# ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 703 – BUILDINGS Education – Primary 354EP – A 36-classroom primary school in Area 36, Fanling

Members are invited to recommend to Finance Committee the upgrading of **354EP** to Category A at an estimated cost of \$398.4 million in money-of-the-day prices.

### **PROBLEM**

We need to reprovision Tung Wah Group of Hospitals (TWGHs) Ma Kam Chan Memorial Primary School (the School), which is accommodated in a school premises not fully meeting the prevailing standard.

### **PROPOSAL**

2. The Director of Architectural Services, with the support of the Secretary for Education, proposes to upgrade **354EP** to Category A at an estimated cost of \$398.4 million in money-of-the-day (MOD) prices for the construction of a 36-classroom primary school in Area 36, Fanling.

/PROJECT .....

## PROJECT SCOPE AND NATURE

3.	The proje	ct site is	located	between	Ching	Shing	Road	and	Ping
Kong Road	in Area 36,	Fanling.	The pro	posed sco	pe of v	vorks u	nder t	he pr	oject
includes the	following f	acilities –	_						

- (a) 36 classrooms;
- (b) nine special rooms, comprising a music room, a visual arts room, a general studies room, three multi-purpose rooms, two computer assisted learning rooms and a language room;
- (c) four small group teaching rooms;
- (d) a guidance activity room;
- (e) two interview rooms;
- (f) two staff rooms and a staff common room;
- (g) a student activity centre;
- (h) a conference room;
- (i) a library;
- (j) an assembly hall;
- (k) multi-purpose areas;
- (1) two basketball courts;
- (m) a roof playground;
- (n) a 60-metre (m) long running track<sup>1</sup>;

/(o) .....

A 60-m running track will be provided to make optimal use of campus space.

- (o) a green corner<sup>2</sup>; and
- (p) other ancillary facilities including a disabled/firemen's lift, facilities for the disabled, a tuck shop-cum-central portioning area, storerooms, toilets, etc.
- 4. To facilitate the smooth ingress/egress of school buses to the project site, the portion of Ping Kong Road immediately adjacent to the project site will be widened under the project.
- 5. The proposed school will meet the planning target of providing two square metres (m²) of open space per student. A site plan, layout plans, a sectional plan, artist's impressions, and a barrier-free access plan for the project are at Enclosures 1 to 13. Subject to funding approval of the Finance Committee, we plan to commence the construction works in December 2014 for completion in October 2016.

### **JUSTIFICATION**

- 6. The School is currently operating at a premises in Sheung Shui with a site area of about 2  $000 \text{ m}^2$  built in 1984 and was designed for a 24-classroom primary school. The existing premises is inadequate to meet the prevailing teaching and learning needs of the School currently operating 27 classes. According to the prevailing standard, the site area of a 24-classroom primary school is about  $4700 \text{ m}^2$ .
- 7. Due to site constraint, the existing school premises could only be marginally upgraded through the School Improvement Programme in 1999 and still falls short of standard provision, lacking general studies room, music room, language room, multi-purpose room and visual arts room, etc. Reprovisioning is the most effective way to improve the teaching and learning environment of the School.

/8. .....

A 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 planting beds.

8. Upon completion of the project, the School will move to the new premises with 36 classrooms in Area 36, Fanling. The reprovisioning project will upgrade the facilities of the School to meet the prevailing standard and increase the supply of primary school places in North District. The School has also indicated its willingness to operate on the basis of "one school, two premises" at the new and existing premises during the transitional period to help meet the projected transient increase in demand for public sector primary school places in the coming years, if necessary.

#### FINANCIAL IMPLICATIONS

9. We estimate the capital cost of the project to be \$398.4 million in MOD prices (please see paragraph 10 below), broken down as follows –

		\$ million	
(a)	Piling	50.9	
(b)	Building	144.8	
(c)	Building services	39.3	
(d)	Drainage <sup>3</sup>	9.1	
(e)	External works <sup>3</sup>	38.9	
(f)	Additional energy conservation, green and recycled features	6.5	
(g)	Furniture and equipment <sup>4</sup>	3.4	
(h)	Consultants' fees for	5.9	
	<ul><li>(i) contract administration</li><li>(ii) management of Resident Site Staff</li></ul>	5.6 0.3	

The estimated cost of \$5.6 million for the proposed road widening works as mentioned in paragraph 4 above has been budgeted under items (d) drainage and (e) external works.

The estimated cost of furniture and equipment (F&E) is prepared with reference to the standard F&E reference list prepared by the Education Bureau for a new 36-classroom primary school adopting the standard of accommodation. The actual cost will be determined based on a survey on the serviceability of the existing F&E which can be re-used as far as practicable.

		\$ million	
(i)	Remuneration of Resident Site Staff	6.6	
(j)	Contingencies	30.5	
	Sub-total	335.9	(in September 2013 prices)
(k)	Provision for price adjustment	62.5	<b>2</b> 010 prices)
	Total	398.4	(in MOD prices)

We propose to engage consultants to undertake contract administration and site supervision for the construction works of the project. A detailed breakdown of the estimate for consultants' fees and resident site staff costs by man-months is at Enclosure 14. The construction floor area (CFA) of the project is about 12 323 m<sup>2</sup>. The estimated construction unit cost, represented by the building and building services costs, is \$14,940 per m<sup>2</sup> of CFA in September 2013 prices. We consider this comparable to that of similar projects built by the Government. A comparison of the reference cost for a 36-classroom primary school based on an uncomplicated site with no unusual environmental or geotechnical constraints with the estimated costs for the project is at Enclosure 15.

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

Year	\$ million (Sept 2013)	Price adjustment factor	\$ million (MOD)
2014 – 15	6.0	1.05450	6.3
2015 – 16	100.0	1.11777	111.8
2016 – 17	160.0	1.18484	189.6
2017 – 18	40.0	1.25593	50.2

Year	\$ million (Sept 2013)	Price adjustment factor	\$ million (MOD)
2018 – 19	20.0	1.33128	26.6
2019 – 20	9.9	1.40117	13.9
	335.9		398.4

- 11. We have derived the MOD estimates on the basis of the Government's latest set of assumptions on the trend rate of change in the prices of public sector building and construction output for the period from 2014 to 2020. 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.
- 12. The cost of furniture and equipment for the project, estimated to be about \$3.4 million, will be borne by the Government according to the existing policy. We estimate the annual recurrent expenditure arising from the project will be \$33.4 million upon full commissioning of the new school premises.

### **PUBLIC CONSULTATION**

- 13. We consulted the Social Services, Labour and Economic Affairs Committee of the North District Council on 4 March 2014 on this reprovisioning project. Members of the Committee supported the project.
- 14. We consulted the Legislative Council Panel on Education on 12 May 2014. Members supported the project.

/ENVIRONMENTAL .....

#### ENVIRONMENTAL IMPLICATIONS

- 15. The project is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). We engaged a consultant to conduct the Preliminary Environmental Review (PER) for the project in November 2013. The PER recommended implementation of the following mitigation measures
  - (a) insulated windows and air-conditioning for the following rooms exposed to excessive traffic noise
    - (i) 19 classrooms;
    - (ii) a visual arts room, a general studies room, a language room and two small group teaching rooms; and
  - (b) solid boundary wall along the north and part of east sides.

With the mitigation measures in place, noise affecting the teaching and learning environment of the reprovisioned School as well as its surrounding residential area will be reduced to the minimum. The estimated cost of the above mitigation measures is \$8.4 million (in September 2013 prices). We have included the cost of these mitigation measures as part of the building and building services works in the project estimates in paragraph 9 above.

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 contract. These include the use of silencers, mufflers, acoustic linings or shields, barrier walls for noisy construction activities, frequent cleaning and watering of the site, and the provision of wheel-washing facilities.

- 17. At the planning and design stages, we have considered measures 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 (e.g. use of excavated materials for filling within the site) on site or in other suitable construction sites as far as possible, in order to minimise the disposal of inert construction waste at public fill reception facilities<sup>5</sup>. We will encourage the contractor to maximise the use of recycled/recyclable inert construction waste, and the use of non-timber formwork to further reduce the construction waste generated.
- 18. At the construction stage, 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 at public fill reception facilities and landfills respectively through a trip-ticket system.
- 19. We estimate that the project will generate in total about 16 426 tonnes of construction waste. Of these, we will reuse about 8 531 tonnes (51.9%) of inert construction waste on site and deliver 6 393 tonnes (38.9%) of inert construction waste to public fill reception facilities for subsequent reuse. We will dispose of the remaining 1 502 tonnes (9.2%) 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 \$0.3 million for this project (based on a unit charge rate of \$27 per tonne for disposal at public fill reception facilities and \$125 per tonne at landfills as stipulated in the Waste Disposal (Charges for Disposal of Construction Waste) Regulation).

/HERITAGE .....

Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N). Disposal of inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

### HERITAGE IMPLICATIONS

20. 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

21. The project does not require any land acquisition.

## ENERGY CONSERVATION, GREEN AND RECYCLED FEATURES

- 22. This project will adopt various forms of energy efficient features and renewable energy technologies, in particular
  - (a) heat recovery fresh air pre-conditioners in the airconditioned space for heat energy reclaim of exhaust air; and
  - (b) photovoltaic system.
- 23. For greening features, there will be landscape in the appropriate area on the main roofs and terraces for environmental and amenity benefits.
- 24. For recycled features, we will adopt rainwater collection system for landscape irrigation with a view to conserving water.
- 25. The total estimated additional cost for adoption of the above features is around \$6.5 million (including \$0.6 million for energy efficient features), which has been included in the cost estimate of this project. The energy efficient features will achieve 7.7% energy savings in the annual energy consumption with a payback period of about six years.

/BACKGROUND .....

## **BACKGROUND INFORMATION**

- We upgraded the project to Category B in September 2011. We engaged a consultant in July 2013 to undertake PER, traffic impact assessment, building environmental assessment, detailed design and preparation of tender documents; a quantity surveying consultant in February 2014 to prepare tender documents; and contractors in August 2013 to undertake topographic survey and ground investigation. The total cost of the consultancy services and works is about \$9.8 million. The services and works by the consultants and contractor are funded under 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 contractors have completed all of the above consultancy services and works.
- Of the 83 trees within the project boundary, three trees will be preserved. The proposed works will involve the removal and felling of 80 trees. All trees to be removed are not important trees<sup>6</sup>. We will incorporate planting proposals as part of the project, including the planting of about 80 trees and 43 000 shrubs.
- 28. We estimate that the proposed works will create about 208 jobs (185 for labourers and another 23 for professional/technical staff) providing a total employment of 3 750 man-months.

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Education Bureau June 2014

<sup>&</sup>lt;sup>6</sup> "Important trees" refer to trees in the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria –

<sup>(</sup>a) trees of 100 years old or above;

<sup>(</sup>b) trees of cultural, historical or memorable significance e.g. Fung Shui tree, tree as landmark of monastery or heritage monument, and trees in memory of an important person or event;

<sup>(</sup>c) trees of precious or rare species;

<sup>(</sup>d) trees of outstanding form (taking account of overall tree sizes, shape and any special features) e.g. trees with curtain like aerial roots, trees growing in unusual habitat; or

<sup>(</sup>e) trees with trunk diameter equal or exceeding 1.0 metre (m) (measured at 1.3 m above ground level), or with height/canopy spread equal or exceeding 25 m.

NORTH DISTRICT 丙崗路 HOSPITAL 北區醫院 CHEUNG LUNG WAI ESTATE (UNDER CONSTRUCTION) 興建中的祥龍圍邨 LITTLE SISTERS OF THE POOR ST. JOSERH'S HOME FOR THE AGED 安貧小妹妹聖若瑟 KONG CHEUNG LUNG WA ESTATE (UNDER CONSTRUCTION) ROOF PLAYGROUND 興建中的祥龍圍邨 天台操場 SITE 工地 TSENG MUI HONG KONG GOLF CLUB MILLENNIUM PEMERGENCY VEHICULAR ACCESS SCHOOL BUDDHIST WISDOM & PRIMARY SCHOOL RUNNING TRACK 跑道 緊急車輛通道 曾梅千禧學科 香港哥爾夫球會 佛教正慧小學 CHING HO ESTATE 清河村 CLASSROOM BLOCK 課室大樓 ELEGANTIA MING TAK COURT COLLEGE 風采中學 明德臺 BASKETBALL COURTS 露天籃球場 200m CAR PARK 位置圖 LOCATION PLAN 停車場 \_EGEND **圖例** VEHICULAR INGRESS/EGRESS LANDSCAPED AREA 車輛出入口 綠化範圍 SPECIAL ROOM BLOCK ROAD WIDENING 特別室大樓 PEDESTRIAN ENTRANCE/EXIT WORKS 行人出入口 路面擴闊工程 (H BARRIER-FREE ENTRANCE/EXIT HONG KONG GOLF CLUB 無障礙出入口 SITE BOUNDARY BUDDHIST WISDOM PRIMARY SCHOOL 香港哥爾夫球會 工地界線 佛教正慧小學 SITE PLAN 354FP ARCHITECTURAL A 36-CLASSROOM PRIMARY SCHOOL IN 工地平面圖 SERVICES AREA 36, FANLING DEPARTMENT 建築署 粉嶺第36區1所設有36間課室的小學

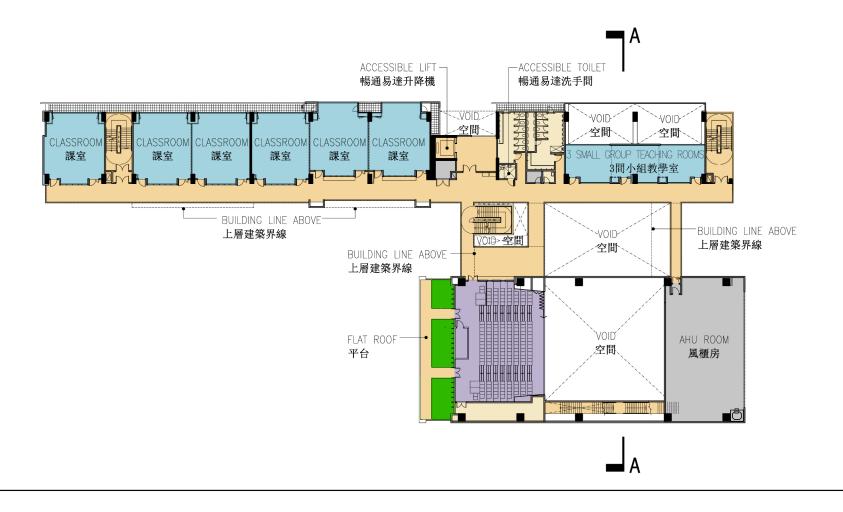














PLANT ROOM

機電房

CIRCULATION/OPEN AREA 通道/露天場地

GENERAL FACILITIES 一般設施

LANDSCAPED AREA

綠化範圍

TEACHING ROOM

教學室

ASSEMBLY HALL 禮堂

THIRD FLOOR PLAN

三樓平面圖

354EP

A 36-CLASSROOM PRIMARY SCHOOL IN AREA 36, FANLING

粉嶺第36區1所設有36間課室的小學



ARCHITECTURAL **SERVICES** DEPARTMENT 建築署







PLANT ROOM

CIRCULATION/OPEN AREA

通道/露天場地

GENERAL FACILITIES 一般設施

LANDSCAPED AREA 綠化範圍

TEACHING ROOM 教學室

STAFF AREA 教職員範圍

FOURTH FLOOR PLAN

四樓平面圖

354FP

A 36-CLASSROOM PRIMARY SCHOOL IN AREA 36, FANLING









CIRCULATION/OPEN AREA 通道/露天場地 GENERAL FACILITIES
一般設施

TEACHING ROOM 教學室

LANDSCAPED AREA 線化範圍

5m 0 10m 20m 30m

FIFTH FLOOR PLAN

五樓平面圖

354EP A 36-CLASSROOM PRIMARY SCHOOL IN AREA 36, FANLING









CIRCULATION/OPEN AREA 通道/露天場地

GENERAL FACILITIES 一般設施

綠化範圍

LANDSCAPED AREA

TEACHING ROOM

教學室

SIXTH FLOOR PLAN

六樓平面圖

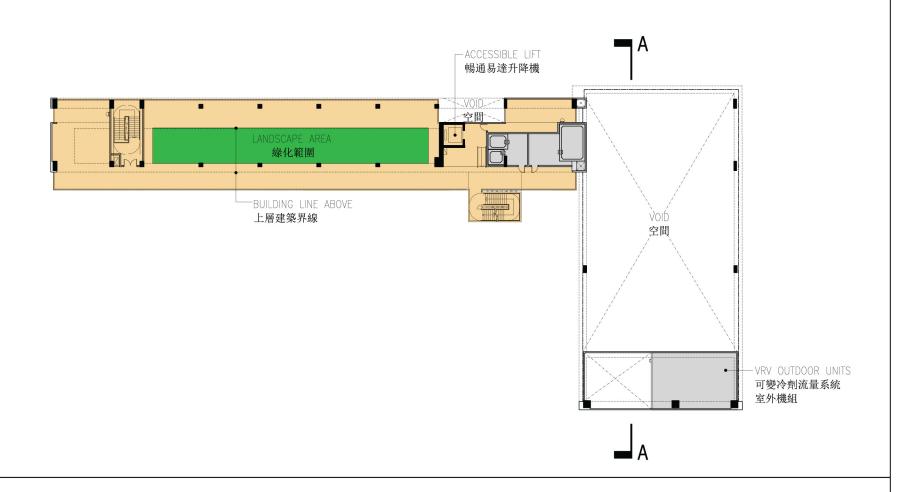
354EP

A 36-CLASSROOM PRIMARY SCHOOL IN AREA 36, FANLING



附件 9





## LEGEND **圖例**



PLANT ROOM



CIRCULATION/OPEN AREA

綠化範圍

LANDSCAPED AREA

通道/露天場地

ROOF FLOOR PLAN

天台平面圖

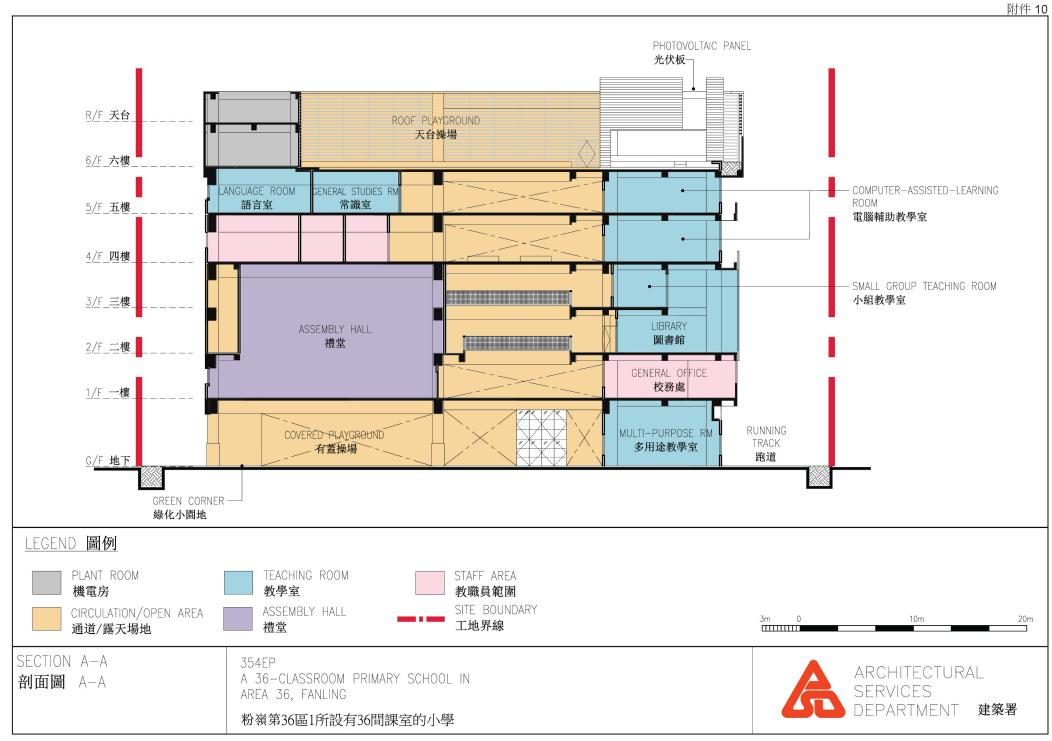
354EP

A 36-CLASSROOM PRIMARY SCHOOL IN AREA 36, FANLING

粉嶺第36區1所設有36間課室的小學



DEPARTMENT 建築署





PERSPECTIVE VIEW FROM EASTERN ENTRANCE AT CHING SHING ROAD (ARTIST'S IMPRESSION)

從東面清城路望向小學的構思透視圖

ARTIST'S IMPRESSION 構思圖 354EP A 36-CLASSROOM PRIMARY SCHOOL IN AREA 36, FANLING



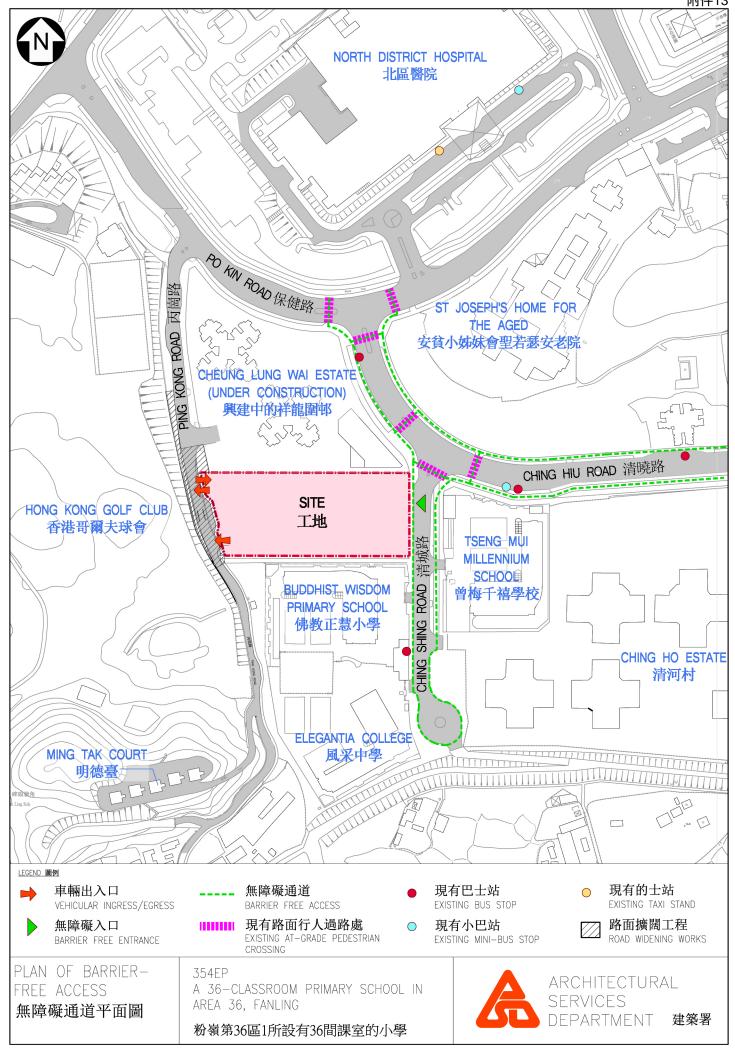


AERIAL VIEW FROM SOUTH WESTERN DIRECTION (ARTIST'S IMPRESSION)

從西南面望向小學的鳥瞰構思圖

ARTIST'S IMPRESSION 構思圖 354EP A 36-CLASSROOM PRIMARY SCHOOL IN AREA 36, FANLING





## 354EP - A 36-classroom primary school in Area 36, Fanling

# Breakdown of the estimates for consultants' fees and resident site staff costs (in September 2013 prices)

			Estimated man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)
(a)	Consultants' fees for	Professional	_	_	_	4.8
	contract administration (Note 2)	Technical	_	_	_	0.8
	udilinistration				Sub-total	5.6
(b)	Resident site staff	Professional	18	38	1.6	1.9
,	(RSS) costs (Note 3)	Technical	134	14	1.6	5.0
					Sub-total	6.9
	Comprising -					
	(i) Consultants' fees for management of RSS				0.3	
	(ii) Remuneration of RSS				6.6	
					Total	12.5

<sup>\*</sup> MPS = Master Pay Scale

#### Notes

- 1. A multiplier of 1.6 is applied to the average MPS salary point to estimate the cost of RSS supplied by the consultants. (As at now, MPS salary point 38 = \$67,370 per month and MPS salary point 14 = \$23,285 per month.)
- 2. The consultants' fees for contract administration are calculated in accordance with payment schedule for construction and maintenance stages of the existing consultancy agreement. The construction and maintenance stages of the assignment will only be executed subject to Finance Committee's funding approval to upgrade 354EP to Category A.
- 3. The actual man-months and actual costs will only be known after completion of the construction works.

# A comparison of the reference cost of a 36-classroom primary school project with the estimated cost of 354EP

# \$ million (in Sept 2013 prices)

		Reference cost*	354EP	
(a)	Piling	28.6	50.9	(See note A)
(b)	Building	138.5	144.8	(See note B)
(c)	Building Services	39.9	39.3	(See note C)
(d)	Drainage	6.9	9.1	(See note D)
(e)	External works	24.2	38.9	(See note E)
(f)	Additional energy conservation, green and recycled features	-	6.5	(See note F)
(g)	Furniture and equipment	-	3.4	(See note G)
(h)	Consultants' fee	-	5.9	(See note H)
(i)	Remuneration of Resident Site Staff	-	6.6	(See note H)
(j)	Contingencies	23.8	30.5	
	Total	261.9	335.9	
(k)	Construction floor area	$13\ 410\ m^2$	12 323 m <sup>2</sup>	
(1)	Construction unit cost $\{[(b) + (c)] / (k)\}$	\$13,310 per m <sup>2</sup>	\$14,940 per m <sup>2</sup>	

## \* 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 mixed use of 158 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 36-classroom primary school site area of 7 000 m<sup>2</sup> 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 bodies of new schools.
- 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

- A. The piling cost is higher because of longer pile depth and site constraint (close proximity to an existing primary school). It is estimated that this project will require the use of 134 nos. steel H-piles (70 nos. of which require pre-boring), at an average depth of 37 m to suit site conditions.
- B. The building cost is higher because of site constraint (close proximity to an existing primary school and lateral support for excavation is required for this site). Provision of insulated windows are needed to satisfy the noise abatement requirements due to excessive traffic noise as approved by the Environmental Protection Department (EPD).
- C. Building services unit cost is higher because of the provision of additional air-conditioning as noise abatement measures as approved by the EPD.
- D. The cost of drainage works is higher because of the road widening works outside the school site.
- E The cost of external works is higher because of road widening works and associated utility work outside the school site (\$5.6 million including drainage works for road widening), provision of a solid boundary wall along the north and part of east sides of the site to satisfy the noise abatement requirements as approved by the EPD and more tree compensation work due to more number of existing trees on site.
- F. The cost is required for the provision of energy conservation, green and recycled features. The energy efficient features will achieve energy saving in the annual consumption with a payback period of about six years.
- G. The cost of furniture and equipment, which is estimated to be \$3.4 million, will be borne by the Government. This is in line with the existing policy on redevelopment and reprovisioning of schools.
- H. Consultants' fees and remuneration of resident site staff is required for this project.