel H-piles at an average depth of 35 metres. The increase in the number of piles is due to the larger construction floor area and building footprint, design allowance for the effect of negative skin friction in view of reclaimed fill and marine deposit, as well as the larger exposed area on elevation that is susceptible to lateral wind load.

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 construction of a two-metre high boundary wall as a noise mitigation measure.

E. The cost of F&E, estimated to be $7.8 million, will be borne by the Government as the school premises will be used to reprovision an existing secondary school.

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

A comparison of the reference cost of a 36-classroom primary school project with the estimated cost of 319EP

		$ million (in Sept 2003 prices)		
		Reference cost*	**319EP**	
(a)	Piling	10.0	14.2	(See note A)
(b)	Building	49.2	49.2	
(c)	Building services	12.3	16.7	(See note B)
(d)	Drainage and external works	11.3	12.1	(See note C)
(e)	Furniture and equipment (F&E)	–	4.3	(See note D)
(f)	Consultants' fees	–	3.0	(See note E)
(g)	Contingencies	8.3	9.5	
	Total	91.1	109.0	
(h)	Construction floor area	12 770 m^2	12 700 m^2	
(i)	Construction unit cost {[(b) + (c)] ÷ (h)}	\$4,816/m^2	\$5,189/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 150 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. F&E 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 ground conditions require the use of 182 steel H-piles at an average depth of 35 metres. The increase in the number of piles is due to design allowance for the effect of negative skin friction in view of reclaimed fill and marine deposit, as well as the larger exposed area on elevation that is susceptible to lateral wind load. The latter factor is more prominent in the primary school than the secondary school, which accounts for the use of more piles for **319EP** than **256ES**.

B. The building services cost is higher because of the provision of air-conditioning as a noise mitigation measure.

C. The drainage and external works cost is higher because of the construction of a two-metre high boundary wall as a noise mitigation measure.

D. The cost of F&E, estimated to be $4.3 million, will be borne by the Government as the school premises will be allocated to two existing bi-sessional schools for conversion into whole-day operation.

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

[#] 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.