For discussion **PWSC(2000-01)68**
on 6 December 2000

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 703 - BUILDINGS
Education – Secondary
238ES – Secondary school in Area 12, Tai Po

Education – Primary
256EP – Primary school in Area 12, Tai Po

Members are invited to recommend to Finance Committee the upgrading of **238ES** and **256EP** to Category A at an estimated cost of $113.1 million and $94.6 million respectively in money-of-the-day prices for the construction of a 30-classroom secondary school and a 30-classroom primary school in Area 12, Tai Po.

PROBLEM

We do not have enough secondary schools to meet the increase in demand for new school places by the school year 2002/03. We also need to provide additional primary schools to implement the whole-day primary schooling policy.

/ **PROPOSAL** .....

PROPOSAL

2. The Director of Architectural Services (D Arch S), with the support of the Secretary for Education and Manpower, proposes to upgrade the following projects to Category A at an estimated total cost of $207.7 million in money-of-the-day (MOD) prices -

		Project Estimate $ million (MOD)
(a)	**238ES** – Secondary school in Area 12, Tai Po	113.1
(b)	**256EP** – Primary school in Area 12, Tai Po	94.6
	Total	207.7

PROJECT SCOPE AND NATURE

3. The two proposed schools are located in Area 12, Tai Po. The sites for the proposed schools are adjacent to each other and have mutual boundaries. The school buildings will adopt standard school designs, but the open area of the schools will be pooled together to provide common facilities for sharing by the schools. The schools will have –

		238ES (secondary school)	**256EP (primary school)**
Standard facilities			
(a)	classrooms;	30	30
(b)	special rooms, including a computer-assisted learning room and a language room;	16	6

/ (c) .....

		238ES (secondary school)	**256EP (primary school)**
Standard facilities			
(c)	remedial teaching rooms;	3	4
(d)	guidance activity/interview room;	1	1
(e)	interview rooms;	2	2
(f)	staff rooms;	2	2
(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 roof of the assembly hall block, can also 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 (inclusive of one/two on ground level and a further one at the rooftop of the assembly hall block);	3	2
(n)	ancillary accommodation including a lift and relevant facilities for the handicapped;	yes	yes

/ **Shared** .....

Shared facilities

(o) a mini-soccer pitch with spectator stand;

(p) a green corner[1];

(q) a carpark with 24 parking spaces cum loading/unloading area.

The two proposed schools will be able to meet the planning target of providing two square metres of open space per student. A site plan for the schools is at Enclosure 1. D Arch S plans to start construction works in March 2001 for completion in August 2002.

JUSTIFICATION

238ES – Secondary school in Area 12, Tai Po

4. The Director of Education (D of E) forecasts that 114 additional secondary school classes will still be required in the territory by the school year 2002/03 to meet the increase in demand for new places. Two projects providing a total of 60 classrooms are pending upgrading to Category A[2]. **238ES** will provide 30 more classrooms. We plan to meet the projected shortfall in future through further school construction projects.

/ 256EP .....

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[1] The green corner is a designated area inside the campus to enable students to pursue their interests in horticulture and natural environment. The green corner includes a green house, a weather station and planting beds.

[2] At the Public Works Subcommittee meeting on 8 November 2000, Members agreed to recommend to Finance Committee the upgrading of **170ES** and **237ES** at an estimated cost of $113.1 million and $118.2 million in MOD prices for the construction of two secondary schools. Finance Committee will consider the recommendation on 1 December 2000.

256EP – Primary school in Area 12, Tai Po

5. To meet the increase in demand for primary school places and to help achieve the policy target of enabling 60% of pupils in public sector schools to study on a whole-day basis by the school year 2002/03, D of E originally planned to build 73 new primary schools for completion between August 1998 and August 2002. Pursuant to the latest projection on population distribution[3] which indicates that further primary school places will need to be provided in certain districts in order to meet the 60% whole-day primary schooling target, D of E now plans to build five additional schools on top of the 73 schools mentioned above, making up a total of 78 schools for completion by the school year 2002/03. To date, 36 of these 78 schools have been completed, and another 32 are at various stages of construction. Seven projects (covering eight schools in total) are pending upgrading to Category A[4].

6. Tai Po District currently has 27 public sector primary schools providing 467 classes. Whilst D of E forecasts that no additional classes are required to meet the increase in demand for school places by the school year 2002/03, **256EP** will enable an existing bi-sessional school in the district to convert into whole-day operation.

FINANCIAL IMPLICATIONS

7. We estimate the capital cost of **238ES** and **256EP** to be $113.1 million and $94.6 million in MOD prices made up as follows -

/ (a) .....

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3 The Working Group on Population Distribution under the Planning Department releases updated projection on population distribution from time to time. The latest update was released in February 2000.

4 At the Public Works Subcommittee meeting on 8 November 2000, Members agreed to recommend to Finance Committee the upgrading of **252EP, 267EP, 268EP, 276EP, 286EP and 287EP** for the construction of four 30-classroom primary schools and two 24-classroom primary schools. At the Public Works Subcommittee meeting on 22 November 2000, Members agreed to recommend to Finance Committee the upgrading of **281EP** for the construction of two 30-classroom primary schools. Finance Committee will consider these recommendations on 1 December 2000 and 15 December 2000 respectively.

		238ES	**256EP**	
		$ million		
(a)	Piling	14.0	2.5	
(b)	Building	58.5	49.7	
(c)	Building services	13.5	14.6	
(d)	Drainage and external works	9.0	8.0	
(e)	Shared facilities	3.5	3.5	
(f)	Furniture and equipment	-	4.5	
(g)	Contingencies	9.6	7.8	
	Sub-total	108.1	90.6	(in September 2000 prices)
(h)	Provision for price adjustment	5.0	4.0	
	Total	113.1	94.6	(in MOD prices)

8. The construction floor area for **238ES** and **256EP** is 12 238 and 10 727 square metres respectively. Their respective construction unit costs, represented by building and building services costs, are $5,883 per square metre and $5,994 per square metre respectively in September 2000 prices. D Arch S considers the estimated construction unit costs comparable to similar school projects built by the Government. Comparisons with reference costs of a secondary school and a 30-classroom primary school based on an uncomplicated site with no unusual environmental or geotechnical constraints are at Enclosures 2 and 3.

/ 9. .....

9. Subject to Members' approval, we will phase the expenditure as follows -

Year	$ million (Sept 2000)		Price adjustment factor	$ million (MOD)	
	238ES	**256EP**		**238ES**	**256EP**
2001 – 02	46.9	44.3	1.02550	48.1	45.4
2002 – 03	53.0	40.0	1.05627	56.0	42.3
2003 – 04	6.4	4.6	1.08795	7.0	5.0
2004 - 05	1.8	1.7	1.12059	2.0	1.9
	108.1	90.6		113.1	94.6

10. We derived the MOD estimates on the basis of Government's latest forecast of trend labour and construction prices for the period 2001 to 2005. We will tender the works under a fixed-price lump-sum contract because the construction period of the two schools will be less than 21 months and we can clearly define the scope of works in advance, leaving little room for uncertainty.

11. A public sewerage system serving the area in which the two schools are situated is scheduled for completion in 2007. Before the public sewerage system is in place, we need to provide the two schools with a temporary sewage treatment plant at a cost of about $3 million to ensure compliance with the Water Pollution Control Ordinance. The temporary plant will incur an additional recurrent expenditure of $300,000 annually until it is demolished after the public system comes into operation. ED will discuss with the two schools how the space thus freed up might be used for educational purposes.

/ 12. .....

12. The cost of furniture and equipment for **238ES**, estimated to be $9.4 million, will be borne by the school sponsor as the school will be allocated to meet an increase in demand for school places. For **256EP**, the cost of furniture and equipment will be borne by the Government as the school will enable an existing bi-sessional school to convert into whole-day operation. The above arrangements for furniture and equipment cost are in accordance with the established practice.

13. We estimate the annually recurrent expenditure for **238ES** and **256EP** to be $40.8 million and $23.1 million respectively, excluding the recurrent costs of the temporary sewage treatment plant

PUBLIC CONSULTATION

14. We consulted the then Tai Po Provisional District Board on **256EP** and the Tai Po District Council on **238ES** in January 1999 and July 2000 respectively. Members of the District Board/Council supported the projects.

ENVIRONMENTAL IMPLICATIONS

15. We conducted Preliminary Environmental Reviews (PERs) for **238ES** and **256EP** in June 1999 and April 1999 respectively. The PER concluded that **238ES** would not be subject to adverse environmental impacts. For **256EP**, the PER concluded that the school would not be subject to adverse environmental impacts provided that we implement the following environmental mitigation measures to keep the road traffic noise impact within the limits stipulated in the Hong Kong Planning Standards and Guidelines -

Project No.	Mitigation Measures	Estimated Cost $ million (in Sept. 2000 prices)
256EP	Provision of insulated windows and air-conditioning to 20 classrooms and three remedial teaching rooms from the 3/F to the 6/F at the south-western façade of the classroom block.	3.3

/ We .....

We have included the cost of these mitigation measures as part of the building and building services works in the project estimate of **256EP**.

16. During construction, we will control noise, dust and site run-off nuisances 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, as well as frequent cleaning and watering of the site.

17. Ways of minimizing the generation of construction and demolition (C&D) materials were considered at the planning and design stage. We will require the contractor to implement necessary measures to minimize the generation of C&D materials. Where such materials are produced, we will try to reuse and recycle them. If this is not possible, C&D materials will be disposed of through designated public filling facilities and/or in landfills through a trip-ticket system. The reuse, recycling and disposal of C&D materials will be properly recorded for monitoring purposes.

18. We estimate that some 2 600 cubic metres of C&D materials will be generated by **238ES**. Of these about 2 000 cubic metres (76.9%) will be reused on site, 200 cubic metres of inert C&D materials (7.7%) will be reused as fill in public filling areas[5] and about 400 cubic metres of C&D waste (15.4%) will be disposed of at landfills. For **256EP,** we estimate that some 1 980 cubic metres of C&D materials will be generated. Of these about 1 530 cubic metres (77.3%) will be reused on site, 150 cubic metres of inert C&D materials (7.6%) will be reused as fill in public filling areas and about 300 cubic metres of C&D waste (15.1%) will be disposed of at landfills.

/ LAND .....

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[5] A public filling area is a designated part of a development project that accepts public fill for reclamation purposes. Disposal of public fill in a public filling area requires a licence issued by the Director of Civil Engineering.

LAND ACQUISITION

19. Part of the school site is agricultural land (about 3 750 square metres) and is held under private ownership. We expect to complete land resumption formalities for this part of the site by end February 2001. The clearance will not affect any household. We will charge the land acquisition and clearance costs, estimated to be $15.2 million, to **Head 701 – Land Acquisition**.

BACKGROUND INFORMATION

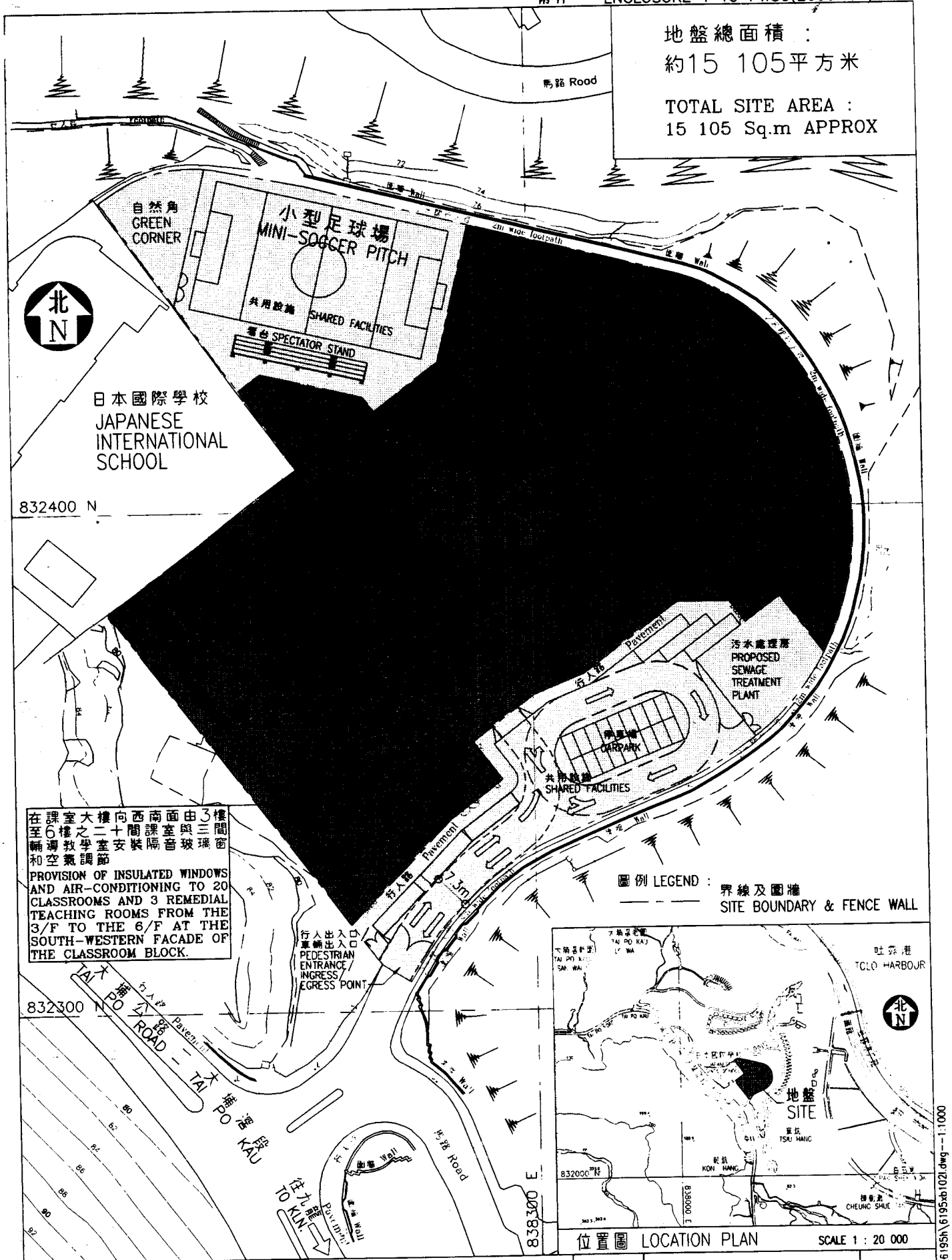
20. We upgraded **256EP** and **238ES** to Category B in September 1999 and June 2000 respectively. We engaged consultants to carry out PERs for **256EP** and **238ES** in April and June 1999 respectively, and topographical surveys for the two schools in October 1999. We also employed a term contractor to carry out site investigations in April 2000. The total costs are $878,189 for **256EP** and $1.22 million for **238ES**. We charged these amounts to block allocation **Subhead 3100GX** "Project feasibility studies, minor investigations and consultants' fees for items in Category D of the Public Works Programme". The consultants and term contractor have completed the PERs, topographical surveys and site investigations. D Arch S has completed the detailed design of the two projects and is preparing the tender documents using in-house staff resources.

21. We estimate that the proposed works under **238ES** will create some 185 jobs with a total of 2 960 man-months comprising three professional staff, seven technical staff and 175 labourers, whereas the works under **256EP** will create some 155 jobs with a total of 2 480 man-months comprising three professional staff, seven technical staff and 145 labourers.

Education and Manpower Bureau
November 2000

地盤總面積 :
約15 105平方米

TOTAL SITE AREA :
15 105 Sq.m APPROX



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	approved JUANA CHAN	date 20/07/00		
	office ARCHITECTURAL BRANCH		ARCHITECTURAL SERVICES DEPARTMENT	

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Enclosure 2 to PWSC(2000-01)68

A comparison of the reference cost of a secondary school project with the estimated cost of 238ES

		Reference cost*	**238ES**	
		$ million (in Sept 2000 prices)		
(a)	Piling	11.0	14.0	(See A below)
(b)	Building	58.5	58.5	
(c)	Building services	13.5	13.5	
(d)	Drainage and external works	10.0	9.0	(See B below)
(e)	Shared facilities	-	3.5	(See C below)
(f)	Contingencies	9.3	9.6	
	Total	102.3	108.1	
(g)	Construction floor area	12 238m^2	12 238m^2	
(h)	Construction unit cost {[(b)+(c)] ÷(g)}	$5,883/$m^2$	$5,883/$m^2$	

*** Assumptions for reference cost**

1. The estimation is based on the assumption that the school site is uncomplicated and without abnormal environmental restrictions. No allowance is reserved for specific environmental restrictions such as the provision of insulated windows, air-conditioning and solid 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 the handing-over of the project site for school construction.

3. Piling cost is based on the use of 138 numbers of steel H-piles at an average depth of 30 metres, on the assumption that percussive piling is permissible. It also includes costs for pile caps, strap beams and testing. No allowance is reserved for the effect of negative skin friction due to fill on reclaimed land.

4. Cost for drainage and external works is for a 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 greenfield site).

5. No consultancy services are required.

6. Furniture and equipment costs are excluded as they are usually borne by the sponsoring body.

7. The reference cost for comparison purpose is subject to review regularly. We will review, and revise if necessary, the reference cost which should be adopted for future projects.

Estimate for 238ES

A. The piling cost is higher because 120 numbers of rock socketed steel H-piles are used instead of 138 numbers of steel H-piles at average depth of 30 metres. The use of rock-socketed steel H-piles, which is a more expensive method than using ordinary steel H-piles, is considered more appropriate in this case due to the existence of extensively large boulders in the subsoil of the site and the need to safeguard the stability of the adjacent slope.

B. The drainage and external works cost includes the apportioned cost for the construction of a temporary sewage treatment plant ($1.5 million). In spite of this additional non-standard element, the drainage and external works cost is still lower than the reference cost because the site area for the part of the secondary school (5 690 square metres) is smaller than that for a standard secondary school (6 900 square metres). The drainage and external works cost for the shared area of the primary and secondary schools is reflected under (e).

C. This is the apportioned cost for the provision of shared facilities, e.g. a mini-soccer pitch with spectator stand and a green corner.

Enclosure 3 to PWSC(2000-01)68

A comparison of the reference cost of a 30-classroom primary school project with the estimated cost of 256EP

		Reference cost*	256EP	
		$ million (in Sept 2000 prices)		
(a)	Piling	9.0	2.5	(See A below)
(b)	Building	49.5	49.7	(See B below)
(c)	Building services	11.5	14.6	(See C below)
(d)	Drainage and external works	9.0	8.0	(See D below)
(e)	Furniture and equipment	-	4.5	(See E below)
(f)	Shared facilities	-	3.5	(See F below)
(g)	Contingencies	7.9	7.8	
	Total	86.9	90.6	
(h)	Construction floor area	10 727m^2	10 727m^2	
(i)	Construction unit cost {[(b)+(c)] ÷(h)}	$5,687/$m^2$	$5,994$m^2$	

*** Assumptions for reference cost**

1. The estimation is based on the assumption that the school site is uncomplicated and without abnormal environmental restrictions. No allowance is reserved for specific environmental restrictions such as the provision of insulated windows, air-conditioning and solid 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 the handing-over of the project site for school construction.

3. Piling cost is based on the use of 112 numbers of steel H-piles at an average depth of 30 metres, on the assumption that percussive piling is permissible. It also includes costs for pile caps, strap beams and testing. No allowance is reserved for the effect of negative skin friction due to fill on reclaimed land.

4. Cost for drainage and external works is for a 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 greenfield site).

5. No consultancy services are required.

6. Furniture and equipment costs are excluded as they are usually borne by the sponsoring body.

7. The reference cost for comparison purpose is subject to review regularly. We will review, and revise if necessary, the reference cost which should be adopted for future projects.

Estimate for 256EP

A. The piling cost is lower because the rock head is close to the surface which allows the use of footing foundations instead of percussive piling.

B. The building cost is higher because of the provision of insulated windows as a noise mitigation measure.

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

D. The drainage and external works cost includes the apportioned cost for the construction of a temporary sewage treatment plant ($1.5 million). In spite of this additional non-standard element, the drainage and external works cost is still lower than the reference cost because the site area for the part of the primary school (4 632 square metres) is smaller than that for a standard 30-classroom primary school (6 200 square metres). The drainage and external works cost for the shared area of the primary and secondary schools is reflected under (f).

E. The cost of furniture and equipment, estimated to be $4.5 million, will be borne by Government as the school will be allocated to an existing bi-sessional school for conversion to whole-day operation.

F. This is the apportioned cost for the provision of shared facilities, e.g. a mini-soccer pitch with spectator stand and a green corner.