For discussion **PWSC(2002-03)56**
on 26 June 2002

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 703 – BUILDINGS
Education – Primary
301EP – A 24-classroom primary school at Hing Ping Road, Tuen Mun
312EP – A 24-classroom primary school at San Ha Street, Chai Wan

Members are invited to recommend to Finance Committee the upgrading of **301EP** and **312EP** to Category A at an estimated cost of $94.8 million and $80.1 million respectively in money-of-the-day prices for the construction of a 24-classroom primary school at Hing Ping Road, Tuen Mun and another at San Ha Street, Chai Wan.

PROBLEM

We need to reprovision the Hing Tak Public School in Tuen Mun which is to be demolished to make way for the construction of the Deep Bay Link. We also need to provide additional primary schools to implement 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 $174.9 million in money-of-the-day (MOD) prices –

/(a) …..

		Project estimate $ million (MOD)
(a)	**301EP** – A 24-classroom primary school at Hing Ping Road, Tuen Mun	94.8
(b)	**312EP** – A 24-classroom primary school at San Ha Street, Chai Wan	80.1
	Total	174.9

PROJECT SCOPE AND NATURE

3. The proposed projects are for the construction of two primary schools. Each school will have the following facilities –

(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 and a staff common room;

(g) a student activity centre;

(h) a conference room;

(i) a library;

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

(k) a multi-purpose area;

/(l) …..

(l) two basketball courts (one on ground level and the other at the rooftop of the assembly hall block);

(m) a green corner[1]; and

(n) ancillary accommodation including a lift and relevant facilities for the handicapped.

Both projects will meet the planning target of providing two square metres of open space per student. The site plans for **301EP** and **312EP** are at Enclosures 1 and 2 respectively. D Arch S plans to start construction works for both projects in December 2002 for completion in July 2004.

JUSTIFICATION

4. The Government's interim target is to enable 60% of our primary school students to study in whole-day schools in the 2002/03 school year. To achieve this target, 78 new primary schools are required between the 1998/99 and the 2002/03 school years. To date, 55 schools have already been completed, and the remaining 23 are at various stages of construction.

5. The Government is further committed to enabling virtually all primary school students to study in whole-day schools by the 2007/08 school year. To this end, the Director of Education (D of E) plans to construct another 46[2] new schools between the 2003/04 and the 2007/08 school years. To date, 16 new school projects have already been upgraded to Category A. **301EP** and **312EP** will help achieve this policy target. Two other 36-classroom schools, covered in **274EP** and **289EP**, will also be considered by Members at this meeting (see paper referenced PWSC(2002-03)51 and PWSC(200-03)52).

/***301EP*** *…..*

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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.

[2] The figure has not taken into account the primary school places provided by **8029EC** "A private independent school at Po Kong Village Road, Wong Tai Sin". We will further review the figure in due course.

301EP – A 24-classroom primary school at Hing Ping Road, Tuen Mun

6. The existing Hing Tak Public School situated on Castle Peak Road, Tuen Mun, was constructed in 1954. It is currently operating six whole-day primary classes. To make way for the construction of the Deep Bay Link[3], the present school premises will be demolished in July 2003[4]. There is therefore a need to reprovision the school to a new premises.

7. More importantly, the Tuen Mun District, in which **301EP** is located, currently has 39 public sector primary schools providing 856 classrooms. D of E forecasts that 112 additional classrooms will be required for full implementation of whole-day primary schooling by the 2007/08 school year. **301EP** will help reduce the shortfall by 18 classrooms to 94. We plan to meet the projected shortfall in this district through further school construction projects.

312EP – A 24-classroom primary school at San Ha Street, Chai Wan

8. The Eastern District, in which **312EP** is located, currently has 27 public sector primary schools providing 585 classrooms. D of E forecasts that 181 additional classrooms will be required for full implementation of whole-day primary schooling by the 2007/08 school year. **312EP** will help reduce the shortfall by 24 classrooms to 157 and will enable an existing bi-sessional primary school to convert into whole-day operation. We plan to meet the projected shortfall in this district through further school construction projects.

FINANCIAL IMPLICATIONS

9. We estimate the capital costs of **301EP** and **312EP** to be $94.8 million and $80.1 million respectively in MOD prices (see paragraph 11 below), made up as follows –

/(a) …..

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[3] The Deep Bay Link is a dual three-lane carriageway linking the Shenzhen Western Corridor at its landing point in Ngau Hom Shek with the Yuen Long Highway at Lam Tei. Demolition cost of the existing school premises will be met from the cost of the Deep Bay Link project.

[4] Before the completion of **301EP** scheduled for July 2004, D of E will provide temporary accommodation for Hing Tak Public School. Removal cost of the school will be met from the cost of the Deep Bay Link project.

		$ million		
		301EP	**312EP**	
(a)	Demolition[5]	3.0	–	
(b)	Site formation	8.0	–	
(c)	Piling	12.7	10.0	
(d)	Building	38.5	38.5	
(e)	Building services	13.5	13.5	
(f)	Drainage and external works	8.0	8.1	
(g)	Furniture and equipment[6]	4.3	4.3	
(h)	Contingencies	8.4	7.0	
	Sub-total	96.4	81.4	(in September 2001 prices)
(i)	Provision for price adjustment	(1.6)	(1.3)	
	Total	94.8	80.1	(in MOD prices)

10. The construction floor area (CFA) of both **301EP** and **312EP** is 9 129 square metres. The estimated construction unit cost for both projects, represented by the building and building services costs, is $5,696 per square metre of CFA in September 2001 prices. D Arch S considers the estimated construction unit costs 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 **301EP** and **312EP** is at Enclosure 3.

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[5] For demolition of temporary structure on the site of **301EP**.

[6] Based on a standard furniture and equipment list prepared by Education Department for "Year 2000 design" school. For **301EP**, we will review the condition of the existing furniture and equipment of the school near the completion of the new school premises. If some of the existing furniture and equipment are in good condition and could be transferred to the new premises, we will adjust the cost for furniture and equipment accordingly.

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

Year	$ million (Sept 2001)		Price adjustment factor	$ million (MOD)	
	301EP	**312EP**		**301EP**	**312EP**
2002 – 03	5.0	4.0	0.98625	4.9	3.9
2003 – 04	36.6	32.0	0.98378	36.0	31.5
2004 – 05	42.4	34.4	0.98378	41.7	33.8
2005 – 06	10.4	9.0	0.98378	10.2	8.9
2006 – 07	2.0	2.0	0.98378	2.0	2.0
	96.4	81.4		94.8	80.1

12. We derived the MOD estimates on the basis of the Government's latest forecast of trend labour and construction prices for the period 2002 to 2007. We will deliver the works through fixed-price lump-sum contracts 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.

13. For **301EP**, the cost of furniture and equipment, estimated to be $4.3 million, will be borne by the Government as the school is used to reprovision an existing school which is to be demolished to make way for the construction of the Deep Bay Link. For **312EP**, the estimated cost of furniture and equipment of $4.3 million will also be borne by the Government because, in line with the existing policy, the school will enable an existing bi-sessional school to convert into whole-day operation.

14. We estimate the annual recurrent expenditure for each school to be $18.4 million.

PUBLIC CONSULTATION

15. We consulted the Tuen Mun District Council on **301EP** and the Eastern District Council on **312EP** on 12 and 14 March 2002 respectively. Members of both Councils supported the projects.

/ENVIRONMENTAL …..

ENVIRONMENTAL IMPLICATIONS

16. We engaged consultants to conduct Preliminary Environmental Reviews (PERs) for **301EP** and **312EP** in November 2001 and January 2002 respectively. The PERs concluded that the schools 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 recommended in the Hong Kong Planning Standards and Guidelines –

Project no.		Mitigation measures	Estimated cost $ million (in Sept 2001 prices)
301EP	(a)	Provision of insulated windows and air-conditioning to 24 classrooms and four small group teaching rooms from the 1/F to the 6/F at the northern façade of the classroom block	2.6
	(b)	Provision of insulated windows and air-conditioning to four special rooms on the 2/F and the 3/F at the eastern façade of the assembly hall block	0.6
	(c)	Construction of a three-metre high boundary wall at the northern and eastern sides of the school site	0.2
312EP	(d)	Provision of insulated windows and air-conditioning to 24 classrooms and four small group teaching rooms from the 1/F to the 6/F at the northern façade of the classroom block	2.6
	(e)	Provision of insulated windows and air-conditioning to four special rooms on the 2/F and the 3/F at the eastern façade of the assembly hall block	0.6
	(f)	Construction of a two-metre high boundary wall at the northern and eastern sides of the school site	0.3

We have included the costs of the above mitigation measures as part of the building services and external works in the respective project estimates.

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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 site, 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 site 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. The contractors will be required to separate public fill from C&D waste for disposal at appropriate facilities. We will record the disposal, reuse and recycling of C&D materials for monitoring purposes. We estimate that each project will generate about 2 500 cubic metres (m^3) of C&D materials. Of these, we will reuse about 1 600 m^3 (64%) on site, 500 m^3 (20%) as fill in public filling areas[7], and dispose of 400 m^3 (16%) at landfills. The notional cost of accommodating C&D waste at landfill sites is estimated to be $50,000 for each project (based on a notional unit cost[8] of $125/$m^3$).

/LAND …..

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[7] 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.

[8] 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. Both projects do not require land acquisition.

BACKGROUND INFORMATION

21. We upgraded **301EP** and **312EP** to Category B in November 2001 and April 2002 respectively. We engaged consultants to carry out PERs and employed term contractors to carry out topographical surveys as well as site investigations for both projects at the following dates and costs –

Project no.	PER	Topographical survey	Site investigation	Total cost
301EP	November 2001	March 2002	February 2002	$935,000
312EP	January 2002	December 2001	April 2002	$900,000

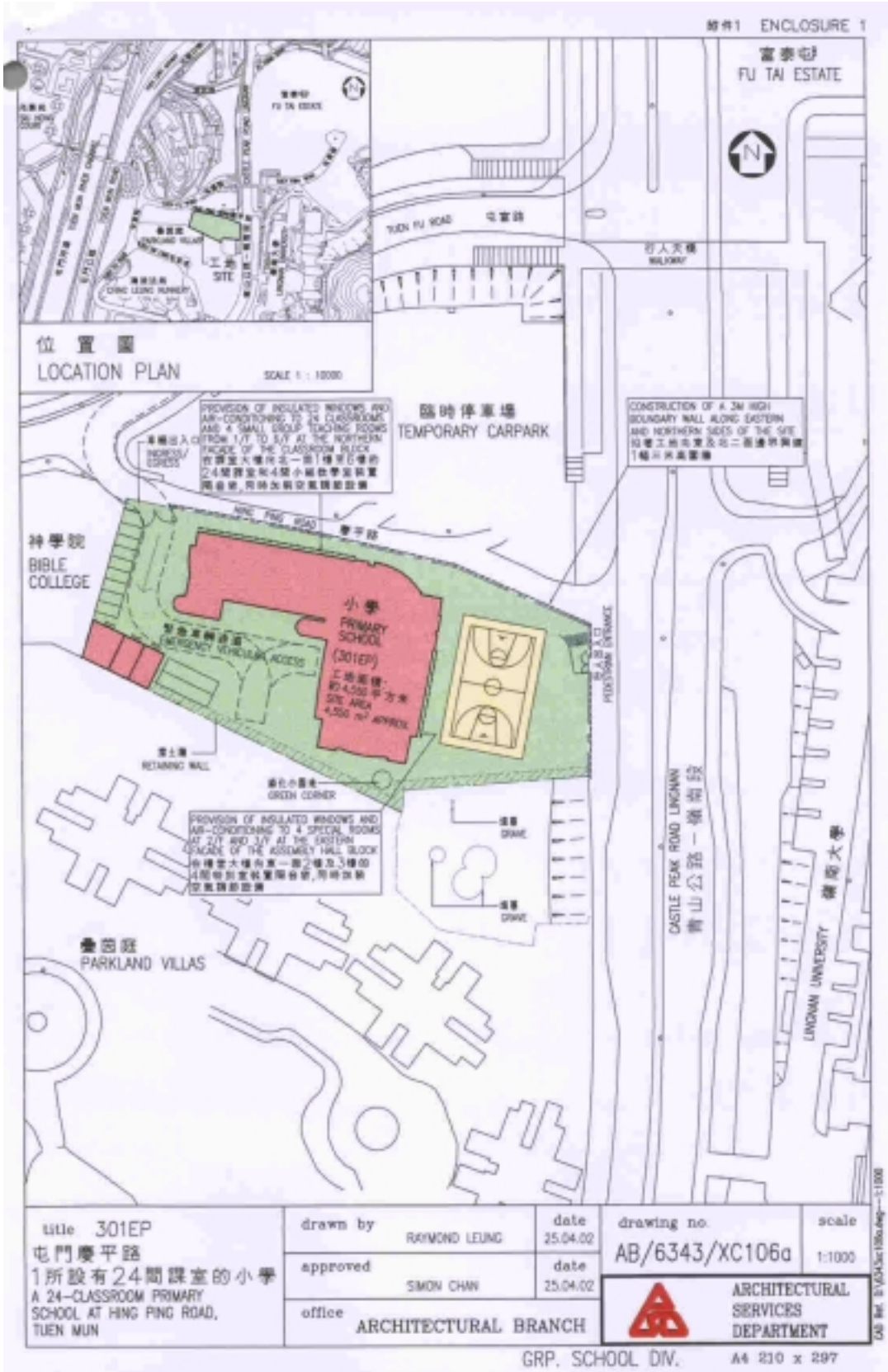
We charged these to block allocation **Subhead 3100GX** "Project feasibility studies, minor investigations and consultants' fees for items in Category D of the Public Works Programme". The consultants and the term contractors have completed the PERs, topographical surveys and site investigations respectively. D Arch S has completed detailed designs and tender documents of the projects with in-house staff resources.

22. We estimate that the proposed works will create the following job opportunities during the construction period –

Project no.	Professional staff	Technical staff	Labourer	Total no. of staff	Total man-months
301EP	2	3	115	120	2 140
312EP	2	3	95	100	1 850

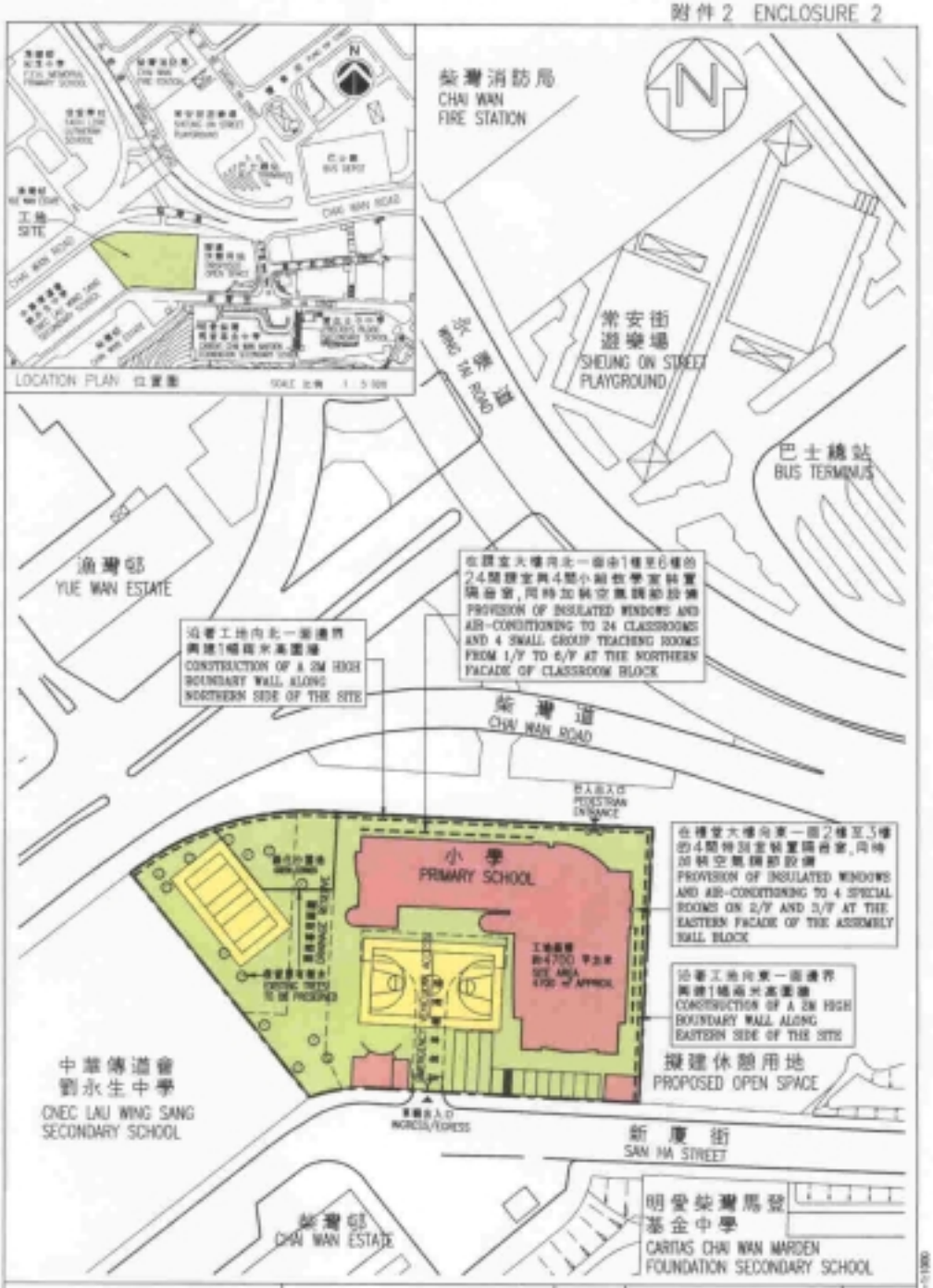
Education and Manpower Bureau
June 2002

附件1 ENCLOSURE 1



title 301EP 屯門慶平路 1所設有24間課室的小學 A 24-CLASSROOM PRIMARY SCHOOL AT HING PING ROAD, TUEN MUN	drawn by RAYMOND LEUNG	date 25.04.02	drawing no. AB/6343/XC106a	scale 1:1000
	approved SIMON CHAN	date 25.04.02	ARCHITECTURAL SERVICES DEPARTMENT	
	office ARCHITECTURAL BRANCH GRP. SCHOOL DIV.			A4 210 x 297

附件 2 ENCLOSURE 2



title (312 EP) 柴灣新廈街1所設有24間課室的小學 A 24-CLASSROOM PRIMARY SCHOOL AT SAN HA STREET, CHAI WAN	drawn by KARRY KAN	date 04/2002	drawing no. AB/6547/XA401	scale 1:1000
	approved MS. J. CHAN	date 04/2002		
	office ARCHITECTURAL BRANCH		ARCHITECTURAL SERVICES DEPARTMENT	

A comparison of the reference cost of a 24-classroom primary school project with the estimated costs of 301EP and 312EP

$ million (in Sept 2001 prices)

		Reference cost*	301EP	312EP	
(a)	Demolition	–	3.0	–	(See note A)
(b)	Site formation	–	8.0	–	(See note A)
(c)	Piling	8.0	12.7	10.0	(See note B)
(d)	Building	41.6	38.5	38.5	(See note C)
(e)	Building services	11.7	13.5	13.5	(See note D)
(f)	Drainage and external works	7.8	8.0	8.1	(See note E)
(g)	Furniture and equipment	–	4.3	4.3	(See note F)
(h)	Contingencies	6.9	8.4	7.0	
	Total	76.0	96.4	81.4	
(i)	Construction floor area	9 129 m^2	9 129 m^2	9 129 m^2	
(j)	Construction unit cost {[(d) + (e)] ÷ (i)}	\$5,839/m^2	\$5,696/m^2	\$5,696/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 101 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 24-classroom primary school site area of 4 700 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. For **301EP**, additional cost is required for demolition of temporary structure on site and carrying out site formation to provide level platforms on this sloping site. Additional cost is also required for the diversion of underground electrical and telephone services, which are presently routed within the site boundary.

B. For **301EP**, the piling cost is higher because it is based on the use of 20 numbers of large diameter bored piles with an average depth of 50 metres instead of the use of 101 numbers of steel H-piles at an average depth of 30 metres assumed for the reference cost. Bored piles are required because of the substantial depth of the bedrock level and also because of the close proximity to existing residential buildings.

   For **312EP**, the piling cost is also higher because it is based on the use of 165 numbers of steel H-piles at an average depth of 29 metres. Additional piles are required due to negative skin friction resulting from the presence of a thick layer of marine deposit.

C. For both **301EP** and **312EP**, the estimated building cost is lower taking into account lower tender returns for schools in the last two quarters.

D. For both **301EP** and **312EP**, the building services cost is higher because of the provision of air-conditioning as a noise mitigation measure. Lower tender returns for schools in the last two quarters have also been accounted for.

E. For **301EP**, the drainage and external works costs are higher because of the construction of a three-metre high boundary wall as a noise mitigation measure.

For **312EP**, the drainage and external works costs are higher because of the construction of a two-metre high boundary wall as a noise mitigation measure.

F. For **301EP**, the cost of furniture and equipment, estimated to be $4.3 million, will be borne by the Government as the school is used to reprovision an existing school which is to be demolished to make way for the construction of the Deep Bay Link.

For **312EP**, the cost of furniture and equipment, also estimated to be $4.3 million, will be borne by the Government as the school would be allocated to an existing bi-sessional school for conversion into whole-day operation.