

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 703 – BUILDINGS

Education – Secondary

259ES – Second secondary school in Area 104, Tin Shui Wai

Education – Primary

322EP – Second primary school in Area 104, Tin Shui Wai

Members are invited to recommend to Finance Committee the upgrading of **259ES** and **322EP** to Category A at an estimated cost of \$124.4 million and \$105.2 million respectively in money-of-the-day prices for the construction of a secondary school and a primary school in Area 104, Tin Shui Wai.

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.

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 \$229.6 million in money-of-the-day (MOD) prices –

	Project estimate \$ million (MOD)
(a) 259ES – Second secondary school in Area 104, Tin Shui Wai	124.4
(b) 322EP – Second primary school in Area 104, Tin Shui Wai	105.2
Total	<hr/> 229.6 <hr/>

PROJECT SCOPE AND NATURE

3. The two proposed schools are located in Area 104, Tin Shui Wai. The facilities for the two schools will include –

	259ES (Secondary school)	322EP (Primary school)
(a) classrooms	30	30
(b) special rooms, including a computer-assisted learning (CAL) 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)

	259ES (Secondary school)	322EP (Primary school)
(j) library	1	1
(k) assembly hall (which, together with the rooftop 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) basketball courts (one at ground level and another at the rooftop of the assembly hall block for each school)	2	2
(n) green corner ¹	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; and
- (q) bus and car parking facilities.

Both projects will meet the planning target of providing two square metres of open space per student. A site plan for **259ES** and **322EP** 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 October 2004 for completion in July 2006.

/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***259ES – Second secondary school in Area 104, Tin Shui Wai***

4. Many existing schools were built to old planning standards and designs. Improvement to the physical facilities of these schools have been provided under the School Improvement Programme² (SIP) as far as it is practicable. However, owing to physical or technical constraints, such as lack of space, the extent of improvement 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. 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 **259ES** will be used to reprovision an existing secondary school through the normal school allocation process to be conducted later this year.

322EP – Second primary school in Area 104, Tin Shui Wai

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 15 of these 46 new schools. **322EP** will further help achieve this policy target.

6. The Yuen Long District, in which **322EP** is located, currently has 76 public sector primary schools providing 970 classrooms. SEM forecasts that 273 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 three primary school projects providing 90 additional classrooms for completion in the 2004/05 and 2005/06 school years. A

/36-classroom

² The School Improvement Programme 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.

36-classroom primary school project, covered in **311EP**, is pending Finance Committee's approval³. The School Allocation Committee⁴ has recommended the allocation of **322EP** to the Church of Christ in China Fong Yun Wah Primary School under the sponsorship of the Hong Kong Council of the Church of Christ in China for whole-day conversion. The above school projects, together with another 24-classroom primary school project under **314EP** to be considered by Members at this meeting (see paper referenced PWSC(2003-04)68) will help reduce the shortfall by 180 classrooms to 93 in the district. We plan to meet the rest of the requirement through further school construction projects.

FINANCIAL IMPLICATIONS

7. We estimate the capital cost of **259ES** and **322EP** to be \$124.4 million and \$105.2 million respectively in MOD prices (see paragraph 8 below), made up as follows –

	\$ million	
	259ES	322EP
(a) Piling	20.2	24.1
(b) Building	56.1	43.5
(c) Building services	17.1	13.5
(d) Drainage and external works	13.0	11.3
(e) Furniture and equipment ⁵	7.8	3.7
(f) Consultants' fees for –	2.7	2.5
(i) Contract administration	1.9	1.8
(ii) Site supervision	0.8	0.7

/(g)

³ At the Public Works Subcommittee meeting on 18 February 2004, Members agreed to recommend to Finance Committee the upgrading of **311EP**. The Finance Committee will consider the recommendation on 27 February 2004.

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.

⁵ Based on the furniture and equipment reference lists prepared by the Education and Manpower Bureau for new schools adopting the standard schedule of accommodation.

	\$ million		
	259ES	322EP	
(g) Contingencies	10.9	9.5	
Sub-total	127.8	108.1	(in September 2003 prices)
(h) Provision for price adjustment	(3.4)	(2.9)	
Total	124.4	105.2	(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 **259ES** and **322EP** are 12 902 square metres and 10 925 square metres respectively. The estimated construction unit costs of **259ES** and **322EP**, represented by the building and building services costs, are \$5,674 and \$5,217 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 **259ES** is at Enclosure 4. A similar comparison between a 30-classroom primary school and **322EP** is at Enclosure 5.

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

Year	\$ million (Sept 2003)		Price adjustment factor	\$ million (MOD)	
	259ES	322EP		259ES	322EP
2004 – 05	4.0	4.0	0.98225	3.9	3.9
2005 – 06	47.0	47.0	0.97734	45.9	45.9
2006 – 07	56.0	44.0	0.97245	54.5	42.8
2007 – 08	16.0	11.0	0.96759	15.5	10.6
2008 – 09	4.8	2.1	0.96638	4.6	2.0
	127.8	108.1		124.4	105.2

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 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 furniture and equipment for **259ES**, estimated to be \$7.8 million, will be borne by the Government as the school premises will be used to provision an existing secondary school. For **322EP**, the cost of furniture and equipment, estimated to be \$3.7 million, will be borne by the Government as the school premises will enable an existing bi-sessional school to convert into whole-day operation. These are in line with existing policies.

11. We estimate the additional annual recurrent expenditure for **259ES** to be \$600,000 and that for **322EP** to be \$3.2 million.

PUBLIC CONSULTATION

12. We consulted the Yuen Long District Council on 15 September 2003. Members of the Council supported both projects. We also 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) 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.

ENVIRONMENTAL IMPLICATIONS

13. We engaged a consultant to conduct Preliminary Environmental Reviews (PERs) for **259ES** and **322EP** in December 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)
259ES	(a) Classroom block Insulated windows and air-conditioning for 12 classrooms from the 2/F to 5/F at the southern façade	1.2
	(b) Special room block Insulated windows and air-conditioning for six special rooms from the 2/F to 7/F and three small group teaching rooms from the 5/F to 7/F at the western façade	1.1
	(c) Two three-metre high boundary walls at the northern and southern sides of the site	0.8
322EP	(d) Classroom block Insulated windows and air-conditioning for 12 classrooms from the 1/F to 6/F at the eastern façade	1.2
	(e) Special room block Insulated windows and air-conditioning for four special rooms on the 3/F, 4/F and 6/F at the eastern façade	0.5
	(f) A three-metre high boundary wall at the southern side of the site	0.5

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

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.

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 that the volume of C&D materials to be generated by each proposed project to be as follows –

/259ES

Project no.	Total C&D materials generated	C&D materials reused/recycled at site		C&D materials to public filling areas ⁶		C&D materials to landfills	
		m ³	%	m ³	%	m ³	%
259ES	3 560	2 290	64.3	710	20.0	560	15.7
322EP	2 870	1 850	64.4	570	19.9	450	15.7

The notional cost of accommodating C&D waste at landfill sites is estimated to be \$70,000 for **259ES** and \$56,250 for **322EP** (based on a notional unit cost⁷ of \$125/m³).

LAND ACQUISITION

17. Both projects do not require land acquisition.

BACKGROUND INFORMATION

18. We upgraded **259ES** and **322EP** to Category B in November 2002. We engaged a term contractor to carry out site investigations in August 2003; and consultants to undertake topographical surveys in July 2003, detailed design in November 2003, PERs in December 2003 and tender documentation in January 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, detailed design and PERs respectively. The consultants are finalising the tender documents.

/19.

⁶ 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.

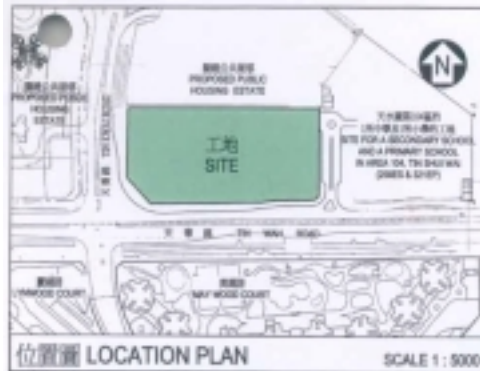
⁷ This estimate has taken into account the cost for developing, operating and restoring the landfills after they are filled and the aftercare required. It does not include the land opportunity cost for existing landfill sites (which is estimated at \$90/m³), nor the cost to provide new landfills (which 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.

19. The proposed construction of the secondary and primary schools will not involve any tree removal proposal. We will incorporate planting proposal as part of the project, including estimated quantities of 180 trees, 3 400 shrubs, 1 600 annuals and 300 square metres of grassed area.

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

Project no.	Professional/ technical staff	Labourer	Total no. of staff	Total man-months
259ES	12	123	135	2 250
322EP	10	110	120	2 000

Education and Manpower Bureau
February 2004

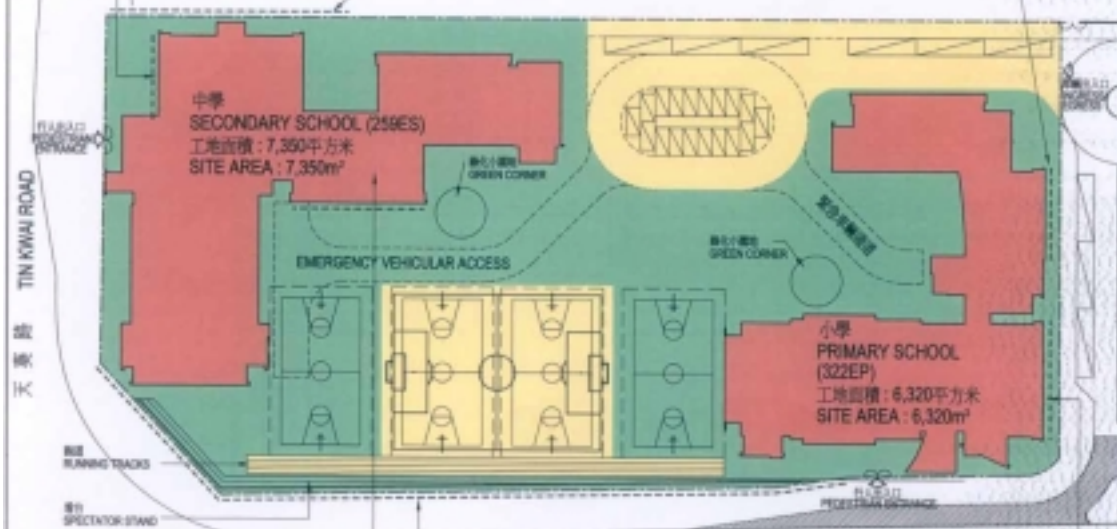


擬建公共屋邨
PROPOSED PUBLIC HOUSING ESTATE

INSULATED WINDOWS AND AIR-CONDITIONING FOR 6 SPECIAL ROOMS FROM THE 2/F TO 7/F AND 3 SMALL GROUP TEACHING ROOMS FROM THE 5/F TO 7/F AT THE WESTERN FACADE OF THE SPECIAL ROOM BLOCK
在特別室大樓向西一面2樓至7樓的6間特別室及5樓至7樓的3間小組教學室裝置隔音窗及空調

CONSTRUCTION OF 3-METRE HIGH BOUNDARY WALL AT THE NORTHERN SIDE OF THE SITE
在校址北面建造三米高的圍牆

INSULATED WINDOWS AND AIR-CONDITIONING FOR 12 CLASSROOMS FROM THE 1/F TO 6/F AT THE EASTERN FACADE OF THE CLASSROOM BLOCK
在課室大樓向東一面1樓至6樓的12間課室裝置隔音窗及空調



INSULATED WINDOWS AND AIR-CONDITIONING FOR 12 CLASSROOMS FROM THE 2/F TO 5/F AT THE SOUTHERN FACADE OF THE CLASSROOM BLOCK
在課室大樓向南一面2樓至5樓的12間課室裝置隔音窗及空調

CONSTRUCTION OF A 3-METRE HIGH BOUNDARY WALL AT THE SOUTHERN SIDE OF THE SITE
在校址南面建造三米高的圍牆

INSULATED WINDOWS AND AIR-CONDITIONING FOR 4 SPECIAL ROOMS ON THE 3/F, 4/F AND 6/F AT THE EASTERN FACADE OF THE SPECIAL ROOM BLOCK
在特別室大樓向東一面3樓、4樓及6樓的4間特別室裝置隔音窗及空調

title 259ES AND 322EP
天水圍第104區的
第2所中學和第2所小學
SECOND SECONDARY SCHOOL AND
SECOND PRIMARY SCHOOL
IN AREA 104, TIN SHUI WAI

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date 18.01.04
date 18.01.04

drawing no. AB/6482/NM-01

scale 1:1000




ARCHITECTURAL SERVICES DEPARTMENT



從南面望向小學校舍的構思圖
VIEW OF THE PRIMARY SCHOOL PREMISES FROM SOUTHERN DIRECTION (ARTIST'S IMPRESSION)



從西面望向中學校舍的構思圖
VIEW OF THE SECONDARY SCHOOL PREMISES FROM WESTERN DIRECTION (ARTIST'S IMPRESSION)

title 259ES AND 322EP 天水圍第104區的 第2所中學和第2所小學 SECOND SECONDARY SCHOOL AND SECOND PRIMARY SCHOOL IN AREA 104, TIN SHUI WAI	drawn by 林恩哲 LAM YAN CHIT	date 18.11.04	drawing no. AB/6482/NM-02	scale
	approved 黎紹賢 REMBERT S.K. LAI	date 18.11.04	 ARCHITECTURAL SERVICES DEPARTMENT	
	office ARCHITECTURAL BRANCH			

Enclosure 3 to PWSC(2003-04)70

**259ES – Second secondary school in Area 104, Tin Shui Wai
322EP – Second primary school in Area 104, Tin Shui Wai**

Breakdown of the estimate for consultants' fees

Consultants' staff costs		Estimated man-months		Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)	
		259ES	322EP			259ES	322EP
(a) Contract administration (Note 2)	Professional	–	–	–	–	1.3	1.3
	Technical	–	–	–	–	0.6	0.5
(b) Site supervision (Note 3)	Professional	8.9	7.8	38	1.6	0.8	0.7
	Total	—	—			2.7	2.5

* 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.)
2. The consultants' staff cost for contract administration is calculated in accordance with the existing consultancy agreement for the design and construction of **259ES** and **322EP**. The assignment will only be executed subject to Finance Committee's approval to upgrade **259ES** and **322EP** 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)70

**A comparison of the reference cost of
a secondary school project
with the estimated cost of 259ES**

\$ million (in Sept 2003 prices)				
		Reference cost*	259ES	
(a)	Piling	9.5	20.2	(See note A)
(b)	Building	52.5	56.1	(See note B)
(c)	Building services	13.9	17.1	(See note C)
(d)	Drainage and external works	11.3	13.0	(See note D)
(e)	Furniture and equipment	–	7.8	(See note E)
(f)	Consultants' fees	–	2.7	(See note F)
(g)	Contingencies	8.7	10.9	
Total		95.9	127.8	
(h)	Construction floor area	12 238 m ²	12 902 m ²	
(i)	Construction unit cost {[(b) + (c)] ÷ (h)}	\$5,426/m ²	\$5,674/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 piling cost is higher because ground conditions require the use of 210 steel H-piles at an average depth of 53 metres. More piles are needed due to design allowance for the effect of negative skin friction in view of pond deposit and soft soil stratum. Longer piles are used because of deeper rockhead level.
- 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 two three-metre high boundary walls as a noise mitigation measure, the requirement to construct a new access road to serve the school sites and the provision of shared facilities.
- E. The cost of furniture and equipment, estimated to be \$7.8 million, will be borne by the Government as the school premises will be used to re-provision an existing secondary school.
- F. 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 322EP**

\$ million (in Sept 2003 prices)

		Reference cost*	322EP	
(a)	Piling	8.0	24.1	(See note A)
(b)	Building	43.3	43.5	(See note B)
(c)	Building services	11.5	13.5	(See note C)
(d)	Drainage and external works	10.0	11.3	(See note D)
(e)	Furniture and equipment	–	3.7	(See note E)
(f)	Consultants' fees	–	2.5	(See note F)
(g)	Contingencies	7.2	9.5	
	Total	<u>80.0</u>	<u>108.1</u>	
(h)	Construction floor area	10 727 m ²	10 925 m ²	
(i)	Construction unit cost {[(b) + (c)] ÷ (h)}	\$5,109/m ²	\$5,217/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 piling cost is higher because ground conditions require the use of 400 non-percussive cast in-situ concrete piles at an average depth of 30 metres. The use of non-percussive cast in-situ concrete piles instead of percussive H-piles is due to the presence of fault and shear zone underneath the site, coupled with extensive hard boulder layers and deep bedrock level. The increase in the number of piles is due to design allowance for the effect of negative skin friction in view of pond deposit and soft soil stratum.
- 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 three-metre high boundary wall as a noise mitigation measure, the requirement to construct a new access road to serve the school sites and the provision of shared facilities.
- E. The cost of furniture and equipment, estimated to be \$3.7 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.
- F. Consultants’ fees are required for contract administration and site supervision.