

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 703 – BUILDINGS

Education – Primary

347EP – A 24-classroom primary school at Phase 4, Shek Kip Mei Redevelopment, Sham Shui Po

Members are invited to recommend to Finance Committee the upgrading of **347EP** to Category A at an estimated cost of \$148.1 million in money-of-the-day prices for the construction of a 24-classroom primary school at Phase 4, Shek Kip Mei Redevelopment, Sham Shui Po, to reprovise an existing aided primary school.

PROBLEM

Some schools are operating from premises which are underprovided by today's standards and should be reprovise when the opportunity arises.

PROPOSAL

2. The Director of Architectural Services, with the support of the Secretary for Education, proposes to upgrade **347EP** to Category A at an estimated cost of \$148.1 million in money-of-the-day (MOD) prices for the construction of a 24-classroom primary school at Phase 4, Shek Kip Mei Redevelopment, Sham Shui Po, to reprovise an existing aided primary school (the School) which is operating in substandard premises in the district.

/PROJECT

PROJECT SCOPE AND NATURE

3. The proposed scope of works for **347EP** includes —
- (a) 24 classrooms;
 - (b) six special rooms, including a computer-assisted learning room and a language room;
 - (c) four small group teaching rooms;
 - (d) a guidance activity room;
 - (e) two interview rooms;
 - (f) a staff room;
 - (g) a staff common room;
 - (h) a student activity centre;
 - (i) a conference room;
 - (j) a library;
 - (k) an assembly hall (which can also be used for a wide range of physical activities such as badminton, gymnastics and table-tennis);
 - (l) a multi-purpose area;
 - (m) a basketball court;
 - (n) a 45-metre (m) running track¹;
 - (o) a green corner²; and

/(p)

¹ Making optimal use of the space of the campus, a 45-m running track will be provided.

² 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 greenhouse, a weather station and planting beds.

- (p) ancillary accommodation, including a lift and relevant facilities for the handicapped.

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The proposed school will meet the planning target of providing two square metres (m²) of open space per student. A site plan is at Enclosure 1 and views of the school premises (artist's impression) are at Enclosure 2. We plan to start the construction works in November 2008 for completion in July 2010.

JUSTIFICATION

4. It is Government's plan to improve the physical conditions of existing school premises to current standards through re-provisioning and redevelopment where warranted. The existing school to be re-provisioned is housed in premises of over 50 years old. It currently occupies a site area of 3 000 m² (compared to 4 700 m² for a standard school site accommodating a 24-classroom primary school) and does not have the additional space required for comprehensive infrastructure upgrading or in-situ redevelopment. Due to site constraints, re-provisioning the school to a new school premises is the most cost-effective way to improve the teaching and learning environment for the teachers and students of the school.

5. Upon completion, **347EP** will provide 24 primary classes and other facilities for accommodating the existing school which is operating the same number of classes in the 2007/08 school year in the same district.

6. We have examined the implementation programme of this project against the implementation schedule of small-class teaching. We will only be able to arrive at a realistic assessment by mid-2008 whether additional classrooms would be required to support small class teaching in the school net in which this project is located. Considering that a change in the project scope and design would cause substantial delay to this project and the fact that minor conversion works could be pursued on a need basis in future, we, with the support of the school sponsoring body, prefer to proceed with this project at its present scope of works and school design without further delay.

/FINANCIAL

FINANCIAL IMPLICATIONS

7. We estimate the capital cost of the project to be \$148.1 million in MOD prices (see paragraph 8 below), made up as follows –

	\$ million	
(a) Site formation	5.5	
(b) Piling	16.5	
(c) Building	63.6	
(d) Building services	17.6	
(e) Drainage	2.3	
(f) External works	8.3	
(g) Furniture and equipment ³	3.0	
(h) Consultants' fees for –	6.0	
(i) Contract administration	1.7	
(ii) Site supervision	4.3	
(i) Contingencies	11.4	
Sub-total	134.2	(in September 2007 prices)
(j) Provision for price adjustment	13.9	
Total	148.1	(in MOD prices)

/We

³ Based on the standard furniture and equipment reference list prepared by the Education Bureau for a new 24-classroom primary school adopting the standard schedule of accommodation. The actual amount will be determined on the basis of a survey on the serviceability of the existing furniture and equipment.

We propose 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 area (CFA) of **347EP** is 9 580 m². The estimated construction unit cost, represented by the building and the building services costs, is \$8,476 per m² of CFA in September 2007 prices. We consider this comparable to similar school projects built by the Government. A comparison of the reference cost for a 24-classroom primary school based on an uncomplicated site with no unusual environmental or geotechnical constraints with the estimated costs for **347EP** is at Enclosure 4.

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

Year	\$ million (Sept 2007)	Price adjustment factor	\$ million (MOD)
2008 – 09	2.3	1.02575	2.4
2009 – 10	52.8	1.06293	56.1
2010 – 11	48.4	1.10545	53.5
2011 – 12	14.5	1.14967	16.7
2012 – 13	16.2	1.19566	19.4
	134.2		148.1

9. We have derived the MOD estimates on the basis of the Government's latest forecast of trend rate of change in the prices of public sector building and construction output for the period 2008 to 2013. We will deliver the construction works through lump sum contracts because we can clearly define the scope of the works in advance. The contract will not provide for price adjustment because the contract period will not exceed 21 months.

10. The cost of furniture and equipment, estimated to be \$3.0 million, will be borne by the Government. This is in line with the existing policy.

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11. We estimate the annual recurrent expenditure for **347EP** to be \$20.8 million.

PUBLIC CONSULTATION

12. We consulted the Sham Shui Po District Council on **347EP** in February 2008 and Members of the Council supported the project.

13. We consulted the Legislative Council Panel on Education on 24 October 2005 on our review of the School Building Programme. Members noted our plan to proceed with reprovisioning and redevelopment projects to upgrade substandard facilities in existing schools. **347EP** is a project to reprovision an existing school which is operating in substandard premises.

ENVIRONMENTAL IMPLICATIONS

14. We engaged a consultant to conduct a Preliminary Environmental Review (PER) for **347EP** in December 2007. The PER recommended 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 –

Mitigation measures	Estimated cost \$ million (in Sept 2007 prices)
(a) Insulated windows and air-conditioning for 24 classrooms at southern and south-eastern façade of the classroom block	2.4
(b) Insulated windows and air-conditioning for four special rooms and four small group teaching rooms at western façade of the special room block	1.0
(c) A 3m high boundary wall along Wai Chi Street	1.0

/With

With such mitigation measures in place, the project would not be exposed to long term environmental impacts. We have included the cost items (a) and (b) of the above mitigation measures as part of the building and building services works in the project estimate. The cost of item (c) has been included as part of the external works.

15. During construction, we will control noise, dust and site run-off nuisances to within established standards and guidelines through the implementation of mitigation measures in the contract. These include the use of silencers, mufflers, acoustic lining or shields for noisy construction activities, frequent cleaning and watering of the site, and the provision of wheel-washing facilities.

16. We have considered measures in the planning and design stages to reduce the generation of construction waste where possible (e.g. using metal site hoardings and signboards so that these materials can be recycled or reused in other projects). In addition, we will require the contractor to reuse inert construction waste (e.g. use of excavated materials for filling within the site) on site or in other suitable construction sites as far as possible, in order to minimize the disposal of inert construction waste to public fill reception facilities⁴. We will encourage the contractor to maximize the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further minimize the generation of construction waste.

17. We will also require the contractor to submit for approval a plan setting out the waste management measures, which will include appropriate mitigation means to avoid, reduce, reuse and recycle inert construction waste. We will ensure that the day-to-day operations on site comply with the approved plan. We will require the contractor to separate the inert portion from non-inert construction waste on site for disposal at appropriate facilities. We will control the disposal of inert construction waste and non-inert construction waste to public fill reception facilities and landfills respectively through a trip-ticket system.

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⁴ Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation. Disposal of inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

18. We estimate that the project will generate in total about 23 850 tonnes of construction waste. Of these, we will reuse about 12 700 tonnes (53.2%) of inert construction waste on site and deliver 9 800 tonnes (41.1%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of 1 350 tonnes (5.7%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at public fill reception facilities and landfill sites is estimated to be \$433,350 for this project (based on a unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne⁵ at landfills).

ENERGY CONSERVATION MEASURES

19. This project has adopted various forms of energy efficient features, including—

- (a) T5 energy efficient fluorescent tubes with electronic ballast and lighting control by daylight sensor will be adopted in all offices and rooms at the perimeter of the building;
- (b) heat recovery fresh air pre-conditioners in the air-conditioned rooms;
- (c) automatic on/off switching of lighting and ventilation fan inside the lift; and
- (d) Light emitting diode (LED) type exit signs.

20. We will install photovoltaic panels to provide renewable energy for environmental benefits.

21. We will provide landscape in the appropriate area on the main roofs and terraces for environmental and amenity benefits.

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⁵ 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 is likely to be more expensive), when the existing ones are filled.

22. We will install rainwater collection system for landscape irrigation with a view to conserving water.

23. The total estimated additional cost for adoption of the energy efficient, renewable energy, greening and recycled features is around \$2.1 million, which has been included in the cost estimate for this project. There will be about 9% energy savings in the annual energy consumption.

HERITAGE IMPLICATIONS

24. This project will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites/buildings, sites of archaeological interests and Government historic sites identified by the Antiquities and Monuments Office.

LAND ACQUISITION

25. The project does not require any land acquisition.

BACKGROUND INFORMATION

26. We upgraded **347EP** to Category B in January 2007. We engaged an architectural consultant in August 2007 to undertake the detailed design and PER. We engaged a quantity surveying consultant in November 2007 to prepare tender documents. The total cost of the above consultancy services and ground investigation works is about \$3.7 million. We have 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 architectural consultant has completed the detailed design and PER. The quantity surveying consultant is finalising the tender documents.

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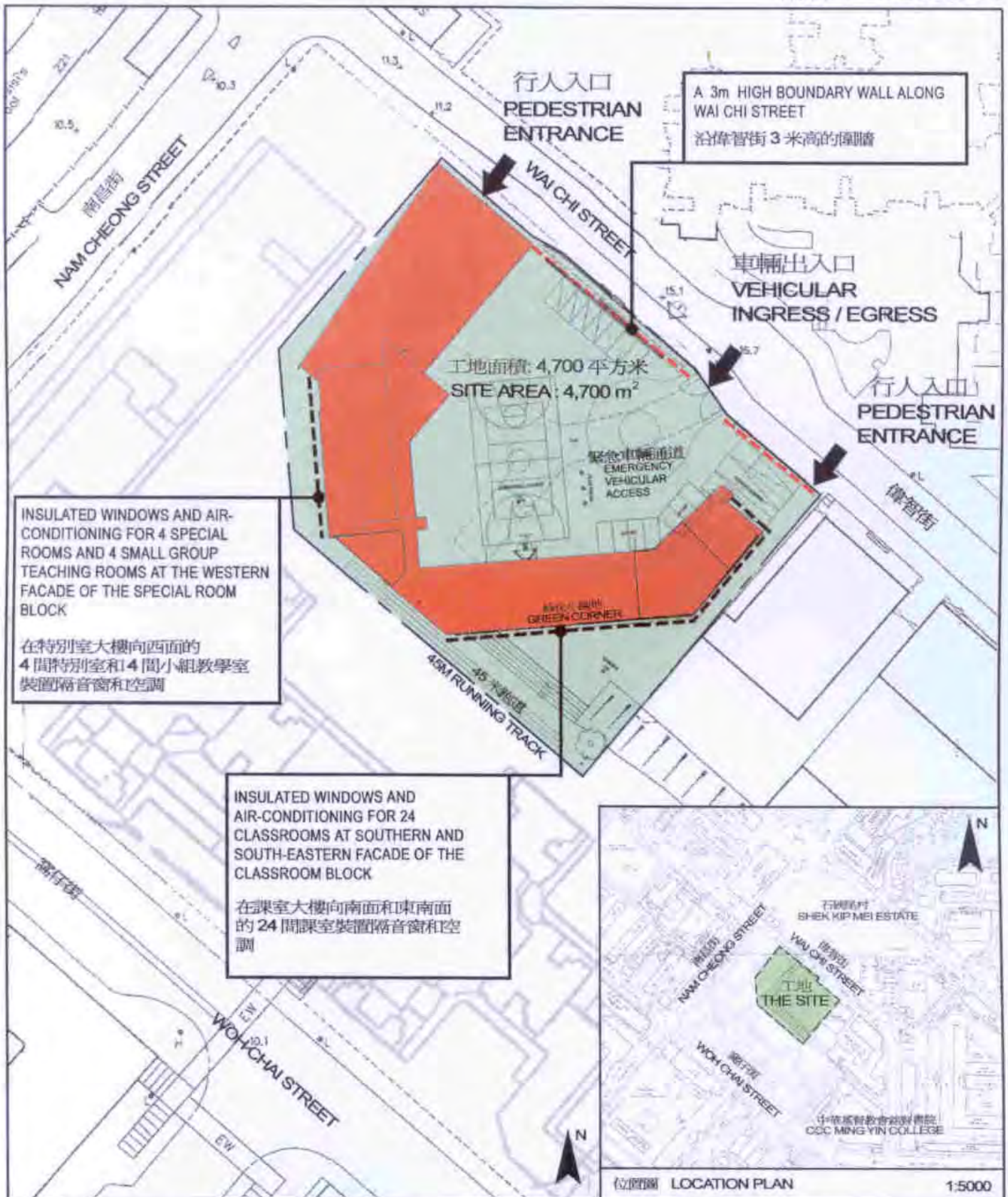
27. The proposed works will involve removal of 20 trees, including 11 trees to be felled and nine trees to be replanted within the project site. All trees to be removed are not important trees⁶. We will incorporate planting proposals as part of the project, including estimated quantities of 17 trees and 1 250 shrubs.

28. We estimate that the proposed works will create about 136 jobs (119 for labourers and another 17 for professional/technical staff) providing a total employment of 2 568 man-months.

Education Bureau
April 2008

⁶ “Important trees” refer to trees in the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria -

- (a) trees of 100 years old or above;
- (b) trees of cultural, historical or memorable significance e.g. Fung Shui tree, tree as landmark of monastery or heritage monument, and trees in memory of an important person or event;
- (c) trees of precious or rare species;
- (d) trees of outstanding form (taking account of overall tree sizes, shape and any special features) e.g. trees with curtain like aerial roots, trees growing in unusual habitat; or
- (e) trees with trunk diameter equal or exceeding 1.0 metre (measured at 1.3 metre above ground level), or with height/canopy spread equal or exceeding 25 metres.



<p>TITLE - 347EP</p>	<p>DRAWN BY U.W.</p>	<p>DATE 11.3.2008</p>	<p>DRAWING NO. Enclosure 1</p>	<p>SCALE 1:800</p>
<p>深水埗石硤尾重建計劃第 4 期 1 所設有 24 間課室的小學 A 24-CLASSROOM PRIMARY SCHOOL AT PHASE 4, SHEK KIP MEI REDEVELOPMENT SHAM SHUI PO</p>	<p>APPROVED BY T.C.W.</p>	<p>DATE 11.3.2008</p>	<p>ARCHITECTURAL SERVICES DEPARTMENT 建築署</p>	
	<p>OFFICE Architectural Branch</p>			



從東北面望向校舍的構思圖
VIEW OF THE SCHOOL PREMISES FROM NORTH-EASTERN DIRECTION (ARTIST'S IMPRESSION)



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

TITLE - 347EP	DRAWN BY U.W.	DATE 11 .3. 2008	DRAWING NO. Enclosure 2	SCALE N/A
深水埗石硤尾重建計劃第 4 期 1 所設有 24 間課室的小學 A 24-CLASSROOM PRIMARY SCHOOL AT PHASE 4, SHEK KIP MEI REDEVELOPMENT SHAM SHUI PO	APPROVED BY T.C.W.	DATE 11 .3. 2008	 ARCHITECTURAL SERVICES DEPARTMENT 建築署	
	OFFICE Architectural Branch			

Enclosure 3 to PWSC(2008-09)9

347EP – A 24-classroom primary school at Phase 4, Shek Kip Mei Redevelopment, Sham Shui Po

Breakdown of the estimate for consultants' fees

Consultants' staff costs		Estimated man-months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)
(a) Contract administration (Note 2)	Professional	–	–	–	1.2
	Technical	–	–	–	0.5
(b) Site supervision (Note 3)	Professional	13.2	38	1.6	1.2
	Technical	102.8	14	1.6	3.1
				Total	6.0

* MPS = Master Pay Scale

Notes

1. A multiplier of 1.6 is applied to the average MPS point to estimate the cost of resident site staff supplied by the consultants. (As at 1 April 2007, MPS point 38 = \$56,945 per month and MPS point 14 = \$18,840 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 **347EP**. The assignment will only be executed subject to Finance Committee's approval to upgrade **347EP** 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 24-classroom primary school project
with the estimated cost of 347EP**

\$ million (in Sept 2007 prices)

	Reference cost*	347EP	
(a) Site formation	–	5.5	(See note A)
(b) Piling	10.0	16.5	(See note B)
(c) Building	53.7	63.6	(See note C)
(d) Building services	14.3	17.6	(See note D)
(e) Drainage	2.3	2.3	
(f) External works	9.2	8.3	(See note E)
(g) Furniture and equipment	–	3.0	(See note F)
(h) Consultants' fees	–	6.0	(See note G)
(i) Contingencies	9.0	11.4	
	Total	98.5	
		134.2	
(j) Construction floor area	9 129 m ²	9 580 m ²	
(k) Construction unit cost {[(c) + (d)] ÷ (j)}	\$7,449/m ²	\$8,476/m ²	

/* Assumptions

* **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 mixed use of 101 steel H-piles at an average depth of 30 m, 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 24-classroom primary school site area of 4 700 m² 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. We have revised the reference cost in March 2008 in accordance with the finalized price level in September 2007.

Notes

- A. Site formation works comprise of retaining walls to maintain the level difference between formation platforms and soil nails to stabilize an existing slope.

/B.

- B. The piling cost is higher because percussive piling system is not recommended due to the excessive vibrations and noise to be generated to nearby residents and high bedrock level under the classroom block . It is estimated that this project will require the use of 138 non-percussion cast in-situ concrete piles at an average depth of 30 m under the assembly hall and 58 rock socketted steel H piles in pre-bored hole at an average depth of 25 m under the classroom block.
- C. The building cost is higher because of larger construction floor area.
- D. The building services cost is higher because of larger construction floor area and the provision of insulated windows and air-conditioning as noise mitigation measures.
- E. The cost of external works is lower because part of the hoarding works will be constructed by the adjacent construction sites.
- F. The cost of furniture and equipment, estimated to be \$3.0 million, will be borne by the Government as the school premises is allocated to an existing school for reprovisioning.
- G. Consultants' fees are required for contract administration and site supervision.