For discussion **PWSC(2000-01)56**
on 8 November 2000

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 711 - HOUSING
Education - Secondary
170ES - Secondary school in Area 109, Tin Shui Wai

Education - Primary
267EP - Primary school in Area 109, Tin Shui Wai

Members are invited to recommend to Finance Committee the upgrading of **170ES** and **267EP** to Category A at an estimated cost of $113.1 million and $102.2 million respectively in money-of-the-day prices for the construction of a secondary school and a primary school in Area 109, Tin Shui Wai.

PROBLEM

We do not have enough secondary schools and primary schools to meet the increase in demand for new school places by the school year 2002/03. 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 Housing and the Secretary for Education and Manpower, proposes to upgrade the following projects to Category A at an estimated total cost of $215.3 million in money-of-the-day (MOD) prices -

/ (a) .....

			Project Estimate $ million (MOD)
(a)	**170ES -**	Secondary school in Area 109, Tin Shui Wai	113.1
(b)	**267EP**	Primary school in Area 109, Tin Shui Wai	102.2
		Total	215.3

PROJECT SCOPE AND NATURE

3. The proposed schools are located in Area 109, Tin Shui Wai. The school buildings will adopt standard school design with shared facilities as follows -

Standard facilities

		170ES (secondary school)	**267EP (primary school)**
(a)	classrooms;	30	30
(b)	special rooms, including a computer-assisted learning room and a language room;	16	6
(c)	remedial teaching rooms;	3	4
(d)	guidance activity/interview room;	1	1
(e)	interview rooms;	2	2
(f)	staff rooms;	2	2
(g)	staff common room;	1	1
(h)	student activity centre;	1	1

/ (i) .....

		170ES (secondary school)	**267EP (primary school)**
(i)	conference room;	1	1
(j)	library;	1	1
(k)	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);	1	1
(l)	multi-purpose area;	1	1
(m)	basketball courts (inclusive of one on ground level and a further one at the rooftop of the assembly hall block);	2	2
(n)	ancillary accommodation including a lift and relevant facilities for the handicapped;	yes	yes

Shared facilities

(o) a mini-soccer pitch;

(p) a parking lot with 16 carparking spaces and six bus parking spaces; and

(q) a 100-metre running track.

The proposed projects will be able to meet the planning target of providing two square metres of open space per student. A site plan for the schools is at Enclosure 1. D Arch S plans to start construction works in January 2001 for completion in July 2002.

/ **JUSTIFICATION** .....

JUSTIFICATION

4. With the further development of Tin Shui Wai New Town, its population will increase from the current 150,000 to 250,000 in 2002 resulting in a shortfall of schools.

170ES - Secondary school in Area 109, Tin Shui Wai

5. The Director of Education (D of E) forecasts that 139 additional secondary classrooms will still be required in the territory by the school year 2002/03 to meet the increase in demand for new places. **170ES**, together with another project **237ES**, to be considered by Members at this meeting (see paper referenced PWSC(2000-01)53), will further provide a total of 60 classrooms. We plan to meet the projected shortfall in future through further school construction projects.

267EP - Primary school in Area 109, Tin Shui Wai

6. To meet the increase in demand for primary school places and to help achieve the policy target of enabling 60% of pupils in public sector schools to study on a whole-day basis by the school year 2002/03, D of E originally planned to build 73 new primary schools for completion between August 1998 and August 2002. Pursuant to the latest projection on population distribution[1] which indicates that further primary school places will need to be provided in certain districts in order to meet the 60% whole-day primary schooling target, D of E now plans to build five additional schools on top of the 73 schools mentioned above, making up a total of 78 schools for completion by the school year 2002/03. To date, 36 of these 78 schools have been completed, and another 32 schools are at various stages of construction. Another five projects **252EP, 268EP**, **276EP, 286EP** and **287EP**, will also be considered by Members at this meeting (see papers referenced PWSC(2000-01)53, PWSC(2000-01)54 and PWSC(2000-01)55).

7. Yuen Long District currently has 47 public sector primary schools providing 821 classrooms. D of E forecasts that an additional 350 classrooms will be required to meet the increase in demand for school places by the school year 2002/03. To meet this new demand, six primary school projects providing 174 classrooms for completion by the school year 2002/03 have already been

/ upgraded .....

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[1] The working group on Population Distribution under the Planning Department releases updated projection on population distribution from time to time. The latest update was released in February 2000.

upgraded to Category A and at various stages of construction. **267EP** will help to reduce the shortfall by 30 classrooms to 146 classrooms. We plan to meet the projected shortfall in future through further school construction projects.

FINANCIAL IMPLICATIONS

8. We estimate the capital costs of **170ES** and **267EP** to be $113.1 million and $102.2 million respectively in MOD prices (see paragraph 9 below), made up as follows -

		170ES	**267EP**	
		$ million		
(a)	Piling	14.3	14.8	
(b)	Building	58.7	49.9	
(c)	Building services	15.2	15.3	
(d)	Drainage and external works	10.0	9.0	
(e)	Contingencies	9.8	8.9	
	Sub-total	108.0	97.9	(in September 2000 prices)
(f)	Provisions for price adjustment	5.1	4.3	
	Total	113.1	102.2	(in MOD prices)

The construction floor area for **170ES** and **267EP** is 12 238 square metres and 10 727 square metres respectively. The respective construction unit costs of these schools, represented by building and building services costs, are $6,039 per square metre and $6,078 per square metre. D Arch S considers that the estimated construction unit costs are comparable to similar school projects built by the Government. Comparisons of the standard costs of a secondary school and a 30-classroom primary school with the estimated costs for **170ES** and **267EP** are at Enclosures 2 and 3 respectively.

9. Subject to approval, we will phase the expenditure as follows -

/ **Year**. .....

Year	$ million (Sept 2000)		Price adjustment factor	$ million (MOD)	
	170ES	**267EP**		**170ES**	**267EP**
2000 - 01	1.1	1.0	1.00000	1.1	1.0
2001 - 02	43.5	44.9	1.02550	44.6	46.0
2002 - 03	50.2	42.7	1.05627	53.0	45.1
2003 - 04	11.2	7.3	1.08795	12.2	7.9
2004 - 05	2.0	2.0	1.12059	2.2	2.2
	108.0	97.9		113.1	102.2

10. We derived the MOD estimates on the basis of Government's latest forecast of trend labour and construction prices for the period 2000 to 2005. We will tender the works under a fixed-price lump-sum contract because the construction period will be less than 21 months and we can clearly define the scope of works in advance, leaving little room for uncertainty.

11. The cost of furniture and equipment for **170ES** and **267EP**, estimated to be $9.4 million and $4.5 million resepctively, will be borne by the school sponsors as the schools will be allocated to meet increase in demand for schools places. The above arrangement for furniture and equipment cost is in accordance with established practice.

12. We estimate the annually recurrent expenditure for **170ES** and **267EP** to be $40.2 million and $23.1 million respectively.

PUBLIC CONSULTATION

13. We consulted the Yuen Long District Council in July 2000. Members of the Council supported the projects.

/ **ENVIRONMENTAL** .....

ENVIRONMENTAL IMPLICATIONS

14. We completed Preliminary Environmental Reviews (PERs) for **170ES** and **267EP** in March and October 2000 respectively. The PERs concluded that these schools would not be subject to adverse environmental impacts provided that we will implement the following environmental mitigation measures to keep the road traffic noise impact on the proposed schools within the limits stipulated in the Hong Kong Planning Standards and Guidelines -

Project No.	Mitigation Measures	Estimated Cost $ million (in September 2000 prices)
170ES	Provision of insulated windows and air-conditioning to ten classrooms, one remedial teaching room and two special rooms from the 1/F to the 6/F at the south-eastern façade of the classroom block; and	1.9
267EP	Provision of insulated windows and air-conditioning to 30 classrooms and four remedial teaching rooms from the 1/F to the 6/F at the south-western façade of the classroom block and one special room on each of the 2/F and the 3/F at the north-western façade of the special room block.	4.2

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

15. During construction, we will control noise, dust and site run-off nuisances 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, as well as frequent cleaning and watering of the site.

16. We estimate that about 400 cubic metres of public fill for **170ES** and 350 cubic metres for **267EP** will be delivered to public filling areas; and about 850 cubic metres of construction and demolition (C&D) materials for **170ES** and 760 cubic metres for **267EP** will be disposed of at landfills. Ways of minimizing the generation of C&D materials were considered at the planning and

/ design .....

design stage. We will require the contractor to implement necessary measures to minimize the generation of C&D materials and to reuse and recycle them. We will control the disposal of C&D materials to designated public filling facilities and/or landfills through a trip ticket system, and record the disposal, reuse and recycling of C&D materials for monitoring purposes.

LAND ACQUISITION

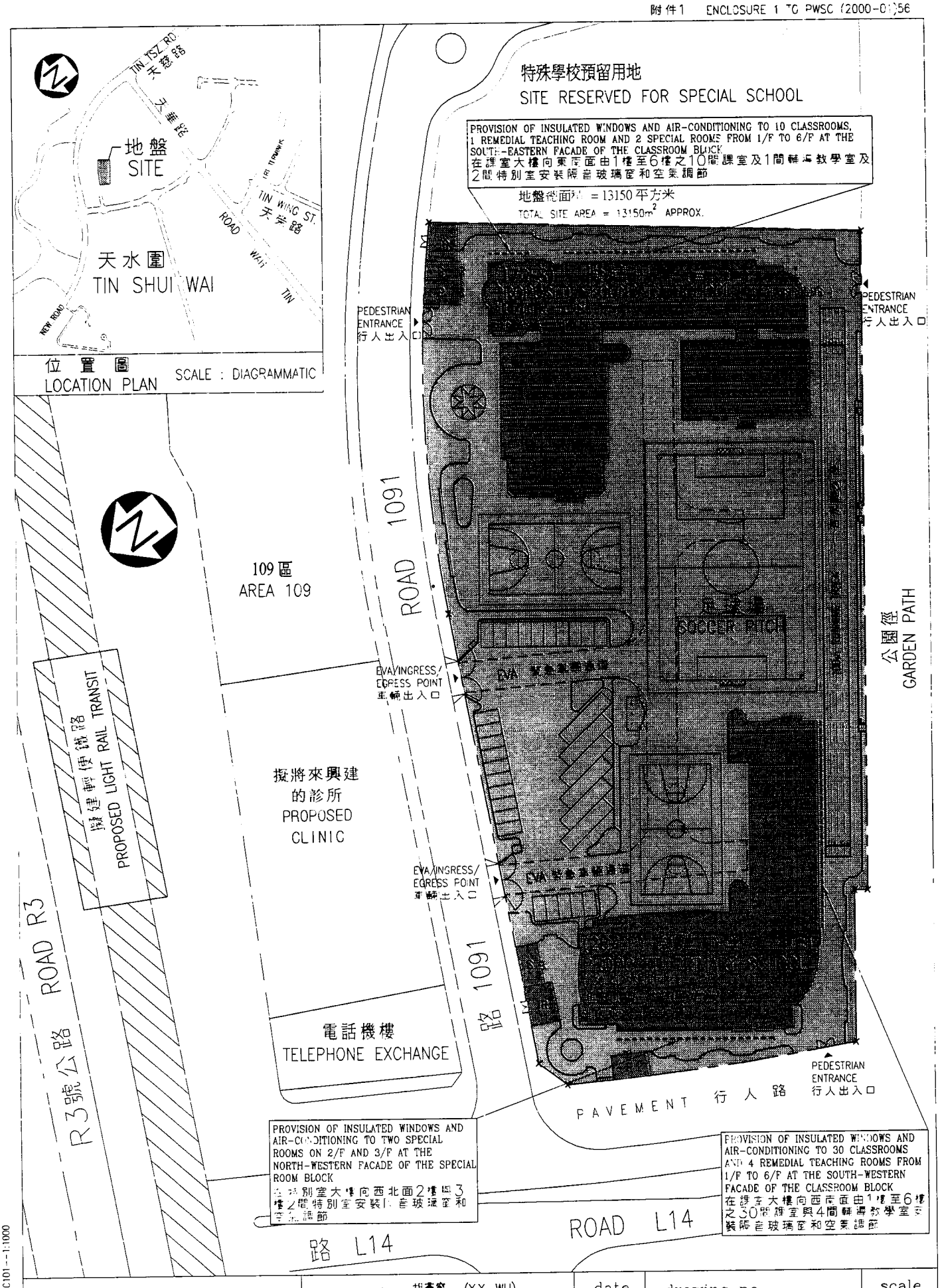
17. Neither of the two school projects requires land acquisition.

BACKGROUND INFORMATION

18. We upgraded **170ES** and **267EP** to Category B in September 2000 and September 1999 respectively. We engaged consultants to carry out PERs and topographical surveys and employed a term contractor to carry out site investigations at a cost of $950,000 and $780,000 for **170ES** and **267EP** respectively. We charged these amounts to block allocation **Subhead B100HX** "Minor housing development related works, studies and investigations for items in Category D of the Public Works Programme". The consultants and the term contractor have completed the PERs, topographical surveys and site investigations. D Arch S has completed the detailed design and has prepared the tender documents of the projects using in-house staff resources.

19. We estimate that the proposed works for **170ES** will create some 170 jobs with a total of 2 840 man-months comprising three professional staff, seven technical staff and 160 labourers; whereas the works for **267EP** will create some 150 jobs with a total of 2 535 man-months comprising three professional staff, seven technical staff and 140 labourers.

Housing Bureau
October 2000



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GRP. Schools Div. A4 210 x 297

A comparison of the standard cost of a secondary school project with the estimated cost of 170ES

		Standard cost*	170ES	
		$ million (in September 2000 prices)		
(a)	Piling	11.0	14.3	(See A below)
(b)	Building	58.5	58.7	(See B below)
(c)	Building services	13.5	15.2	(See C below)
(d)	Drainage and external works	10.0	10.0	
(e)	Contingencies	9.3	9.8	
	Total	102.3	108.0	
(f)	Construction floor area	12 238m^2	12 238m^2	
(g)	Construction unit cost {[(b)+(c)] ÷(f)}	\$5,883/m^2	\$6,039/m^2	

*** Assumptions for standard cost**

1. The estimation is based on the assumption that the school site is uncomplicated and without abnormal environmental restrictions. No allowance is reserved for specific environmental restrictions such as the provision of insulated windows, air-conditioning and solid 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 the handing-over of 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 greenfield site).

5. No consultancy services are required.

6. Furniture and equipment costs are excluded as they are usually borne by the sponsoring body.

7. The standard cost for comparison purpose is subject to review regularly. We will continue to periodically review, and revise if necessary, the standard cost which should be adopted for future projects.

Estimates for 170ES

A. The piling cost is higher because it is based on the use of 142 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 in a standard secondary school.

B. The building cost is higher because of the provision of the insulated windows as a noise mitigation measure.

C. The building services cost is higher because of the provision of air-conditioning as a noise mitigation measure.

A comparison of the standard cost of a 30-classroom primary school project with the estimated cost of 267EP

		Standard cost*	**267EP**	
		$ million (in September 2000 prices)		
(a)	Piling	9.0	14.8	(See A below)
(b)	Building	49.5	49.9	(See B below)
(c)	Building services	11.5	15.3	(See C below)
(d)	Drainage and external works	9.0	9.0	
(e)	Contingencies	7.9	8.9	
	Total	86.9	97.9	
(f)	Construction floor area	10 727m^2	10 727m^2	
(g)	Construction unit cost {[(b)+(c)] ÷(f)}	$5,687/$m^2$	$6,078/$m^2$	

*** Assumptions for standard cost**

1. The estimation is based on the assumption that the school site is uncomplicated and without abnormal environmental restrictions. No allowance is reserved for specific environmental restrictions such as the provision of insulated windows, air-conditioning and solid 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 the handing-over of the project site for school construction.

3. Piling cost is based on the use of 112 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 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 greenfield site).

5. No consultancy services are required.

6. Furniture and equipment costs are excluded as they are usually borne by the sponsoring body.

7. The standard cost for comparison purpose is subject to review regularly. We will continue to periodically review, and revise if necessary, the standard cost which should be adopted for future projects.

Notes - Estimates for 267EP

A. The piling cost is higher because it is based on the use of 131 numbers of steel H-piles at an average depth of 45 metres instead of 112 numbers of steel H-piles at average depth of 30 metres for a standard 30-classroom primary school.

B. The building cost is higher because of the provision of the insulated windows as a noise mitigation measure.

C. The building services cost is higher because of the provision of air-conditioning as a noise mitigation measure.