For discussion **PWSC(2004-05)9**
on 5 May 2004

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 703 – BUILDINGS
Education – Tertiary/others
102ET – A direct subsidy scheme school (secondary-cum-primary) in Area 11, Sha Tin

Members are invited to recommend to Finance Committee the upgrading of **102ET** to Category A at an estimated cost of $222.5 million in money-of-the-day prices for the construction of a direct subsidy scheme school (secondary-cum-primary) in Area 11, Sha Tin.

PROBLEM

We do not have enough schools to meet the forecast demand for secondary school places by the 2007/08 school year. We also need to promote the setting up of "through-train" schools and diversity in the education system through allocating new schools to quality sponsors.

PROPOSAL

2. The Director of Architectural Services (D Arch S), with the support of the Secretary for Education and Manpower (SEM), proposes to upgrade **102ET** to Category A at an estimated cost of $222.5 million in money-of-the-day (MOD) prices for the construction of a direct subsidy scheme (DSS) school (secondary-cum-primary) in Area 11, Sha Tin.

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PROJECT SCOPE AND NATURE

3. The proposed school will adopt a non-standard design to accommodate a 30-classroom secondary section and a 30-classroom primary section, with the following planned facilities –

		Secondary section	Primary section
(a)	classrooms	30	30
(b)	special rooms, including a computer-assisted learning 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)	multi-purpose area	1	1
(k)	green corner[1]	1	1
(l)	ancillary accommodation, including a lift and relevant facilities for the handicapped	Available	Available

Shared facilities

(m) a combined library;

(n) a large assembly hall (which, together with the rooftop of the large assembly hall block, can be used for a wide range of physical activities such as badminton, gymnastics and table-tennis);

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[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.

Shared facilities

(o) a small assembly hall;

(p) three basketball courts (two at ground level and another one at the rooftop of the large assembly hall block);

(q) a mini-football pitch-cum-two basketball courts at ground level;

(r) two running tracks[2]; and

(s) bus and car parking facilities.

The proposed school will meet the planning target of providing two square metres 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. D Arch S plans to start the construction works in September 2004 for completion in July 2006.

JUSTIFICATION

4. SEM forecasts that 423 secondary school classes in addition to the existing provision will be required in the territory between the 2004/05 and 2007/08 school years to meet the projected increase in demand for new school places[3]. To date, Finance Committee has approved funding for nine new schools, which will reduce the shortfall in the number of classes to 201. A school project with a secondary section, covered in **38EC** under **Head 708**, is pending Finance Committee's approval[4]. **102ET** includes a 30-classroom secondary section. This will further reduce the territory-wide shortfall. We plan to meet the rest of the requirement through further school construction projects. These include **260ES** to be considered by Members at this meeting (see paper referenced PWSC(2004-05)8).

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[2] Making the optimal use of the open space of the campus, a 100-metre running track will be provided on the secondary section site and a 40-metre long running track on the primary section site.

[3] The existing provision has included DSS school places. Details of our school place planning mechanism can be found in LC Paper No. 1058/03-04(01) discussed by the Legislative Council Panel on Education on 30 January 2004.

[4] At the Public Works Subcommittee meeting on 21 April 2004, Members agreed to recommend to Finance Committee the upgrading of **38EC** "A direct subsidy scheme school (secondary-cum-primary) at Harmony Road, Siu Sai Wan". The Finance Committee will consider the recommendation on 14 May 2004.

5. Secondary school places are planned on a territory-wide basis[5]. This has the advantage of containing the number of new schools required to be built. Nevertheless, in identifying sites for building new secondary schools, we would seek to balance the supply and demand at the district level as far as possible. As far as the Sha Tin District is concerned, if we exclude the supply of school places provided by DSS schools which may charge a school fee and recruit students from all over the territory, we project that it will have a shortfall of 12 secondary school classes by 2007[6].

6. The Sha Tin District, in which **102ET** is located, currently has 45 public sector primary school premises providing 1 137 classrooms. There will be no new supply of classrooms (except those to be provided by a new DSS school to be completed in 2005 and **102ET** itself). SEM forecasts that the provision will be sufficient to meet the projected demand for 972 classes for the full implementation of whole-day primary schooling by the 2007/08 school year, with a nominal surplus of 165 classrooms[7].

7. Apart from meeting the projected demand for school places from a macro-planning perspective, our School Building Programme is designed to upgrade the quality of education and to help implement various policy objectives. Among other things, we would like to promote the "through-train" mode through the allocation of school premises. Under the "through-train" arrangement, students of the linked primary schools are allowed to proceed to the linked secondary schools without going through the Secondary 1 school places allocation process. This will better enable the development of a coherent curriculum with continuity of learning experience throughout the primary and secondary schooling as well as professional collaboration between teachers of the primary and secondary sections. We also believe that this helps promote students' effective learning and smoothen their transition from primary to secondary education. The proposed project **102ET** is a secondary-cum-primary school to be operated under a "through-train" arrangement.

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5 Primary school places are planned on a district basis to enable young children to attend schools close to their home.

6 Unlike DSS schools, government and aided schools provide non-fee charging school places in Secondary 1 to Secondary 3 and all their school places are subject to the Secondary School Places Allocation system administered on a district basis. If we nevertheless include the supply of school places of DSS schools in the district, Sha Tin may have a projected surplus of 97 secondary classes by 2007.

7 If we include the supply of school places of DSS schools in the district, Sha Tin may have a projected surplus of 201 primary classes by 2007.

8. The School Allocation Committee[8] has recommended the allocation of **102ET** to the Hong Kong Baptist University (HKBU) for operation under the DSS mode[9]. The proposed school will be the first of its kind in Hong Kong to be sponsored by and affiliated with a university. It will provide a unique opportunity for fostering a close partnership between primary and secondary school teachers and university scholars. The Department of Education Studies of HKBU is playing a leading role in the development of this project, seeking to put contemporary educational theories into practice and to share its experience with other educational institutions in Hong Kong after the school has come into operation. Moreover, **102ET** is located at a site next to HKBU's future school of continuing education (due to open also in 2006), which will provide two-year associate degree curricula. The co-location of the through-train secondary-cum-primary school with the school of continuing education will create synergy in the provision of quality education from basic to post-secondary levels.

FINANCIAL IMPLICATIONS

9. We estimate the capital cost of **102ET** to be $222.5 million in MOD prices (see paragraph 10 below), made up as follows –

	$ million		
	Secondary section	**Primary section**	**Total**
(a) Piling	23.8	18.9	42.7
(b) Building	66.1	48.7	114.8
(c) Building services	18.6	13.9	32.5
(d) Drainage and external works	11.3	10.0	21.3

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8 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.

9 Under the DSS, a DSS grant based on the average unit cost for an aided school place is provided on a per student basis.

		$ million			
		Secondary section	**Primary section**	**Total**	
(e)	Contingencies	12.0	9.2	21.2	
	Sub-total	131.8	100.7	232.5	(in September 2003 prices)
(f)	Provision for price adjustment	(5.7)	(4.3)	(10.0)	
	Total	126.1	96.4	222.5	(in MOD prices)

The construction floor areas (CFAs) of the secondary section and the primary section are 15 500 square metres and 11 500 square metres respectively. The estimated construction unit costs of the secondary section and the primary section, represented by the building and the building services costs, are $5,465 and $5,443 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 the secondary section is at Enclosure 3. A similar comparison between a 30-classroom primary school and the primary section is at Enclosure 4.

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

Year	**$ million (Sept 2003)**	**Price adjustment factor**	**$ million (MOD)**
2004 – 05	9.0	0.97150	8.7
2005 – 06	110.0	0.95450	105.0
2006 – 07	86.0	0.95450	82.1
2007 – 08	22.0	0.96643	21.3
2008 – 09	5.5	0.98455	5.4
	232.5		222.5

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11. We have derived the MOD estimate 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 2004 to 2009. We will deliver the works through a fixed-price lump-sum contract because the contract period will be less than 21 months and we can clearly define the scope of works in advance, leaving little room for uncertainty.

12. The cost of furniture and equipment[10] for the school will be borne by the school sponsor. This is in line with the existing policy. We estimate the annual recurrent expenditure for the secondary section to be $38.2 million and that for the primary section to be $23 million.

PUBLIC CONSULTATION

13. We 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 DSS 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.

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[10] Based on the furniture and equipment reference list prepared by the Education and Manpower Bureau for new schools adopting the standard schedule of accommodation.

14. We consulted the Sha Tin District Council (STDC) on 22 April 2004. Members generally welcomed the initiative of HKBU to expand its service from tertiary education to the primary and secondary school sectors, but some were concerned about the under-enrolled situation in some schools in Sha Tin District and the projected surplus supply of school places in view of the planned opening of a few new schools in the district in the next couple of years (including **102ET**). In response, HKBU itself undertook to cap the share of students of the proposed school to be recruited from Sha Tin District and, subject to school operations, to make its facilities available for public use. The discussion concluded with STDC supporting the project.

ENVIRONMENTAL IMPLICATIONS

15. We engaged a consultant to conduct a Preliminary Environmental Review (PER) for **102ET** in December 2003. The PER recommended the provision 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 –

School section		**Mitigation measures**	**Estimated cost $ million (in Sept 2003 prices)**
Secondary	(a)	Insulated windows and air-conditioning for 15 classrooms, seven special rooms and three small group teaching rooms from the 2/F to 7/F at the north-western façade of the classroom block	3.0
	(b)	Insulated windows and air-conditioning for four special rooms from the 2/F to 3/F and 5/F to 6/F at the north-western façade of the special room block	0.8
Primary	(c)	Insulated windows and air-conditioning for 15 classrooms, four special rooms and four small group teaching rooms from the 2/F to 6/F at the north-western façade of the classroom block	2.1

16. We have included the costs of the above mitigation measures as part of the building services works in the project estimate.

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17. 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.

18. 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.

19. 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 project will generate about 6 430 cubic metres (m^3) of C&D materials. Of these, we will reuse about 4 140 m^3 (64.4%) on site, 1 280 m^3 (19.9%) as fill in public filling areas[11], and dispose of 1 010 m^3 (15.7%) at landfills. The notional cost of accommodating C&D waste at landfill sites is estimated to be $126,250 for this project (based on a notional unit cost[12] of $125/$m^3$).

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[11] 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.

[12] 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 $90/$m^3$), 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.

LAND ACQUISITION

20. This project does not require land acquisition.

BACKGROUND INFORMATION

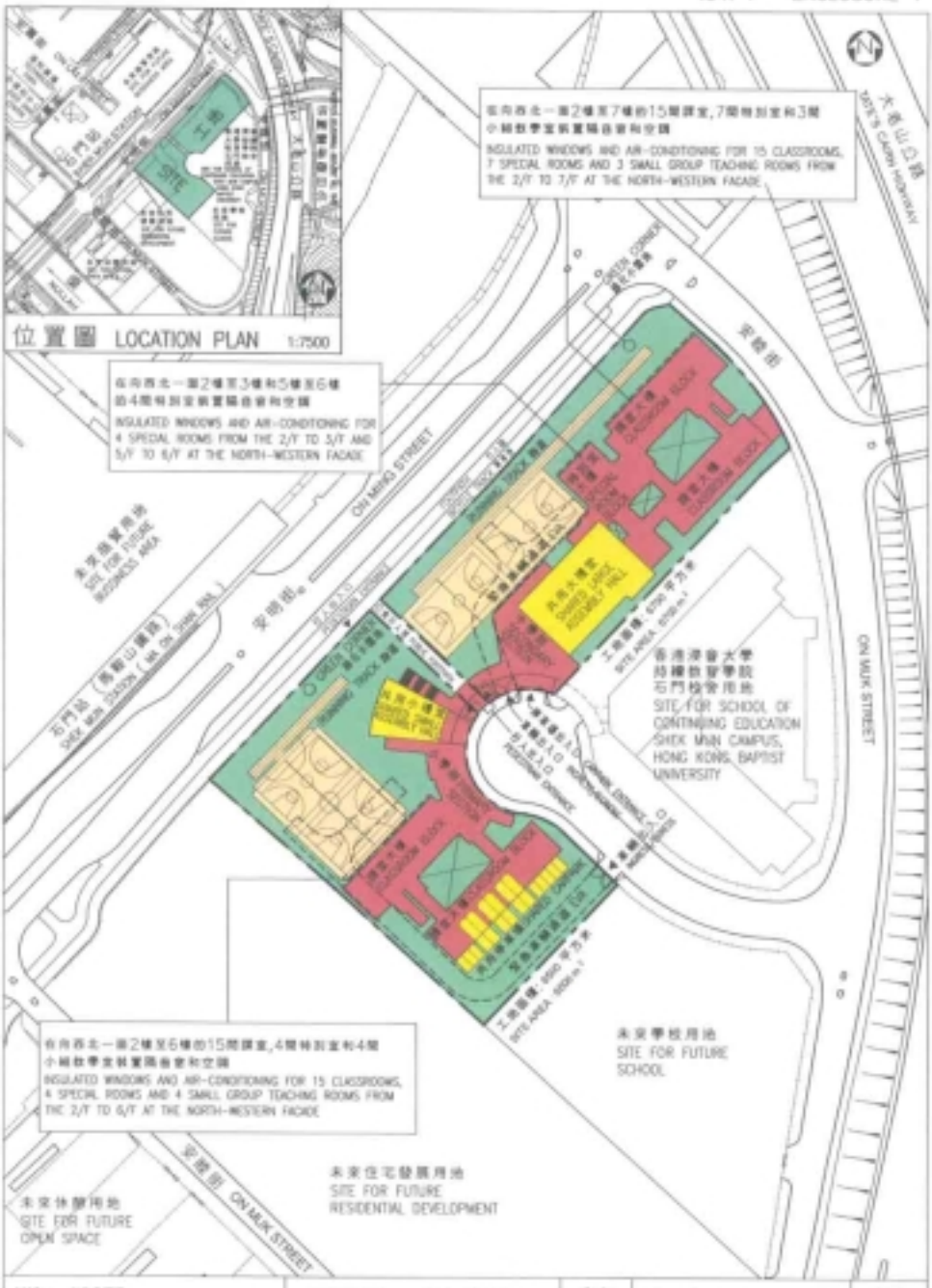
21. We upgraded **102ET** to Category B in December 2003. We engaged a term contractor to carry out site investigation in December 2003, and consultants to undertake the PER in December 2003, topographical survey in January 2004 and structural drafting in February 2004 at a total cost of $2 million. 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 consultants have completed the site investigation, PER and topographical survey of the project. The consultants are finalising the structural drafting. D Arch S is finalising the detailed design and tender documents with in-house staff resources.

22. The proposed construction of the school 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 200 square metres of grassed area.

23. We estimate that the proposed works will create about 245 jobs (228 for labourers and another 17 for professional/technical staff) providing a total employment of 4 400 man-months.

Education and Manpower Bureau
April 2004

附件 1　ENCLOSURE 1



title 102ET 沙田第11區的1所直接資助計劃學校(中學暨小學) A DIRECT SUBSIDY SCHEME SCHOOL (SECONDARY-CUM-PRIMARY) IN AREA 11, SHA TIN	drawn by S. L. CHEUNG	date 04.2004	drawing no. AB/6848/XB501	scale 1:1500
	approved ANDREW SUNG	date 04.2004		
	office ARCHITECTURAL BRANCH		ARCHITECTURAL SERVICES DEPARTMENT	

從西面望向校舍的構思圖（鳥瞰視像）
VIEW OF THE SCHOOL PREMISES FROM WESTERN DIRECTION
(ARITIST'S IMPRESSION – BIRD'S EYE VIEW)

從西面望向校舍的構思圖（街道視像）
VIEW OF THE SCHOOL PREMISES FROM WESTERN DIRECTION
(ARITIST'S IMPRESSION – STREET VIEW)

title 102ET 沙田第11區的1所直接資助計劃學校（中學暨小學） A DIRECT SUBSIDY SCHEME SCHOOL (SECONDARY-CUM-PRIMARY) IN AREA 11, SHA TIN	drawn by S. L. CHEUNG	date 04.2004	drawing no. AB/6848/XB502	scale N.T.S.
	approved ANDREW SUMO	date 04.2004		
	office ARCHITECTURAL BRANCH		ARCHITECTURAL SERVICES DEPARTMENT	

Enclosure 3 to PWSC(2004-05)9

A comparison of the reference cost of a secondary school project with the estimated cost of the secondary section of 102ET

$ million (in Sept 2003 prices)

		Reference cost*	**Secondary section**	
(a)	Piling	9.5	23.8	(See note A)
(b)	Building	52.5	66.1	(See note B)
(c)	Building services	13.9	18.6	(See note C)
(d)	Drainage and external works	11.3	11.3	
(e)	Contingencies	8.7	12.0	
	Total	95.9	131.8	
(f)	Construction floor area	12 238 m^2	15 500 m^2	
(g)	Construction unit cost {[(b) + (c)] ÷ (f)}	$5,426/$m^2$	$5,465/$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 the ground conditions require the use of 34 large diameter bored piles at an average depth of 34 metres. The use of large diameter bored piles instead of percussive steel H-piles is due to the dramatic change from weak soil to rock stratum underneath the site which provides inadequate side restraint to the slender H-piles. Longer piles are used because the large diameter bored piles are required to be founded on the bed rock which is on average 34 metres below ground 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.

Enclosure 4 to PWSC(2004-05)9

A comparison of the reference cost of a 30-classroom primary school project with the estimated cost of the primary section of 102ET

$ million (in Sept 2003 prices)

		Reference cost*	Primary section	
(a)	Piling	8.0	18.9	(See note A)
(b)	Building	43.3	48.7	(See note B)
(c)	Building services	11.5	13.9	(See note C)
(d)	Drainage and external works	10.0	10.0	
(e)	Contingencies	7.2	9.2	
	Total	80.0	100.7	
(f)	Construction floor area	10 727 m^2	11 500 m^2	
(g)	Construction unit cost {[(b) + (c)] ÷ (f)}	$5,109/$m^2$	$5,443/$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 the ground conditions require the use of 27 large diameter bored piles at an average depth of 34 metres. The use of large diameter bored piles instead of percussive steel H-piles is due to the dramatic change from weak soil to rock stratum underneath the site which provides inadequate side restraint to the slender H-piles. Longer piles are used because the large diameter bored piles are required to be founded on the bed rock which is on average 34 metres below ground 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.