

## **ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE**

### **HEAD 703 – BUILDINGS**

#### **Education – Secondary**

#### **254ES – Secondary school in Area 16, Yuen Long**

#### **Education – Primary**

#### **315EP – Primary school in Area 16, Yuen Long**

Members are invited to recommend to Finance Committee the upgrading of **254ES** and **315EP** to Category A at an estimated cost of \$109.4 million and \$89.9 million respectively in money-of-the-day prices for the construction of one secondary school and one primary school in Area 16, Yuen Long.

### **PROBLEM**

We do not have enough secondary schools to meet the increase in demand for new school places by the school year 2007/08. We also 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 the following projects to Category A at an estimated total cost of \$199.3 million in money-of-the-day (MOD) prices –

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	<b>Project estimate \$ million (MOD)</b>
(a) <b>254ES</b> – Secondary school in Area 16, Yuen Long	109.4
(b) <b>315EP</b> – Primary school in Area 16, Yuen Long	89.9
Total	<hr/> 199.3 <hr/>

### PROJECT SCOPE AND NATURE

3. The two proposed schools are located in Area 16, Yuen Long. The facilities for the two schools will include –

	<b>254ES (Secondary school)</b>	<b>315EP (Primary school)</b>
(a) classrooms	30	30
(b) special rooms, including a computer-assisted learning room and a language room	16	6
(c) small group teaching rooms	3	4
(d) guidance activity room	1	1
(e) interview rooms	2	2
(f) staff room	1	1
(g) staff common room	1	1
(h) student activity centre	1	1
(i) conference room	1	1
(j) library	1	1
		/(k) .....

	<b>254ES (Secondary school)</b>	<b>315EP (Primary school)</b>
(k) 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)	1	1
(l) multi-purpose area	1	1
(m) two basketball courts (one at ground level and one at the rooftop of the assembly hall block)	2	2
(n) green corner <sup>1</sup>	1	1
(o) ancillary accommodation including a lift and relevant facilities for the handicapped	Available	Available

### **Shared facilities**

- (p) a mini-football pitch-cum-two basketball courts

Both projects will meet the planning target of providing two square metres of open space per student. A site plan for **254ES** and **315EP** 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 projects in December 2003 for completion in July 2005.

### **JUSTIFICATION**

#### ***254ES – Secondary school in Area 16, Yuen Long***

4. SEM forecasts that 930 additional secondary school classes will be required in the territory between the 2003/04 and 2007/08 school years to meet the

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<sup>1</sup> 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.

increase in demand for new places. To date, Finance Committee has approved funding for 20 new schools providing 588 classrooms. **254ES** will provide 30 classrooms. The shortfall of secondary school classes will therefore be reduced to 312 classrooms. Another 30-classroom secondary school, covered in **251ES**, will also be considered by Members at this meeting (see paper referenced PWSC(2003-04)18). We plan to meet the rest of the projected shortfall through further school construction projects.

### ***315EP – Primary school in Area 16, Yuen Long***

5. 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 56<sup>2</sup> new schools between the 2003/04 and 2007/08 school years. To date, Finance Committee has approved funding for 19 new schools. Another project covering two schools is pending upgrading<sup>3</sup>. **315EP** will help achieve this policy target. Another school project, covered in **310EP**, will also be considered by Members at this meeting (see paper referenced PWSC(2003-04)20).

6. The Yuen Long District, in which **315EP** is located, currently has 77 public sector primary schools providing 914 classrooms. SEM forecasts that 406 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, two primary school projects providing 60 classrooms have already been upgraded to Category A and are planned for completion in the 2003/04 school year. **315EP** will help reduce the shortfall further by 30 classrooms to 316

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<sup>2</sup> 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.

<sup>3</sup> At the Public Works Subcommittee meeting on 7 May 2003, Members agreed to recommend to Finance Committee the upgrading of **305EP** for the construction of two 36-classroom primary schools. The Finance Committee will consider the recommendation on 30 May 2003.

in this district and facilitate conversion of bi-sessional classes into whole-day operation. We plan to meet the rest of the projected shortfall in this district through further school construction projects.

**FINANCIAL IMPLICATIONS**

7. We estimate the capital cost of **254ES** and **315EP** to be \$109.4 million and \$89.9 million respectively in MOD prices (see paragraph 8 below), made up as follows –

	\$ million		
	<b>254ES</b>	<b>315EP</b>	
(a) Piling	24.4	20.0	
(b) Building	53.0	41.3	
(c) Building services	15.8	11.0	
(d) Drainage and external works	10.7	9.7	
(e) Furniture and equipment <sup>4</sup>	–	3.9	
(f) Consultants’ fees for –	2.8	2.4	
(i) Contract administration	2.1	1.9	
(ii) Site supervision	0.7	0.5	
(g) Contingencies	10.7	8.4	
Sub-total	117.4	96.7	(in September 2002 prices)
(h) Provision for price adjustment	(8.0)	(6.8)	
Total	109.4	89.9	(in MOD prices)

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<sup>4</sup> 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 areas (CFAs) of **254ES** and **315EP** are 13 470 square metres and 10 720 square metres respectively. The estimated construction unit costs of **254ES** and **315EP**, represented by the building and building services costs, are \$5,108 and \$4,879 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 **254ES** is at Enclosure 4. A similar comparison between a 30-classroom primary school and **315EP** is at Enclosure 5.

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

Year	\$ million (Sept 2002)		Price adjustment factor	\$ million (MOD)	
	<b>254ES</b>	<b>315EP</b>		<b>254ES</b>	<b>315EP</b>
2003 – 04	10.0	8.0	0.94300	9.4	7.5
2004 – 05	49.2	41.0	0.93003	45.8	38.1
2005 – 06	44.7	35.4	0.93003	41.6	32.9
2006 – 07	11.5	10.0	0.93003	10.7	9.3
2007 – 08	2.0	2.3	0.93003	1.9	2.1
	<u>117.4</u>	<u>96.7</u>		<u>109.4</u>	<u>89.9</u>

9. 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.

10. The cost of furniture and equipment<sup>5</sup>, estimated to be \$8.6 million for **254ES**, will be borne by the school sponsor as the school will meet increase in demand for school places. For **315EP**, the cost of furniture and equipment, estimated to be \$3.9 million, will be borne by the Government as the school will enable an existing bi-sessional school to convert into whole-day operation. These are in line with existing policies.

11. We estimate the annual recurrent expenditure for **254ES** to be \$42.6 million and that for **315EP** to be \$23.7 million.

## **PUBLIC CONSULTATION**

12. We consulted the Yuen Long District Council on 13 May 2002. Members of the Council supported both projects.

## **ENVIRONMENTAL IMPLICATIONS**

13. We engaged consultants to conduct Preliminary Environmental Reviews (PERs) for **254ES** and **315EP** in October 2002. The PERs concluded that both schools would not be subject to adverse environmental impacts provided that we install insulated windows and air-conditioning to 13 special rooms and three small group teaching rooms from the 1/F to 6/F at the western façade of the special room block of **254ES** in order to keep the road traffic noise impact within the limits recommended in the Hong Kong Planning Standards and Guidelines. We have included \$1.7 million as part of the building services works in the project estimate of **254ES** to implement the above mitigation measures.

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 sites, and the provision of wheel-washing facilities.

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<sup>5</sup> Based on a standard furniture and equipment list prepared by the Education and Manpower Bureau for "Year 2000 design" schools.

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 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.

16. 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. 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 <sup>6</sup>		C&D materials to landfills	
		m <sup>3</sup>	%	m <sup>3</sup>	%	m <sup>3</sup>	%
<b>254ES</b>	3 410	2 180	64	680	20	550	16
<b>315EP</b>	2 610	1 670	64	520	20	420	16

The notional cost of accommodating C&D waste at landfill sites is estimated to be \$68,750 for **254ES** and \$52,500 for **315EP** (based on a notional unit cost<sup>7</sup> of \$125/m<sup>3</sup>).

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<sup>6</sup> 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.

<sup>7</sup> 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/m<sup>3</sup>), 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**

17. Both projects do not require land acquisition.

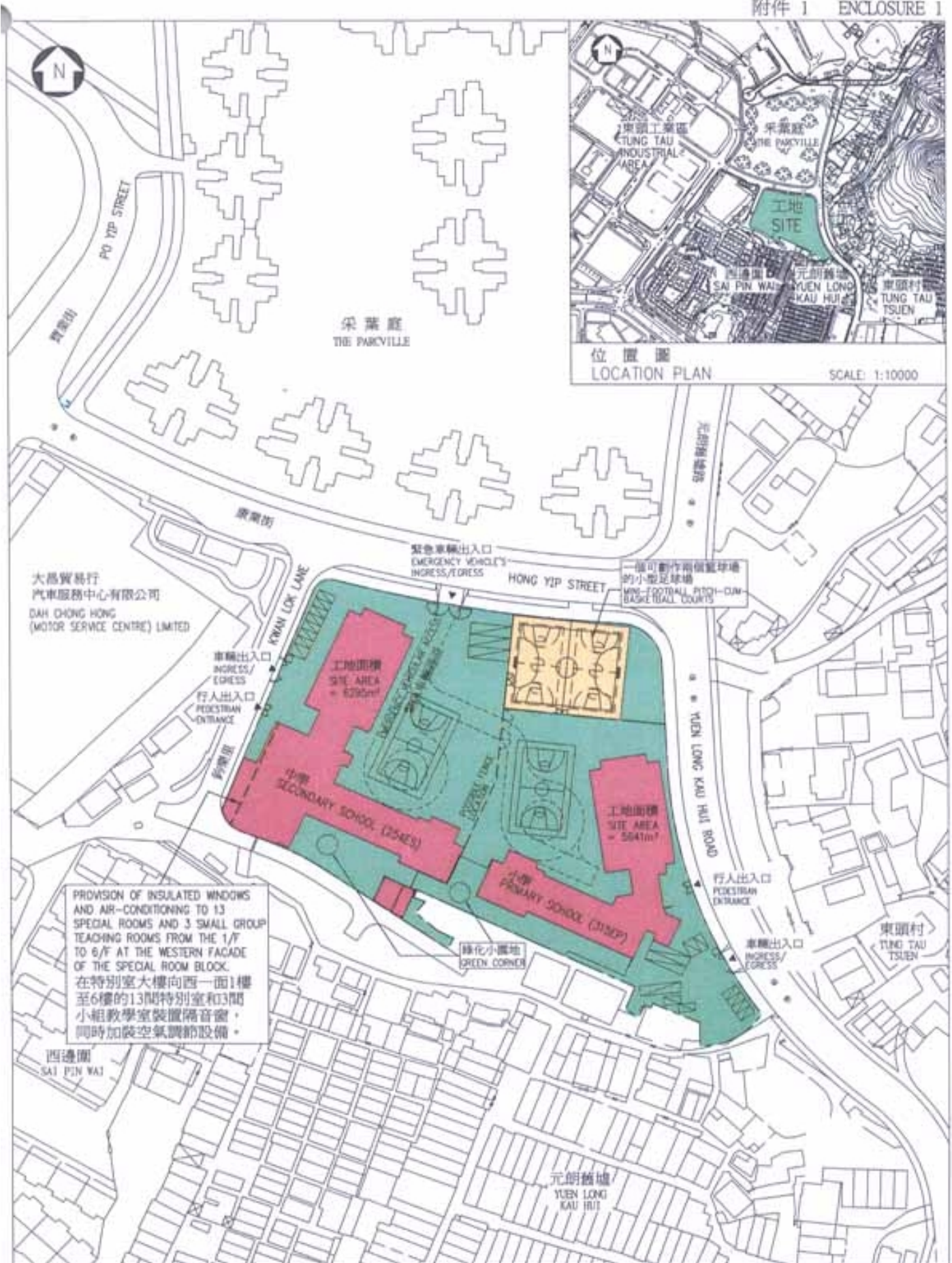
**BACKGROUND INFORMATION**

18. We consulted the Legislative Council Panel on Education on 20 January 2003 on our latest plan for building secondary and primary schools. These projects are two of the planned projects. The Panel had no objection to our proposed plan.


19. We upgraded **254ES** and **315EP** to Category B in October 2001. We engaged a term contractor to carry out site investigation in August 2002; and also consultants to undertake topographical survey and detailed design in June 2002, PERs in October 2002, and tender documentation in March 2003 at a total cost of \$7.3 million. We charged this 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 investigation, topographical survey, detailed design and PERs of both projects. The consultants are finalising the tender documentation.

20. We estimate that the proposed works will create the following job opportunities during the construction period –

<b>Project no.</b>	<b>Professional/ technical staff</b>	<b>Labourer</b>	<b>Total no. of staff</b>	<b>Total man-months</b>
<b>254ES</b>	15	135	150	2 800
<b>315EP</b>	10	110	120	2 250



PROVISION OF INSULATED WINDOWS AND AIR-CONDITIONING TO 13 SPECIAL ROOMS AND 3 SMALL GROUP TEACHING ROOMS FROM THE 1/F TO 6/F AT THE WESTERN FACADE OF THE SPECIAL ROOM BLOCK.  
在特別室大樓向西一面1樓至6樓的13間特別室和3間小組教學室裝置隔音窗，同時加裝空氣調節設備。

title 254ES & 315EP 元朗第16區的1所中學及1所小學 ONE SECONDARY SCHOOL AND ONE PRIMARY SCHOOL IN AREA 16, YUEN LONG	drawn by MA SHING KEUNG	date 12.05.03	drawing no. AB/5691 & 6347/XD101	scale 1:1500
	approved NEVN C.L. HO	date 12.05.03	 ARCHITECTURAL SERVICES DEPARTMENT	
	office ARCHITECTURAL BRANCH			






電腦繪製的工地模擬圖（東北面）

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



電腦繪製的小學模擬圖（東南面）

COMPUTER RENDERING DRAWING OF THE PRIMARY SCHOOL (SOUTH-EASTERN VIEW)

title 254ES & 315EP 元朗第16區的1所中學及1所小學 ONE SECONDARY SCHOOL AND ONE PRIMARY SCHOOL IN AREA 16, YUEN LONG	drawn by MA SHING KEUNG	date 12.05.03	drawing no. AB/5691 & 6347/XD102	scale N.T.S.
	approved NEVIN C.L. HO	date 12.05.03	 ARCHITECTURAL SERVICES DEPARTMENT	
	office ARCHITECTURAL BRANCH			

**Enclosure 3 to PWSC(2003-04)19**

**254ES – Secondary school in Area 16, Yuen Long  
315EP – Primary school in Area 16, Yuen Long**

**Breakdown of estimates for consultants' fees**

Consultants' staff costs		Estimated man-months		Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)	
		254ES	315EP			254ES	315EP
(a) Contract administration (Note 2)	Professional	–	–	–	–	1.4	1.2
	Technical	–	–	–	–	0.7	0.7
(b) Site supervision (Note 3)	Professional	7.6	5.4	38	1.6	0.7	0.5
					Total	2.8	2.4

\* 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 **254ES** and **315EP**. The assignment will only be executed subject to Finance Committee's approval to upgrade **254ES** and **315EP** 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 254ES**

	\$ million (in Sept 2002 prices)		
	Reference cost*	254ES	
(a) Piling	9.0	24.4	(See note A)
(b) Building	50.2	53.0	(See note B)
(c) Building services	12.8	15.8	(See note C)
(d) Drainage and external works	10.5	10.7	(See note D)
(e) Consultants' fees	–	2.8	(See note E)
(f) Contingencies	8.3	10.7	
Total	90.8	117.4	
(g) Construction floor area	12 238 m <sup>2</sup>	13 470 m <sup>2</sup>	
(h) Construction unit cost {[(b) + (c)] ÷ (g)}	\$5,148/m <sup>2</sup>	\$5,108/m <sup>2</sup>	

\* **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 piling cost is higher because the close proximity of village housing requires the use of 390 “non-percussion, cast in-situ” piles at an average depth of 26 metres instead of 138 percussive steel H-piles at an average depth of 30 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 drainage and external works cost is higher because of the requirement for shared sports facilities.
- 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 315EP**

	\$ million (in Sept 2002 prices)		
	Reference cost*	315EP	
(a) Piling	7.5	20.0	(See note A)
(b) Building	41.3	41.3	
(c) Building services	11.0	11.0	
(d) Drainage and external works	9.5	9.7	(See note B)
(e) Furniture and equipment	–	3.9	(See note C)
(f) Consultants' fees	–	2.4	(See note D)
(g) Contingencies	7.0	8.4	
	Total	76.3	96.7
(h) Construction floor area	10 727 m <sup>2</sup>	10 720 m <sup>2</sup>	
(i) Construction unit cost {[(b) + (c)] ÷ (h)}	\$4,876/m <sup>2</sup>	\$4,879/m <sup>2</sup>	

\* **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 piling cost is higher because the close proximity of village housing requires the use of 320 “non-percussion, cast in-situ” piles at an average depth of 26 metres instead of 112 steel H-piles at an average depth of 30 metres.
- B. The drainage and external works cost is higher because of the requirement for shared sports facilities.
- C. The cost of furniture and equipment, estimated to be \$3.9 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.
- D. Consultants’ fees are required for contract administration and site supervision.