For discussion **PWSC(2000-01)22**
on 17 May 2000

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 703 – BUILDINGS
Education – Secondary
235ES – Two secondary schools at Fat Tseung Street, Sham Shui Po

Education – Primary
273EP – Primary school at Fat Tseung Street, Sham Shui Po

Members are invited to recommend to Finance Committee the upgrading of **235ES** and **273EP** to Category A at estimated costs of $253.7 million and $113.1 million respectively in money-of-the-day prices for the construction of two 30-classroom secondary schools and a 30-classroom primary school at Fat Tseung Street, Sham Shui Po.

PROBLEM

We do not have enough secondary schools to meet additional demand for school places by the school year 2002/03. We also need to provide additional primary schools for the implementation of 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, proposes to upgrade the following projects to Category A at an estimated total cost of $366.8 million in money-of-the-day (MOD) prices -

/(a) …..

		Project Estimate $ million (MOD)
(a)	**235ES** – Two secondary schools at Fat Tseung Street, Sham Shui Po	253.7
(b)	**273EP** – Primary school at Fat Tseung Street, Sham Shui Po	113.1
	Total	366.8

PROJECT SCOPE AND NATURE

3. 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 sports and recreational facilities for sharing by the three schools. The schools will be provided with the following facilities -

Standard design school buildings

		235ES (each school)	**273EP**
(a)	classrooms	30	30
(b)	special rooms, including a computer-assisted learning room and a language room	16	6
(c)	remedial teaching rooms	3	4
(d)	guidance activity/interview room	1	1
(e)	interview rooms	2	2

/(f) …..

		235ES (each school)	**273EP**
(f)	staff room	2	2
(g)	staff common room	1	1
(h)	student activity room	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	3[1]	2[2]
(n)	ancillary accommodation including a lift and relevant facilities for the handicapped	yes	yes

Shared facilities

(a) a football pitch with spectator stands

(b) a 100-metre running track

/(c) …..

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[1] Each secondary school will have two basketball courts on ground level, and one at the rooftop of the assembly hall block.

[2] The primary school will have one basketball court on ground level, and another one at the rooftop of the assembly hall block.

(c) a green corner[3].

4. The three schools will all be able to meet the planning target of providing 2 square metres of open space per student. A site plan for the schools is at Enclosure 1 for Members' reference. D Arch S plans to start the construction works in December 2000 for completion in July 2002.

JUSTIFICATION

235ES - Two secondary schools at Fat Tseung Street, Sham Shui Po

5. The Director of Education (D of E) forecasts that 277 additional secondary school classrooms will be required in the territory by the school year 2002/03 to meet the increase in demand for new places. **235ES** will provide a total of 60 classrooms. We plan to meet the projected shortfall through further school construction projects.

273EP - Primary school at Fat Tseung Street, Sham Shui Po

6. 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 commencement of the school year 2002/03, D of E plans to build an additional 73 primary schools for completion between August 1998 and August 2002. To date, 19 of these schools have been completed, and 46 schools are at various stages of construction[4]. Another primary school project, **232EP**, will also be considered by Members at this meeting (see paper referenced PWSC(2000-01)21).

7. Sham Shui Po District currently has 22 public sector primary schools providing 399 classrooms. Whilst D of E forecasts that no additional classrooms are required to meet the increase in demand for school places by the

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[3] 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.

[4] Of these 46 schools, 41 were approved by Finance Committee and five are being funded by the Housing Authority.

2002/03 school year, **273EP** will enable an existing bi-sessional school in the district to convert into whole-day operation.

FINANCIAL IMPLICATIONS

8. We estimate the capital cost of **235ES** and **273EP** to be $253.7 million and $113.1 million respectively in MOD prices including the cost of the shared facilities which amounts to $1.5 million, made up as follows -

		235ES			**273EP**	
		School 1	**School 2**	**Total for 235ES**		
			$ million			
(a)	Piling	19.5	19.5	39.0	16.1	
(b)	Building	59.0	58.9	117.9	49.8	
(c)	Building services	17.2	16.6	33.8	14.2	
(d)	Drainage and external works	10.9	10.9	21.8	9.9	
(e)	Shared facilities	0.5	0.5	1.0	0.5	
(f)	Furniture and equipment	-	-	-	4.8	
(g)	Contingencies	10.7	10.6	21.3	9.1	
	Sub-total	117.8	117.0	234.8	104.4	(in December 1999 prices)
(h)	Provision for price adjustment	9.5	9.4	18.9	8.7	
	Total	127.3	126.4	253.7	113.1	(in MOD prices)

/The …..

The construction floor area for each secondary school under **235ES** and the primary school under **273EP** is 12 238 and 10 727 square metres respectively. The respective construction unit costs of these schools are shown in Enclosures 2 and 3. D Arch S considers the estimated construction unit costs comparable to similar school projects built by the Government. A comparison of the standard cost of a secondary school with the estimated costs for **235ES** is at Enclosure 2 and a comparison of the standard cost of a 30-classroom primary school with the estimated cost for **273EP** is at Enclosure 3.

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

Year	$ million (Dec 1999)				Price adjustment factor	$ million (MOD)			
	235ES			273EP		235ES			273EP
	Sch 1	Sch 2	Total			Sch 1	Sch 2	Total	
2000 – 01	3.0	3.0	6.0	2.0	1.00000	3.0	3.0	6.0	2.0
2001 – 02	57.5	57.2	114.7	50.5	1.04500	60.1	59.8	119.9	52.8
2002 – 03	47.1	47.0	94.1	40.6	1.10770	52.2	52.1	104.3	45.0
2003 – 04	10.2	9.8	20.0	11.3	1.17416	12.0	11.5	23.5	13.3
	117.8	117.0	234.8	104.4		127.3	126.4	253.7	113.1

10. We derived the MOD estimates on the basis of Government's latest forecast of trend labour and construction prices for the period 2000 to 2004. We will tender the works under one fixed-price lump-sum contract because the contract period will be shorter than 21 months and we can clearly define the scope of works in advance, leaving little room for uncertainty.

11. The cost of furniture and equipment for **235ES**, estimated to be $9.1 million for each school, will be borne by the school sponsor as the schools will be allocated to meet increase in demand for school places. For **273EP**, 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 arrangement for furniture and equipment cost is in accordance with the

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established practice. We estimate the additional annually recurrent expenditure for each school under **235ES** and **273EP** to be $40.2 million and $19.5 million respectively. The shared facilities will not incur any additional recurrent expenditure.

PUBLIC CONSULTATION

12. We consulted the Community Affairs, Leisure and Cultural Services Committee of the Sham Shui Po District Council in March 2000. Members of the Committee supported the projects.

ENVIRONMENTAL IMPLICATIONS

13. We have conducted Preliminary Environmental Reviews (PERs) for the two projects and will implement the required mitigation measures in accordance with the findings. We will implement the following environmental mitigation measures to keep the road traffic noise impact on the proposed schools within the limits recommended in the Hong Kong Planning Standards and Guidelines -

Project No.		Mitigation Measures	Estimated Cost $ million (at Dec. 99 prices)
235ES and 273EP	(a)	construction of a 3-metre high solid boundary wall at the north-eastern, south-eastern and south-western sides of the site;	3.0
235ES (School 1)	(b)	provision of insulated windows and air-conditioning to 30 classrooms and one remedial teaching room from the 1/F to the 6/F at the north-western façade of the classroom block and 12 special rooms from the 1/F to the 6/F at the north-eastern and south-eastern facades of the special room block;	4.2

/(c) …..

Project No.		Mitigation Measures	Estimated Cost $ million (at Dec. 99 prices)
(School 2)	(c)	provision of insulated windows and air-conditioning to 30 classrooms and one remedial teaching room from the 1/F to the 6/F at the south-eastern façade and one remedial teaching room on the 1/F at the south-western facade of the classroom block as well as six special rooms from the 1/F to the 6/F at the north-eastern facade of the special room block; and	3.5
273EP	(d)	provision of insulated windows and air-conditioning to 30 classrooms and four remedial teaching rooms from the 1/F to the 6/F at the north-eastern façade of the classroom block and two special rooms on the 2/F and 3/F at the north-western facade of the special room block.	3.0

14. 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.

15. We estimate that about 850 cubic metres of construction and demolition (C&D) waste for each school under **235ES** and 760 cubic metres for **273EP** will be disposed of at landfills; and 400 cubic metres of public fill for each school under **235ES** and 350 cubic metres for **273EP** will be delivered to public filling areas. Ways of reducing the generation of C&D material were considered during the planning and design stages. As a result, we will require our contractor to submit a waste management plan to the D Arch S for approval, with appropriate mitigation measures including allocation of an area for waste segregation. We will ensure that the day-to-day operations on site comply with the approved waste management plan. We will also require the contractor to reuse as far as possible the excavated material as filling material on site or at

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other sites in order to minimize the disposal of public fill to public filling areas. To further minimize the generation of C&D materials, we will encourage the contractor to use non-timber formwork, hoarding and other temporary works. We will require the contractor to separate public fill from C&D waste for disposal at appropriate locations and to sort the C&D waste by category on site to facilitate reuse/recycling. This will reduce the generation of such waste. We will control the disposal of public fill and C&D waste to designated public filling facilities and landfills respectively through a trip ticket system, and record the disposal, reuse and recycling of C&D materials for monitoring purposes.

LAND ACQUISITION

16. None of the three schools requires land acquisition.

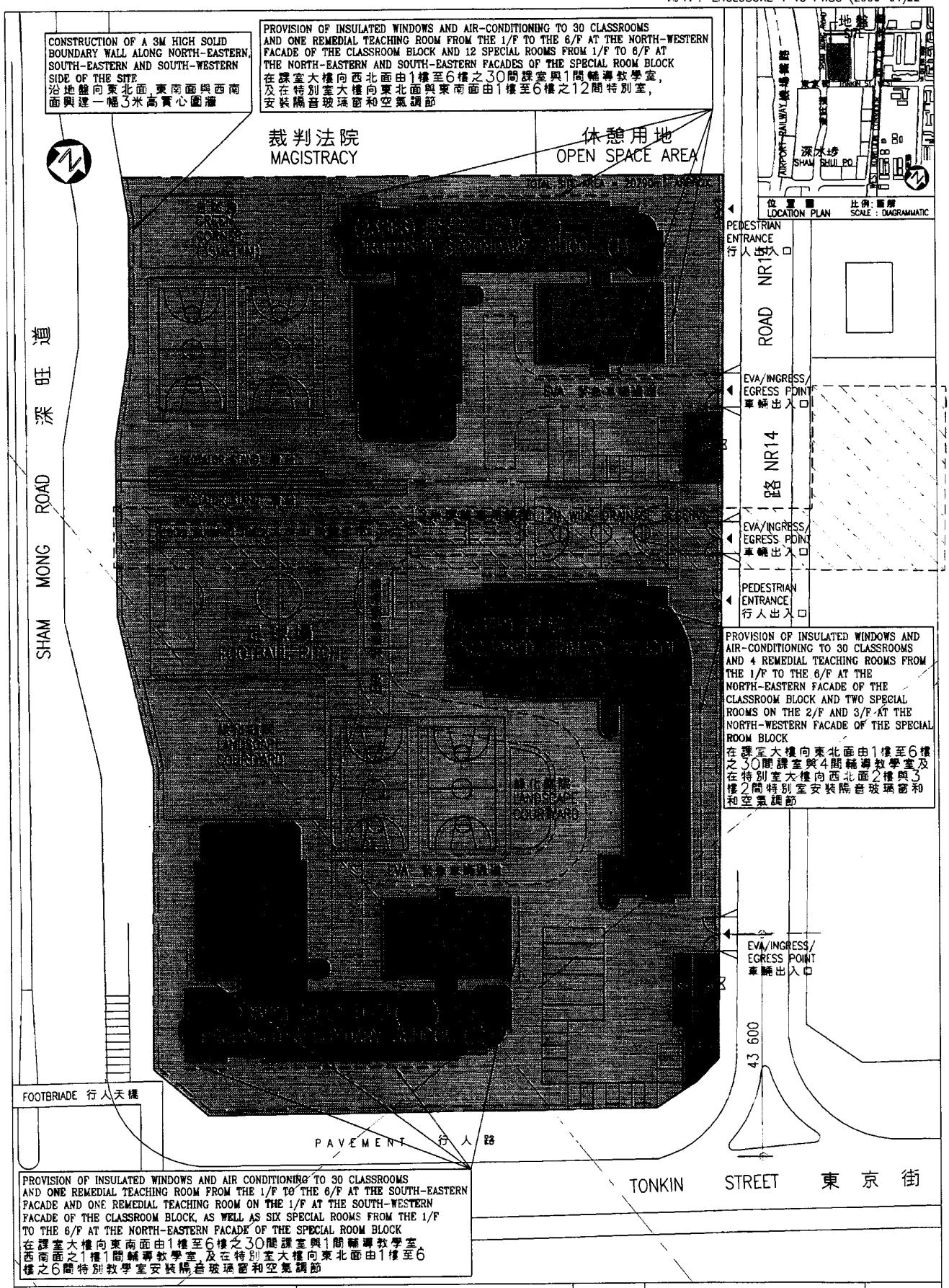
BACKGROUND INFORMATION

17. We upgraded **235ES** and **273EP** to Category B in September 1999. In September 1999, we employed, at a total cost of $2.4 million, consultants to carry out PERs and topographical surveys, and a term contractor to carry out ground investigations for the two projects. 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 consultants have completed the PERs and topographical surveys and the term contractor has substantially completed the site investigations. D Arch S has completed the detailed design of the project and is preparing the tender documents using in-house staff resources.

18. We estimate that the proposed works will create some 453 new jobs comprising five professional staff, 16 technical staff and 432 labourers during the construction period.

Education and Manpower Bureau
May 2000

(PWSC0272/WIN10)



title (273EP & 235ES) 深水埗發祥街(西九龍填海區)兩所中學及一所小學 TWO SECONDARY SCHOOLS AND ONE PRIMARY SCHOOL AT FAT TSEUNG STREET, SHAMSHUIPO (WEST KOWLOON RECLAMATION)	drawn by H.W. LEUNG	date 08.05.00	drawing no. AB/5829&6189/XA201
	approved HORTENSIA CHAN	date 08.05.00	scale 1:1000
	office ARCHITECTURAL BRANCH		建築署 ARCHITECTURAL SERVICES DEPARTMENT

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Enclosure 2 to PWSC(2000-01)22

A comparison of the standard cost of a secondary school project with the estimated cost of 235ES

		Standard cost*	235ES		
			School 1	School 2	
		$ million (at Dec 1999 prices)			
(a)	Piling	11.0	19.5	19.5	(See note A)
(b)	Building	58.5	59.0	58.9	(See note B)
(c)	Building services	13.5	17.2	16.6	(See note C)
(d)	Drainage and external works	10.0	10.9	10.9	(See note D)
(e)	Shared facilities	-	0.5	0.5	(See note E)
(f)	Contingencies	9.3	10.7	10.6	
	Total	102.3	117.8	117.0	
(g)	Construction floor area	12 238m^2	12 238m^2	12 238m^2	
(h)	Construction unit cost {[(b)+(c)] ÷(h)}	$5,883/$m^2$	$6,227/$m^2$	$6,169/$m^2$	

*** Assumptions for standard 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 standard cost for comparison purpose is subject to review regularly. D Arch S has recently updated the standard cost of a secondary school from $107.6 million at December 1998 prices to $102.3 million at December 1999 prices. D Arch S will continue to periodically review, and revise if necessary, the standard cost which should be adopted for future projects.

Notes

A. The piling costs are higher because they are based on the use of 170 numbers of steel H-piles at an average depth of 40 metres for both schools instead of 138 numbers at an average depth of 30 metres in a standard secondary school. Additional piles are required due to negative skin friction as the site is on reclaimed land made up of marine deposit and clay alluvium. This is because the settlement of the fill layer will cause negative skin friction which will in turn reduce the useful loading capacity of the piles. The average depth of 40 metres is necessary because the bedrock level of the site is around 40 metres.

B. The building costs are higher because of the provision of insulated windows as a noise mitigation measure for the schools.

C. The building services costs are higher because of the provision of air-conditioning as a noise mitigation measure for the schools.

D. The drainage and external works costs are higher because of the construction of a 3-metre high solid boundary wall as a noise mitigation measure.

E. The cost of shared facilities is the apportioned cost for the construction of a football pitch with spectator stands, a green corner and a 100-metre running track.

Enclosure 3 to PWSC(2000-01)22

A comparison of the standard cost of a 30-classroom primary school project with the estimated cost of 273EP

		Standard cost*	273EP	
		$ million (at Dec 1999 prices)		
(a)	Piling	9.0	16.1	(See note A)
(b)	Building	49.5	49.8	(See note B)
(c)	Building services	11.5	14.2	(See note C)
(d)	Drainage and external works	9.0	9.9	(See note D)
(e)	Shared facilities	-	0.5	(See note E)
(f)	Furniture and equipment	-	4.8	(See note F)
(g)	Contingencies	7.9	9.1	
	Total	86.9	104.4	
(h)	Construction floor area	10 727m^2	10 727m^2	
(i)	Construction unit cost {[(b)+(c)] ÷(h)}	\$5,687/m^2	\$5,966/m^2	

*** Assumptions for standard 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 standard cost for comparison purpose is subject to review regularly. D Arch S has recently updated the standard cost of a primary school from $90.8 million at December 1998 prices to $86.9 million at December 1999 prices. D Arch S will continue to periodically review, and revise if necessary, the standard cost which should be adopted for future projects.

Notes

A. The piling cost is higher because it is based on the use of 150 numbers of steel H-piles at an average depth of 40 metres instead of 112 numbers of steel H-piles at average depth of 30 metres for a standard 30-classroom primary school. Additional piles are required due to negative skin friction as the site is on reclaimed land made up of marine deposit and clay alluvium. This is because the settlement of the fill layer will cause negative skin friction which will in turn reduce the useful loading capacity of the piles. The average depth of 40 metres is necessary because the bedrock level of the site is around 40 metres.

B. The building cost is higher because of the provision of the 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.

D. The drainage and external works cost is higher because of the construction of a 3-metre high solid boundary wall as a noise mitigation measure and the provision of the shared facilities.

E. The cost of shared facilities is the apportioned cost for the construction of a football pitch with spectator stands, a green corner and a 100-metre running track.

F. The cost of furniture and equipment, estimated to be $4.8 million, will be borne by Government as the school will be allocated to an existing bi-sessional school for conversion to whole-day operation.