

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 703 – BUILDINGS

Education – Secondary

263ES – Second secondary school at development near Choi Wan Road and Jordan Valley, Kwun Tong

Members are invited to recommend to Finance Committee the upgrading of **263ES** to Category A at an estimated cost of \$248.0 million in money-of-the-day prices for the construction of a new secondary school premises at development near Choi Wan Road and Jordan Valley, Kwun Tong to re-provision an existing aided secondary school.

PROBLEM

Some schools are operating in premises which are under-provided by today's standards and should be re-provisioned when the opportunity arises.

PROPOSAL

2. The Director of Architectural Services, with the support of the Secretary for Education, proposes to upgrade **263ES** to Category A at an estimated cost of \$248.0 million in money-of-the-day (MOD) prices for the construction of a 30-classroom secondary school premises at development near Choi Wan Road and Jordan Valley, Kwun Tong, to re-provision an existing aided secondary school (the School) which is operating in sub-standard premises in the same district.

/PROJECT

PROJECT SCOPE AND NATURE

3. The proposed secondary school will have the following facilities –
- (a) 30 classrooms;
 - (b) 16 special rooms, including a computer-assisted learning room, a language room and a multi-purpose room;
 - (c) three 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) two basketball courts at ground level;
 - (n) a 60-metre (m) running track¹;

/(o)

¹ Making optimal use of the space of the campus, a 60-m running track will be provided.

- (o) a green corner²; and
- (p) ancillary accommodation, including a lift and relevant facilities for the handicapped.

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 The proposed new school premises 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 in November 2009 for completion in July 2011.

JUSTIFICATION

4. The School which is to be reprovioned was built in 1970 on a sloped site area of 4 554 m², which falls short of the current standard. Certain essential facilities for effective teaching and learning, including five classrooms, small group teaching rooms, student activity centre, conference room, interview rooms, guidance activity room, medical room and changing room, are lacking. The open space provision also falls short of the latest planning standard. The dilapidated condition of the existing campus necessitates frequent repairs. Due to site constraints which pose difficulties for in-situ redevelopment, reprovioning is the most cost-effective way to upgrade the teaching and learning environment of the School.

5. Upon completion, **263ES** will provide 30 classrooms and other facilities for accommodating the School which is operating 31 classes in the 2008/09 school year in the same district. With the implementation of the New Senior Secondary academic structure from September 2009 onwards, the School will have an ultimate class structure of five classes at each level from Secondary 1 to Secondary 6.

FINANCIAL IMPLICATIONS

6. We estimate the capital cost of the project to be \$248.0 million in MOD prices (see paragraph 7 below), made up as follows –

/(a)

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 weather station and planting beds.

	\$ million	
(a) Piling	18.2	
(b) Building	105.0	
(c) Building services	28.0	
(d) Additional energy conservation measures	17.8	
(e) Drainage	6.2	
(f) External works	19.2	
(g) Furniture and equipment ³	6.4	
(h) Consultants' fees	3.4	
(i) contract administration	3.0	
(ii) management of resident site staff	0.4	
(i) Remuneration of resident site staff	5.5	
(j) Contingencies	20.3	
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Sub-total	230.0	(in September 2008 prices)
(k) Provision for price adjustment	18.0	
	<hr/>	
Total	248.0	(in MOD prices)
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³ Based on the standard furniture and equipment reference list prepared by the Education Bureau for a new 30-classroom secondary 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 estimates for consultants' fees and resident site staff costs by man-months is at Enclosure 3. The construction floor area (CFA) of the new school premises under **263ES** is 12 880 m². The estimated construction unit cost, represented by the building and the building services costs, is \$10,326 per m² of CFA in September 2008 prices. We consider this comparable to similar school projects built by the Government. A comparison of the reference cost for constructing a 30-classroom secondary school based on an uncomplicated site with no unusual environmental or geotechnical constraints with the estimated costs for **263ES** is at Enclosure 4.

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

Year	\$ million (Sept 2008)	Price adjustment factor	\$ million (MOD)
2009 – 10	4.9	1.03500	5.1
2010 – 11	73.2	1.05570	77.3
2011 – 12	87.8	1.07681	94.5
2012 – 13	34.1	1.09835	37.5
2013 – 14	30.0	1.12032	33.6
	230.0		248.0

8. 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 2009 to 2014. We will deliver the construction works through a lump-sum contract because we can clearly define the scope of the works in advance. The contract will provide for price adjustments to reflect market fluctuations in labour and material costs.

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9. The cost of furniture and equipment, estimated to be \$6.4 million, will be borne by the Government in line with the existing policy.

10. We estimate the annual recurrent expenditure for **263ES** to be \$41.0 million.

PUBLIC CONSULTATION

11. At its meeting on 7 April 2009, the Kwun Tong District Council was consulted on **263ES** and supported the project.

12. 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 sub-standard facilities in existing schools. **263ES** is a project to reprovision an existing school operating in sub-standard premises.

ENVIRONMENTAL IMPLICATIONS

13. We engaged a consultant to conduct a Preliminary Environmental Review (PER) for **263ES** in October 2008. 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 the provision of insulated windows and air-conditioning for 12 special rooms on the G/F, 1/F, 3/F, 4/F, 5/F and 6/F at the western façade of the special room block at the cost of \$2.5 million. We have included the cost of the above mitigation measures as part of the building and building services in the project estimate. With such mitigation measures in place, the project will not be exposed to long term environmental impacts.

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 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.

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15. 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 on site (e.g. use of excavated materials for filling within the 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.

16. 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.

17. We estimate that the project will generate in total about 16 600 tonnes of construction waste. Of these, we will reuse about 7 600 tonnes (45.8%) of inert construction waste on site and deliver 7 100 tonnes (42.8%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of 1 900 tonnes (11.4%) 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 \$429,200 for this project (based on a unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne⁵ at landfills).

/ENERGY

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.

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.

ENERGY CONSERVATION MEASURES

18. As set out in the 2008-09 Policy Agenda, the Government will demonstrate state-of-the-art energy efficient designs and technologies by means of a government building and an educational building as energy efficiency demonstration projects. This project has been identified as one of the demonstration projects⁶. A holistic approach has been adopted to enhance the environmental performance of the project from various aspects.

19. This project include some environmental and energy efficient features that are commonly adopted in other government projects, such as –

- (a) heat recovery fresh air pre-conditioners in the air-conditioned spaces for heat energy reclaim of exhaust air;
- (b) T5 energy efficient fluorescent tubes with electronic ballast and lighting control by occupancy sensors and daylight sensors;
- (c) light emitting diode (LED) type exit signs; and
- (d) automatic on/off switching of lighting and ventilation fan inside the lift.

20. Apart from incorporating environmental features that are commonly adopted in other government projects, this demonstration project has incorporated some other environmental and energy efficient features for exploring and identifying suitable ones for wider adoption in future. Some new energy efficient technologies have also been adopted for demonstration purposes. We hope that this project will not only serve as demonstration for state-of-the-art designs and technologies, but will also serve educational purposes on environmental protection and energy saving.

21. Examples of additional environmental and energy efficient features to be incorporated in this project are highlighted below –

/(a)

⁶ The other energy efficiency demonstration project is Kai Tak Government Offices.

- (a) building energy management system: this system provides flexible control for building engineering systems to suit the usage patterns. The system will enable scheduled control on lighting and central dimming, automatic reduction or termination in air-conditioning when the room is unoccupied, and will also provide energy consumption records for energy audits and review;
- (b) renewable energy installations: for promotion of alternative and clean source of electricity, we will provide a range of renewable energy features using solar and wind power, including photovoltaic (PV) panels (including also thin film PV and sun tracking PV), solar water heaters, small scale wind turbine and daylight suntubes;
- (c) energy efficient ventilation and air-conditioning system –
 - (i) water-cooled Variable Refrigerant Volume (VRV) air-conditioning system, which is more energy efficient than air-cooled air-conditioning system. The system will also serve classrooms on one floor for demonstration purpose;
 - (ii) occupancy sensor control for air-conditioning supply;
 - (iii) demand control of supply and fresh air with carbon dioxide sensors; and
 - (iv) variable speed fans and motors;
- (d) energy efficient lighting system: apart from the use of light emitting diode (LED) type exit signs, LED will also be adopted for accent lighting and general lighting in classrooms on one floor and the assembly hall for demonstration purpose; and
- (e) other environmental and energy efficient features for environmental and amenity benefits –
 - (i) lift power regeneration system;
 - (ii) landscape in the appropriate area on the main roof and terraces and vertical greening on external walls;

/(iii)

- (iii) sun shading devices and low-e glazing; and
- (iv) rainwater collection system for landscape irrigation.

22. The total estimated additional cost for adoption of the environmental and energy conservation measures is around \$17.8 million (including \$5.8 million for energy efficient features), which has been included in the cost estimate for this project. The energy efficient features will achieve 27.3% energy savings in the annual energy consumption with a payback period at about 18.4 years, which is longer than the normal cap of nine years for other projects. A longer payback period is anticipated as some state-of-the-art energy designs and technologies have been included for demonstration and evaluation purposes. It is anticipated that the costs for some of those new features will drop, making them more commercially viable in the near future.

HERITAGE IMPLICATIONS

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

LAND ACQUISITION

24. The project does not require any land acquisition.

BACKGROUND INFORMATION

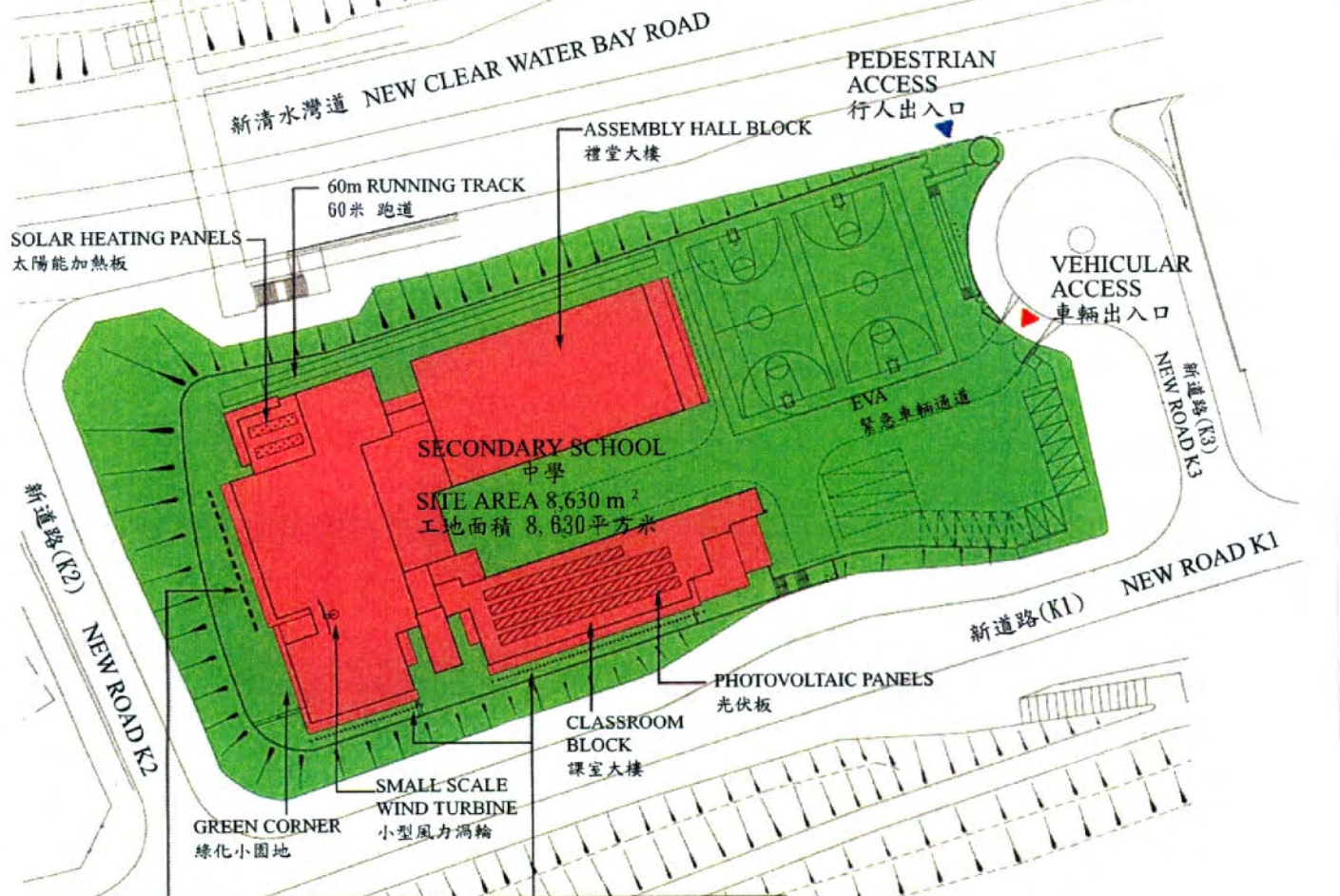
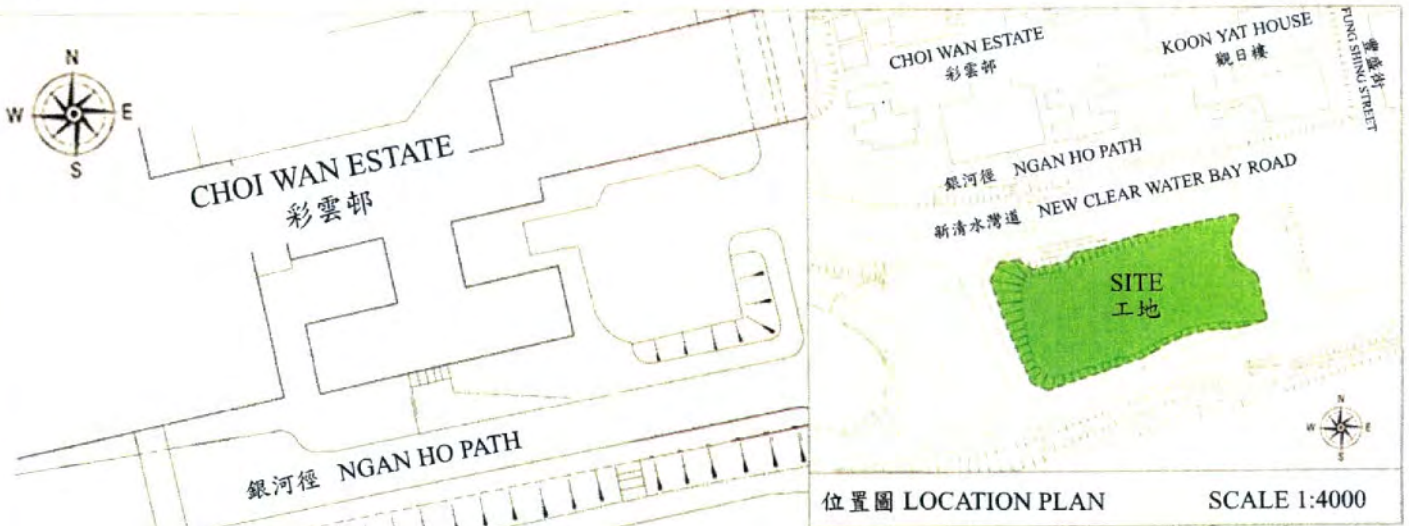
25. **263ES** was upgraded to Category B in September 2007. We engaged an architectural consultant in June 2008 to undertake the detailed design and PER, and a quantity surveying consultant was engaged in September 2008 to prepare tender documents. The total cost of the consultancy services and works is about \$5.6 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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26. The proposed works will not involve any removal of trees. We will incorporate planting proposals as part of the project, including estimated quantities of 62 trees, 1 850 shrubs and 250 m² of grassed area.

27. We estimate that the proposed works will create about 232 jobs (209 for labourers and another 23 for professional/technical staff) providing a total employment of 4 180 man-months.

Education Bureau
June 2009



INSULATED WINDOWS AND AIR CONDITIONING FOR 12 SPECIAL ROOMS ON G/F, 1/F, 3/F, 4/F, 5/F & 6/F AT THE WESTERN FACADE OF THE SPECIAL ROOM BLOCK
 在特別室大樓向西面地下, 1樓, 3樓, 4樓, 5樓及6樓的12間特別室裝置隔音窗和空調

PHOTOVOLTAIC PANELS ON THE SOUTHERN FACADE OF THE CLASSROOM BLOCK
 在課室大樓向南方裝置光伏板

Project Title **263 ES**
 觀塘彩雲道及佐敦谷毗鄰發展計劃的第二所中學
 SECOND SECONDARY SCHOOL AT DEVELOPMENT NEAR CHOI WAN RD. AND JORDAN VALLEY, KWUN TONG.

Drawn by **D. KWOK** Date **APR. 09**
 Approved by **N. CHOW** Date **APR. 09**
 Office **ARCHITECTURAL BRANCH**

Drawing No. **AB/7140/XA103** Scale **1:1000**
ARCHITECTURAL SERVICES DEPARTMENT




從東北面望向校舍的構思圖

VIEW OF THE SCHOOL PREMISES FROM NORTH-EASTERN DIRECTION (ARTIST'S IMPRESSION)



從西南面望向校舍的構思圖

VIEW OF THE SCHOOL PREMISES FROM SOUTH-WESTERN DIRECTION (ARTIST'S IMPRESSION)

Project Title 263 ES 觀塘彩雲道及佐敦谷毗鄰 發展計劃的第二所中學 SECOND SECONDARY SCHOOL AT DEVELOPMENT NEAR CHOI WAN RD. AND JORDAN VALLEY, KWUN TONG.	Drawn by D. KWOK	Date APR. 09	Drawing No. AB/7140/XA102	Scale NTS
	Approved by N. CHOW	Date APR. 09	 ARCHITECTURAL SERVICES DEPARTMENT	
	Office ARCHITECTURAL BRANCH			

Enclosure 3 to PWSC(2009-10)40

**263ES – Second secondary school at development near
Choi Wan Road and Jordan Valley, Kwun Tong**

**Breakdown of the estimates for consultants' fees and resident site staff costs
(in September 2008 prices)**

		Estimated man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)
(a)	Consultants' fees for contract	–	–	–	2.2
	administration (Note 2)	–	–	–	0.8
Sub-total					3.0
(b)	Resident site staff	13.4	38	1.6	1.3
	costs (Note 3)	144.9	14	1.6	4.6
Sub-total					5.9
Comprising –					
(i)	Consultants' fees for management of resident site staff				0.4
(ii)	Remuneration of resident site staff				5.5
Total					8.9

* 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 2008, MPS point 38 = \$60,535 per month and MPS point 14 = \$19,835 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 **263ES**. The assignment will only be executed subject to the Finance Committee's approval to upgrade **263ES** 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(2009-10)40

**A comparison of the reference cost of
a 30-classroom secondary school project
with the estimated cost of 263ES**

\$ million (in Sept 2008 prices)

	Reference cost*	263ES	
(a) Piling	19.0	18.2	(See note A)
(b) Building	104.5	105.0	(See note B)
(c) Building services	26.3	28.0	(See note C)
(d) Additional energy conservation measures	-	17.8	(See note D)
(e) Drainage	4.5	6.2	(See note E)
(f) External works	17.0	19.2	(See note F)
(g) Furniture and equipment	-	6.4	(See note G)
(h) Consultants' fees	-	3.4	(See note H)
(i) Remuneration of resident site staff	-	5.5	(See note I)
(j) Contingencies	17.0	20.3	
	<hr/>	<hr/>	
Total	188.3	230.0	
	<hr/>	<hr/>	
(k) Construction floor area	12 238 m ²	12 880 m ²	
(l) Construction unit cost {[(b) + (c)] ÷ (k)}	\$10,688/m ²	\$10,326/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 use of 138 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 30-classroom secondary school site area of 6 950 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 for meeting new demand of school places.
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.

/Notes

Notes

- A. The piling cost is lower because part of the building is supported by footing.
- B. The building cost is higher because of larger construction floor area.
- C. The cost of the building services works is higher because of larger construction floor area and the provision of air-conditioning as a noise mitigation measure.
- D. The cost of additional energy conservation measures includes cost for features commonly adopted in government projects as well as a number of new environmental and energy conservation designs and technologies for demonstration purposes.
- E. The cost of drainage is higher because of larger site area and rock excavation involved.
- F. The cost of external works is higher because of larger site area.
- G. The cost of furniture and equipment, estimated to be \$6.4 million, will be borne by the Government in line with existing policy for reprovisioning of existing schools.
- H. Consultants' fees for contract administration and management of resident site staff are required for contract administration and site supervision of the building works.
- I. Remuneration of resident site staff is required for site supervision of the building works.