For discussion **PWSC(2002-03)21**
on 8 May 2002

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 703 – BUILDINGS
Education – Secondary
249ES – Secondary school at Lai Hong Street, Sham Shui Po
253ES – Secondary school at Hing Wah Street West, Sham Shui Po

Members are invited to recommend to Finance Committee the upgrading of **249ES** and **253ES** to Category A at an estimated cost of $98.8 million each in money-of-the-day prices for the construction of one secondary school at Lai Hong Street and another at Hing Wah Street West, Sham Shui Po.

PROBLEM

We do not have enough secondary schools to meet the increase in demand for new school places by the school year 2004/05.

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 $197.6 million in money-of-the-day (MOD) prices –

/(a) …..

			Project estimate $ million (MOD)
(a)	**249ES** –	Secondary school at Lai Hong Street, Sham Shui Po	98.8
(b)	**253ES** –	Secondary School at Hing Wah Street West, Sham Shui Po	98.8
		Total	197.6

PROJECT SCOPE AND NATURE

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

(a) 30 classrooms;

(b) 16 special rooms, including a computer-assisted learning room and a language 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, 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);

(l) a multi-purpose area;

/(m) …..

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

(n) a green corner[1]; and

(o) 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 **249ES** and **253ES** are at Enclosures 1 and 2 respectively. D Arch S plans to start the construction works for both projects in November 2002 for completion in July 2004.

JUSTIFICATION

4. The Director of Education (D of E) forecasts that 369[2] additional secondary school classes will be required in the territory by the school year 2004/05 to meet the increase in demand for new places. The proposed projects will provide a total of 60 classrooms, and together with another four projects providing a total of 120 classrooms[3], the shortfall of secondary school classes will be reduced to 189 classrooms. We plan to meet the projected shortfall through further school construction projects.

FINANCIAL IMPLICATIONS

5. We estimate the capital costs of **249ES** and **253ES** to be $98.8 million each in MOD prices (see paragraph 6 below), made up as follows –

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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 secondary 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.

[3] At the Public Works Subcommittee meeting on 17 April 2002, Members agreed to recommend to the Finance Committee the upgrading of **230ES**, **246ES**, **247ES** and **248ES** to Category A. The Finance Committee will consider the recommendations on 10 May 2002.

		$ million	
(a)	Piling	13.3	
			/(b) …..
(b)	Building	50.2	
(c)	Building services	17.3	
(d)	Drainage and external works	10.5	
(e)	Contingencies	9.1	
	Sub-total	100.4	(in September 2001 prices)
(f)	Provision for price adjustment	(1.6)	
	Total	98.8	(in MOD prices)

The construction floor area (CFA) for each school under **249ES** and **253ES** is 12 238 square metres. The estimated construction unit cost of each school, represented by the building and building services costs, is $5,516 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 secondary school based on an uncomplicated site with no unusual environmental or geotechnical constraints with the estimated costs for **249ES** and **253ES** is at Enclosure 3.

6. Subject to approval, we will phase the expenditure of each of the two schools as follows –

Year	**$ million (Sept 2001)**	**Price adjustment factor**	**$ million (MOD)**
2002 – 03	7.0	0.98625	6.9
2003 – 04	39.6	0.98378	39.0
2004 – 05	41.2	0.98378	40.5
2005 – 06	10.5	0.98378	10.3
2006 – 07	2.1	0.98378	2.1
	100.4		98.8

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/7. …..

7. 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 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.

8. The cost of furniture and equipment[4] for **249ES** and **253ES**, estimated to be $9.4 million for each school, will be borne by the school sponsors as the schools will meet increase in demand for school places. This is in line with the existing policy.

9. We estimate the annual recurrent expenditure for each school under **249ES** and **253ES** to be $40.9 million.

PUBLIC CONSULTATION

10. We consulted the Sham Shui Po District Council on both projects on 9 April 2002. Members supported the projects.

ENVIRONMENTAL IMPLICATIONS

11. We conducted Preliminary Environmental Reviews (PERs) for **249ES** and **253ES** in October 2001. 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)
249ES	(a) Provision of insulated windows and air-conditioning to 30 classrooms and one small group teaching room from the 1/F to the 6/F at the south-eastern façade of the classroom block	2.4

/(b) …..

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[4] Based on a standard furniture and equipment list prepared by Education Department for "Year 2000 design" school.

Project no.	Mitigation measures	Estimated cost $ million (in Sept 2001 prices)
	(b) Provision of insulated windows and air-conditioning to one small group teaching room and one multi-purpose room on the 1/F at the north-eastern and north-western façades of the assembly hall block	0.2
	(c) Provision of insulated windows and air-conditioning to 13 special rooms from the 1/F to the 6/F at the north-eastern, north-western and south-western façades of the special room block	1.9
253ES	(d) Provision of insulated windows and air-conditioning to 30 classrooms and one small group teaching room from the 1/F to the 6/F at the north-western façade of the classroom block	2.4
	(e) Provision of insulated windows and air-conditioning to one small group teaching room and one multi-purpose room on the 1/F at the north-eastern and south-eastern façades of the assembly hall block	0.2
	(f) Provision of insulated windows and air-conditioning to 12 special rooms and one small group teaching room from the 1/F to the 6/F at the north-eastern, south-eastern and south-western façades of the special room block	1.9

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

12. 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.

/13. …..

13. 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 project 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 contractor to use metal site hoardings and signboards so that these materials can be recycled or reused in other projects.

14. D Arch S will require the contractor to submit a waste management plan (WMP) for approval. The WMP 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 WMP. 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 contractor 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 school will generate about 3 250 cubic metres (m^3) of C&D materials. Of these, we will reuse about 2 100 m^3 (64.6%) on site, 650 m^3 (20.0%) as fill in public filling areas[5] and dispose of 500 m^3 (15.4%) at landfills. The notional cost of accommodating C&D waste at landfill sites is estimated to be $62,500 for each school (based on a notional unit cost[6] of $125/$m^3$).

LAND ACQUISITION

15. The projects do not require land acquisition.

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[5] 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.

[6] 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.

/BACKGROUND …..

BACKGROUND INFORMATION

16. We upgraded **249ES** and **253ES** to Category B in February and April 2002 respectively. We engaged consultants to carry out PERs and topographical surveys and also employed term contractors to carry out site investigations for the two projects at the following dates and costs –

Project no.	PER	Topographical survey	Site investigation	Total cost
249ES	October 2001	January 2002	February 2002	$1,000,000
253ES	October 2001	January 2002	January 2002	$1,020,000

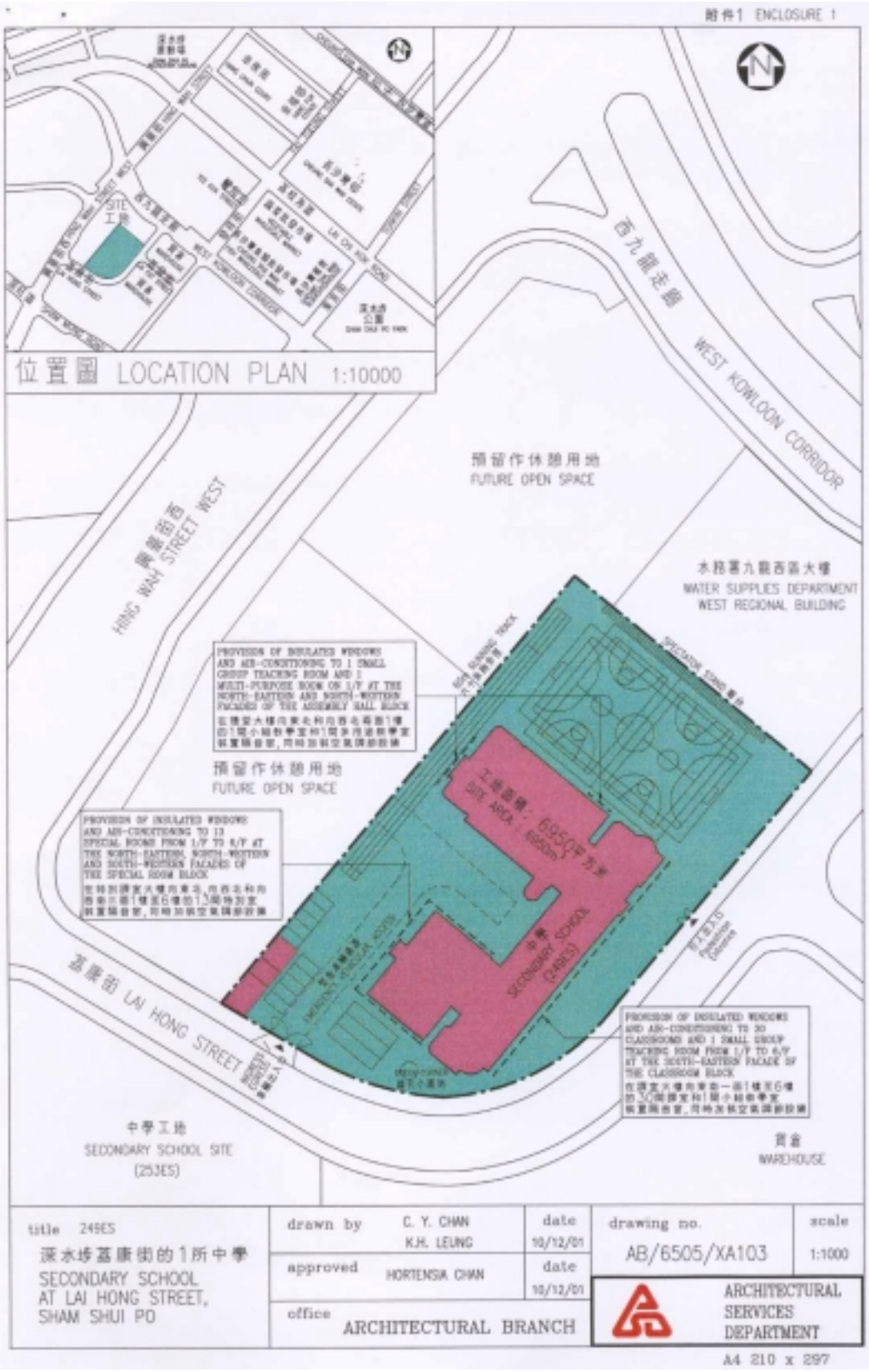
We charged these amounts to block allocation **Subhead 3100GX** "Project feasibility studies, minor investigations and consultants' fees for items in Category D of the Public Works Programme". The consultants and the term contractors have completed the PERs, topographical surveys and site investigations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

17. 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
249ES	2	6	145	153	2 892
253ES	2	6	145	153	2 892

Education and Manpower Bureau
April 2002

附件1 ENCLOSURE 1



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	approved HORTENSIA CHAN	date 10/12/01	ARCHITECTURAL SERVICES DEPARTMENT	
	office ARCHITECTURAL BRANCH			

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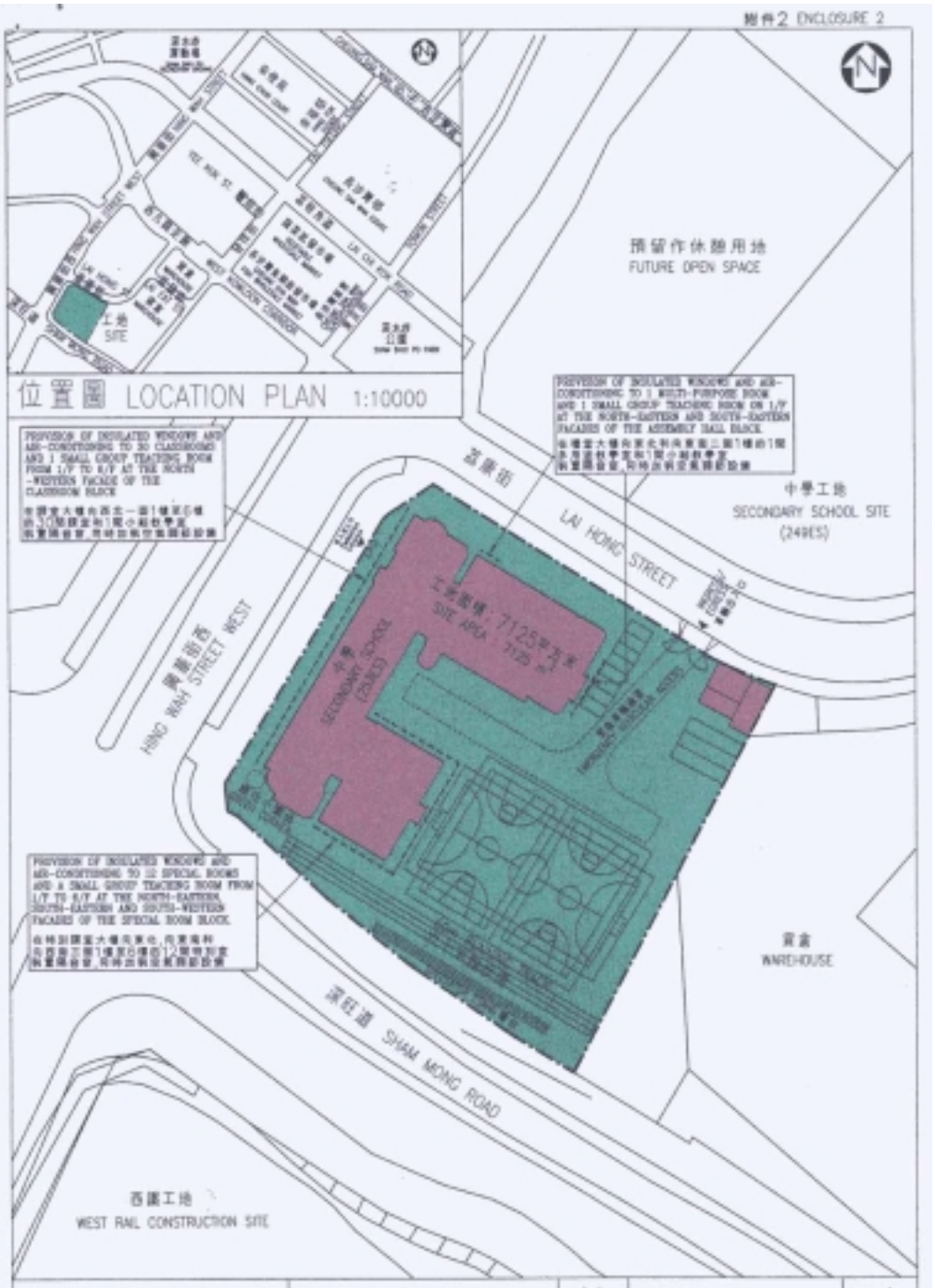
附件2 ENCLOSURE 2



title 25SE5 深水埗興華街西的1所中學 SECONDARY SCHOOL AT HING WAH STREET WEST, SHAM SHUI PO	drawn by K.M. YAM	date 04/02/02	drawing no. AB/6506/XA201	scale 1:1000
	approved LOUISA MENG	date 04/02/02		
	office ARCHITECTURAL BRANCH		ARCHITECTURAL SERVICES DEPARTMENT	

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Enclosure 3 to PWSC(2002-03)21

A comparison of the reference cost of a secondary school project with the estimated costs of 249ES and 253ES

		$ million (in Sept 2001 prices)		
		Reference cost*	**249ES** and **253ES** (each school)	
(a)	Piling	11.0	13.3	(See note A)
(b)	Building	54.9	50.2	(See note B)
(c)	Building services	14.3	17.3	(See note C)
(d)	Drainage and external works	10.5	10.5	
(e)	Contingencies	9.0	9.1	
	Total	99.7	100.4	
(f)	Construction floor area	12 238 m^2	12 238 m^2	
(g)	Construction unit cost {[(b) + (c)] ÷ (f)}	\$5,655/m^2	\$5,516/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 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 "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 both **249ES** and **253ES**, the piling costs are higher because they are based on the use of 205 numbers of steel H-piles at an average depth of 40 metres instead of 138 numbers of steel H-piles at an average depth of 30 metres assumed for the reference cost. Additional and longer piles are required as the sites are on reclaimed land with the presence of marine deposit and clay alluvium and also because the rock head level is deeper. Lower tender returns for schools in the last two quarters have also been accounted for.

B. For both **249ES** and **253ES**, the estimated building cost is lower taking into account lower tender returns for schools in the last two quarters.

C. For both **249ES** and **253ES**, the building services costs are higher because of the provision of air-conditioning as noise mitigation measures. Lower tender returns for schools in the last two quarters have also been accounted for.