For discussion **PWSC(2013-14)8**
on 22 May 2013

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 703 – BUILDINGS
Education – Primary
350EP – A 30-classroom primary school at Site 1A-4, Kai Tak Development, Kowloon

Members are invited to recommend to the Finance Committee the upgrading of **350EP** to Category A at an estimated cost of $317.5 million in money-of-the-day prices for the construction of a 30-classroom primary school at Site 1A-4, Kai Tak Development, Kowloon.

PROBLEM

We need to improve the teaching and learning environment of Po Leung Kuk Stanley Ho Sau Nan Primary School (the School) which is currently operating in sub-standard school premises.

PROPOSAL

2. The Director of Architectural Services, with the support of the Secretary for Education, proposes to upgrade **350EP** to Category A at an estimated cost of $317.5 million in money-of-the-day (MOD) prices for the construction of a 30-classroom primary school at Kai Tak Development for reprovisioning of the School.

/ PROJECT …..

PROJECT SCOPE AND NATURE

3. The proposed project site occupies an area of around 6 600 square meters (m^2) at Site 1A-4, Kai Tak Development, Kowloon. The proposed scope of work for **350EP** includes –

(a) 30 classrooms;

(b) four small group teaching rooms;

(c) six special rooms, comprising a music room, a visual arts room, a general studies room, a multi-purpose room, a computer assisted learning room and a language room;

(d) two interview rooms;

(e) a guidance activity room;

(f) a staff room;

(g) a staff common room;

(h) a conference room;

(i) a student activity centre;

(j) a library;

(k) a multi-purpose area;

(l) two basketball courts;

(m) an assembly hall (which can also be used for a wide range of physical activities such as badminton, gymnastics and table-tennis);

(n) a green corner[1]; and

/(o) …..

[1] 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.

(o) ancillary facilities including a disabled/fireman's lift, facilities for the disabled, a tuck shop-cum-central portioning area, stores and toilets.

The proposed school will meet the planning target of providing two square metres of open space per student. A site plan, an artist's impression, layout plan, a sectional plan and a barrier-free access plan for the project are at Enclosures 1 to 9. Subject to the funding approval of the Finance Committee, we plan to commence the construction works in November 2013 for completion in September 2015.

JUSTIFICATION

4. It is the Government's plan to improve the physical conditions of sub-standard school premises to prevailing standards through the School Improvement Programme (SIP) as well as reprovisioning and redevelopment projects. The existing site area of the School (i.e. about 2 200 m^2 for the 24-classroom school premises) is far below the current standard (i.e. 4 700 m^2 for a 24-classroom school premises). The School is currently housed in a 50-year old premises. The sub-standard facilities of the existing campus are inadequate to meet the prevailing teaching and learning needs of a primary school. An extension block was added to the school in 2001 under SIP. However, certain standard facilities such as assembly hall with stage, classrooms, general studies room, computer assisted learning room, language room, multi-purpose area/room, library, and covered playground are seriously under-sized. Major and emergency repairs of the School were necessary from time to time in order to meet its operational needs and safety standard over the years. Due to site constraints, infrastructure upgrading or in-situ redevelopment of the School would not be technically feasible. The reprovisioning project is therefore necessary to upgrade the facilities of the School to meet the prevailing standards and improve the teaching and learning environment for teachers and students.

5. Upon completion, the School which currently operates 24 classes in Wong Tai Sin District will provide 30 primary school classes and other facilities in the new school premises.

/ **FINANCIAL** …..

FINANCIAL IMPLICATIONS

6. We estimate the capital cost of the project to be $317.5 million in MOD prices (please see paragraph 7 below) , broken down as follows –

		$ million	
(a)	Site formation works	1.8	
(b)	Piling	54.9	
(c)	Building	113.6	
(d)	Building services	36.2	
(e)	Drainage	6.0	
(f)	External works	21.7	
(g)	Additional energy conservation measures	5.2	
(h)	Furniture and equipment[2]	3.0	
(i)	Contingencies	23.9	
	Sub-total	266.3	(in September 2012 prices)
(j)	Provision for price adjustment	51.2	
	Total	317.5	(in MOD prices)

/The …..

[2] Based on the standard furniture and equipment reference list prepared by the Education Bureau for a new 30-classroom primary school adopting the standard schedule of accommodation. The actual amount will be determined on the basis of a survey on the serviceability of the existing furniture and equipment.

The construction floor area (CFA) of the new school premises is about 11 068 m^2. The estimated construction unit cost, represented by the building and building services costs, is $13,535 per m^2 of CFA in September 2012 prices. We consider this unit cost comparable to similar school projects built by the Government. A comparison of the reference cost for a 30-classroom primary school based on an uncomplicated site with no unusual environmental or geotechnical constraints with the estimated cost for **350EP** is at Enclosure 10.

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

Year	$ million (Sept 2012)	Price adjustment factor	$ million (MOD)
2013 – 14	10.0	1.06225	10.6
2014 – 15	98.0	1.12599	110.3
2015 – 16	92.0	1.19354	109.8
2016 – 17	36.0	1.26516	45.5
2017 – 18	20.0	1.34107	26.8
2018 – 19	10.3	1.41147	14.5
	266.3		317.5

8. 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 2013 to 2019. 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.

9. The cost of furniture and equipment for **350EP**, estimated to be $3.0 million, will be borne by the Government according to the existing policy.

10. We estimate the annual recurrent expenditure arising from **350EP** to be $31.4 million.

PUBLIC CONSULTATION

11. We consulted the Legislative Council Panel on Education on 24 October 2005 on our review of the School Building Programme. Members noted our plan to proceed with reprovisioning and redevelopment projects to upgrade sub-standard facilities in existing schools.

12. We consulted the Kowloon City District Council (KCDC) on **350EP** by circulation of an information paper in early February 2013. Members of KCDC did not raise any concern about the project.

13. We also consulted the Legislative Council Panel on Education on 17 April 2013. Members supported the project.

ENVIRONMENTAL IMPLICATIONS

14. The project is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). We engaged a consultant to complete Preliminary Environmental Review (PER) for **350EP** following the "Class Assessment Document for Standard Schools" in February 2012. The PER recommended implementation of the following mitigation measures–

	Mitigation measures	**Estimated cost $ million (in Sept 2012 prices)**
(a)	A three-metre high wall along the eastern and southern sides of the site	1.3
(b)	Insulated windows and air-conditioning for 22 classrooms from 1/F to 3/F at western and northern facades of the classroom blocks	4.7
(c)	Insulated windows and air-conditioning for two small group teaching rooms on 1/F at western facade of the special room block	0.4
(d)	Insulated windows and air-conditioning for one special room on 1/F at southern facade of the hall block	0.3

/With …..

With such mitigation measures in place, the project would not be exposed to long-term adverse environmental impacts. We have included the cost of the above 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 to within established standards and guidelines through the implementation of mitigation measures in the relevant contract. These include the use of silencers, mufflers, acoustic lining or shields, and the building of barrier walls for noisy construction activities, frequent cleaning and watering of the site, and the provision of wheel-washing facilities.

16. 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[3]. 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 generation of construction waste.

17. 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.

/18. …..

---

[3] 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.

18. We estimate that the project will generate in total about 14 000 tonnes of construction waste. Of these, we will reuse about 3 600 tonnes (25.7%) of inert construction waste on site and deliver 9 000 tonnes (64.3%) of inert construction waste to public fill reception facilities for subsequent reuse. We will dispose of the remaining 1 400 tonnes (10.0%) 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 $0.42 million for this project (based on a unit cost of $27 per tonne for disposal at public fill reception facilities and $125 per tonne[4] at landfills).

HERITAGE IMPLICATIONS

19. The 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

20. The project does not require any land acquisition.

ENERGY CONSERVATION, GREEN AND RECYCLED FEATURES

21. District Cooling System[5] for air-conditioning will be adopted for this project at Kai Tak Development. Besides, this project will adopt various forms of energy efficient features and renewable energy technologies, in particular –

(a) automatic demand control of chilled water circulation system ;

/(b) …..

---

[4] 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 per m^3), nor the cost to provide new landfills (which is likely to be more expensive), when the existing ones are filled.

[5] The District Cooling System is a large-scale centralized air-conditioning system which produces chilled water at its central chiller plants and distributes the chilled water to user buildings in Kai Tak Development through an underground water piping network.

(b) thermal energy reclaim of exhaust air from air-conditioned space by using fresh air pre-conditioners; and

(c) photovoltaic system.

22. For greening features, we will provide landscape in the appropriate area on the main roofs and terraces for environmental and amenity benefits.

23. For recycled features, we will adopt rainwater collection system for landscape irrigation with a view to conserving water.

24. The total estimated additional cost for adoption of the above energy conservation measures is around $5.2 million (including $0.6 million for energy efficient features), which has been included in the cost estimates of the project. The energy efficient features will achieve 8.0% energy savings in the annual energy consumption with a payback period of about 6.3 years.

BACKGROUND INFORMATION

25. We upgraded **350EP** to Category B in March 2009. We engaged consultants to undertake topographical survey and PER in November 2009 and a term contactor to undertake site investigations in September 2009. The total cost of the consultancy services and works is about $1.4 million. We have 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 contractors and consultants have completed all the above consultancy services and works. We have completed the detailed design and tender documents of the project with in-house resources.

/26. …..

26. There are two trees within the project boundary. The proposed works will involve felling of all two trees, which are not suitable for transplanting. All trees to be felled are not important trees[6]. We will incorporate planting proposals as part of the project, including estimated quantities of 20 trees, 10 000 shrubs and 700 m^2 of grassed area.

27. We estimate that the proposed works will create about 180 jobs (168 for labourers and another 12 for professional/technical staff) providing a total employment of 3 020 man-months.

28. At the Public Works Subcommittee (PWSC) meeting on 31 October 2001, some Members suggested and the Administration agreed to include information on the scope, approved project estimates and progress of all items under the Kai Tak Development (formerly known as the "South East Kowloon Development") Public Works Programme in future PWSC submissions relating to the Kai Tak Development. For details, please refer to the Development Bureau's PWSC submission PWSC(2013-14)11 on **469CL** "Kai Tak development – infrastructure at north apron area of Kai Tak Airport", which has been submitted to be considered at the same PWSC meeting.

Education Bureau
May 2013

---

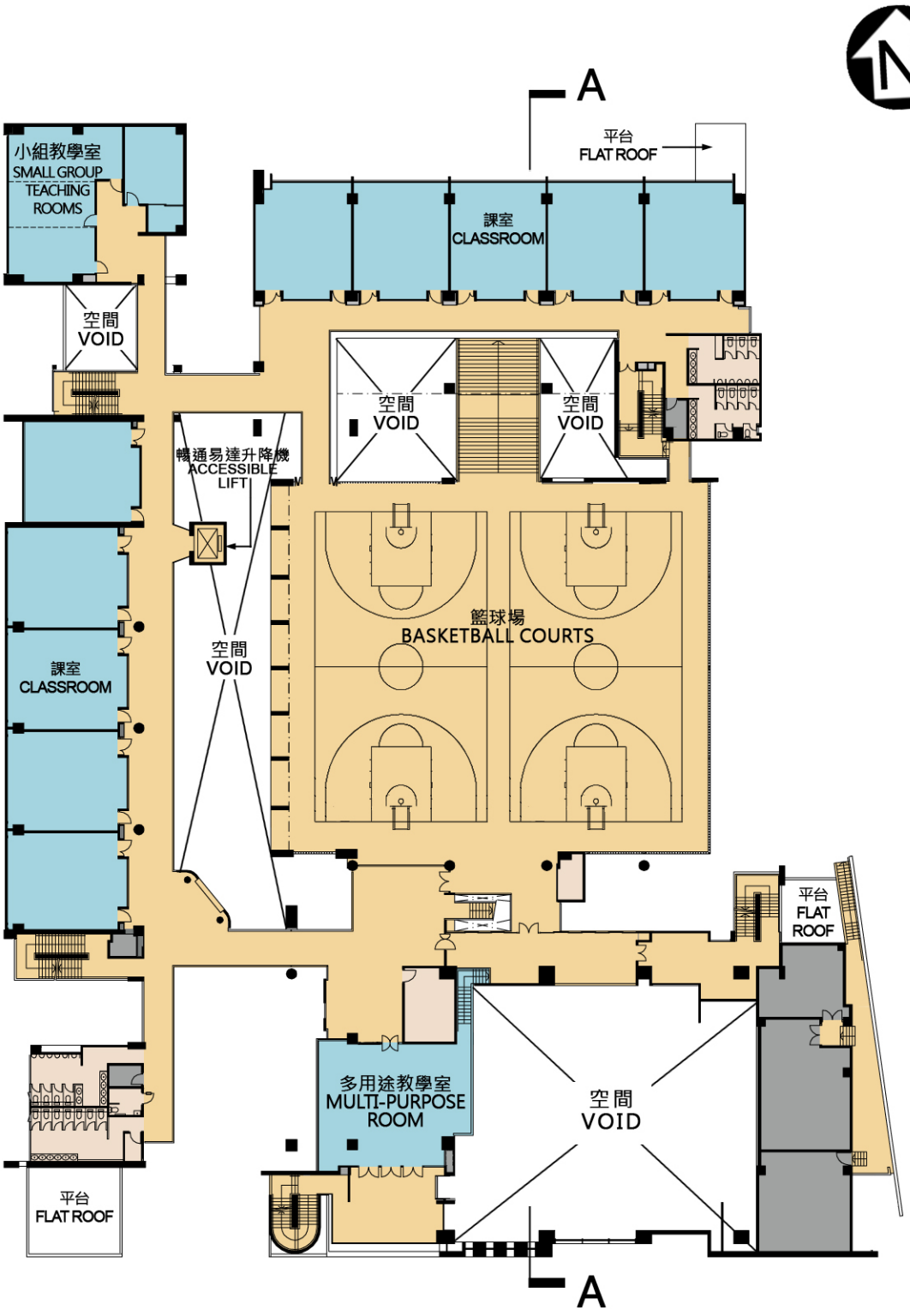
[6] "Important trees" refer to trees in the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria -

(a) trees of 100 years old or above;
(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;
(c) trees of precious or rare species;
(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
(e) trees with trunk diameter equal or exceeding 1.0 metre (measured at 1.3 metre above ground level), or with height/canopy spread equal or exceeding 25 metres.

工地平面圖 SITE PLAN	PROJECT TITLE 項目名稱 350EP 九龍啟德發展計劃（地盤1A-4）1所設有30間課室的小學 A 30-CLASSROOM PRIMARY SCHOOL AT SITE 1A-4, KAI TAK DEVELOPMENT, KOWLOON

ARCHITECTURAL SERVICES DEPARTMENT 建築署

地下平面圖 GROUND FLOOR PLAN	PROJECT TITLE 項目名稱 350EP 九龍啟德發展計劃（地盤1A-4）1所設有30間課室的小學 A 30-CLASSROOM PRIMARY SCHOOL AT SITE 1A-4, KAI TAK DEVELOPMENT, KOWLOON	ARCHITECTURAL SERVICES DEPARTMENT 建築署

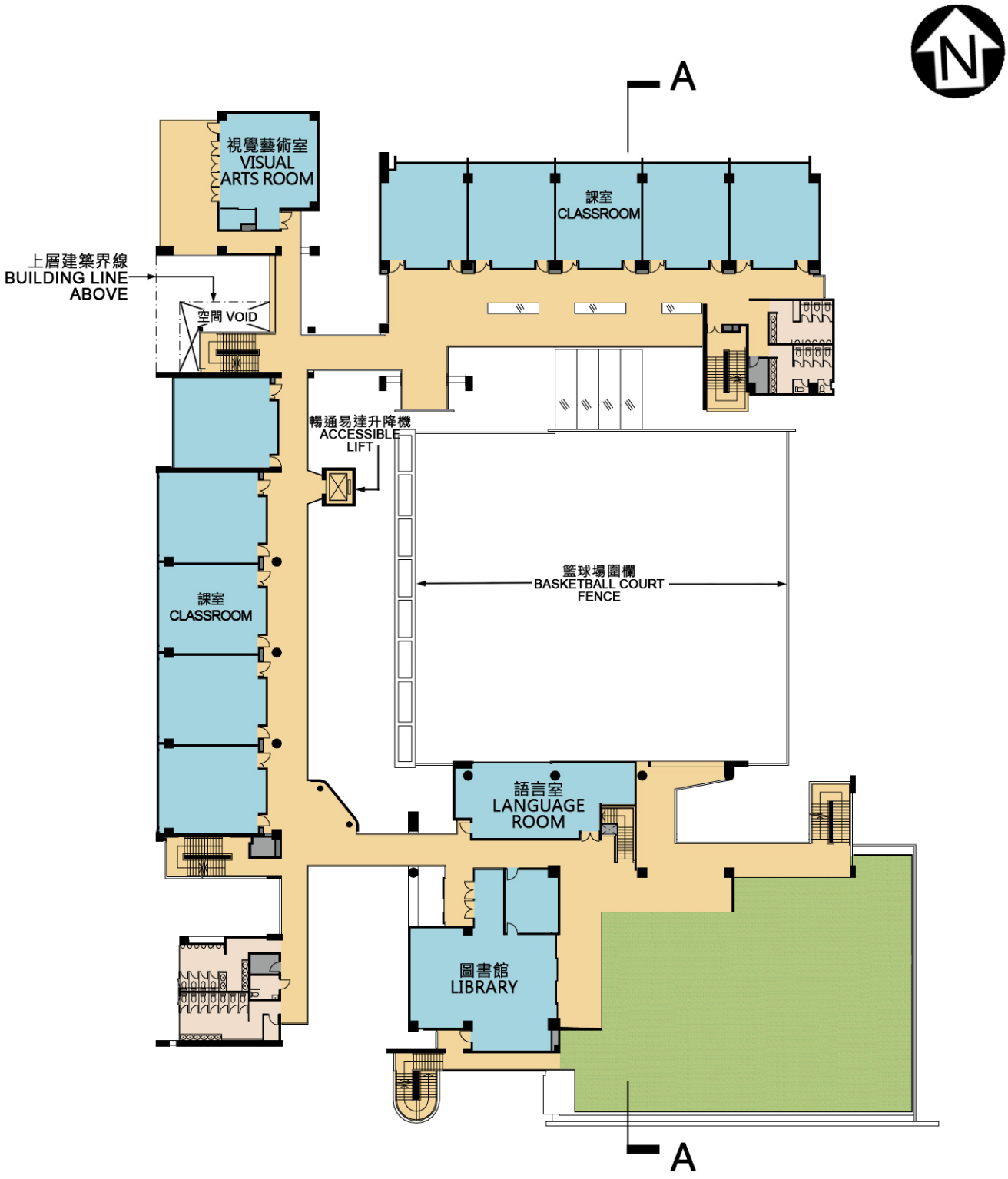


5m 0 10m 25m

圖例 LEGEND

- 教學室 TEACHING ROOM
- 機電房 PLANT ROOM
- 通道 / 露天場地 CIRCULATION / OPEN AREA

一樓平面圖 FIRST FLOOR PLAN	PROJECT TITLE 項目名稱 350EP 九龍啟德發展計劃（地盤1A-4）1所設有30間課室的小學 A 30-CLASSROOM PRIMARY SCHOOL AT SITE 1A-4, KAI TAK DEVELOPMENT, KOWLOON	ARCHITECTURAL SERVICES DEPARTMENT 建築署



5m 0 10m 25m

圖例 LEGEND

- 教學室 TEACHING ROOM
- 機電房 PLANT ROOM
- 通道 / 露天場地 CIRCULATION / OPEN AREA
- 綠化平台 LANDSCAPE DECK
- 天窗 SKYLIGHT

二樓平面圖
SECOND FLOOR PLAN

PROJECT TITLE 項目名稱
350EP
九龍啟德發展計劃（地盤1A-4）1所設有30間課室的小學
A 30-CLASSROOM PRIMARY SCHOOL AT
SITE 1A-4, KAI TAK DEVELOPMENT, KOWLOON

ARCHITECTURAL SERVICES DEPARTMENT 建築署

5m 0 10m 25m

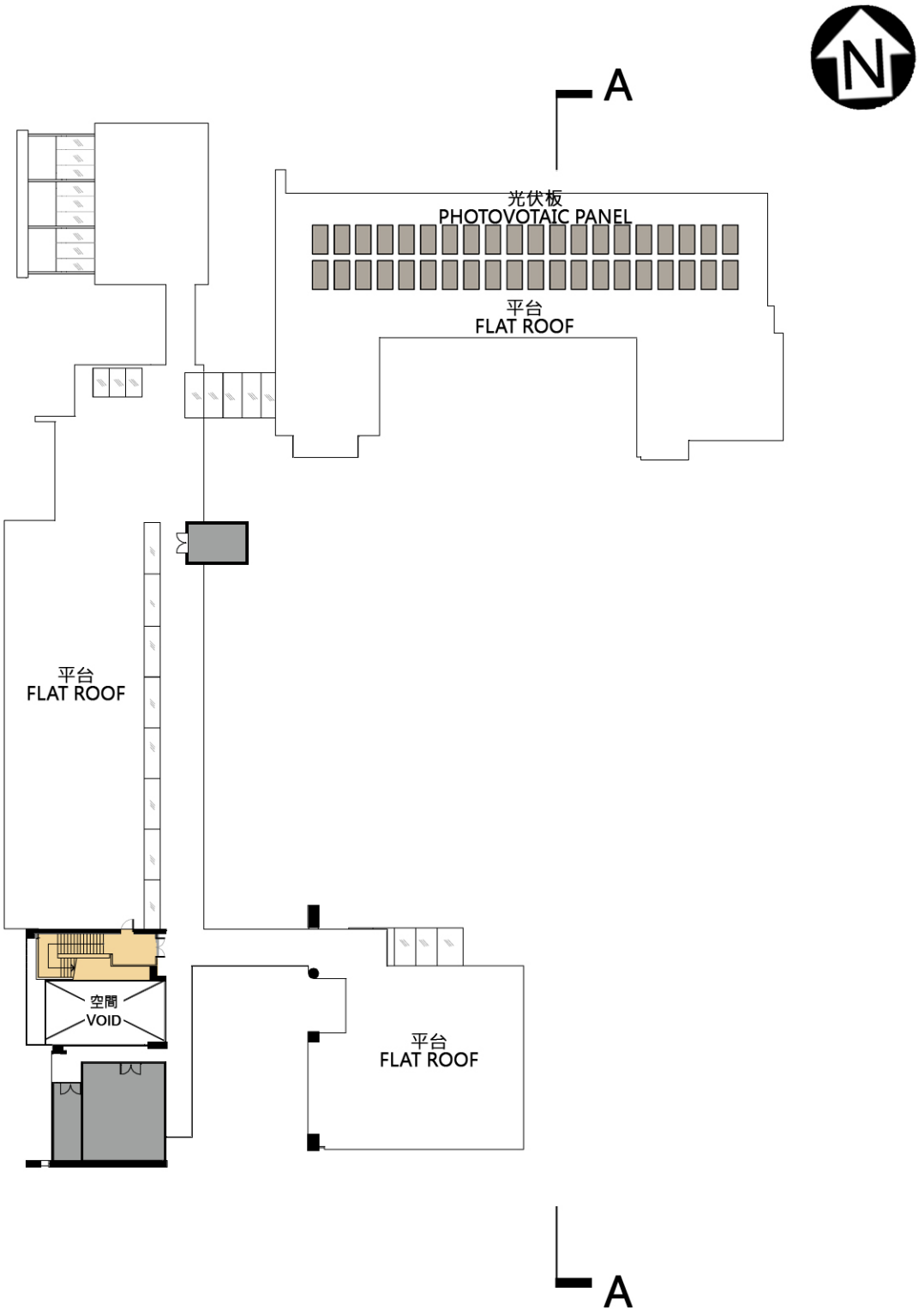
圖例 LEGEND

教學室 TEACHING ROOM	機電房 PLANT ROOM
通道 / 露天場地 CIRCULATION / OPEN AREA	綠化平台 LANDSCAPE DECK

三樓平面圖
THIRD FLOOR PLAN

PROJECT TITLE 項目名稱
350EP
九龍啟德發展計劃（地盤1A-4）1所設有30間課室的小學
A 30-CLASSROOM PRIMARY SCHOOL AT
SITE 1A-4, KAI TAK DEVELOPMENT, KOWLOON

ARCHITECTURAL SERVICES DEPARTMENT 建築署

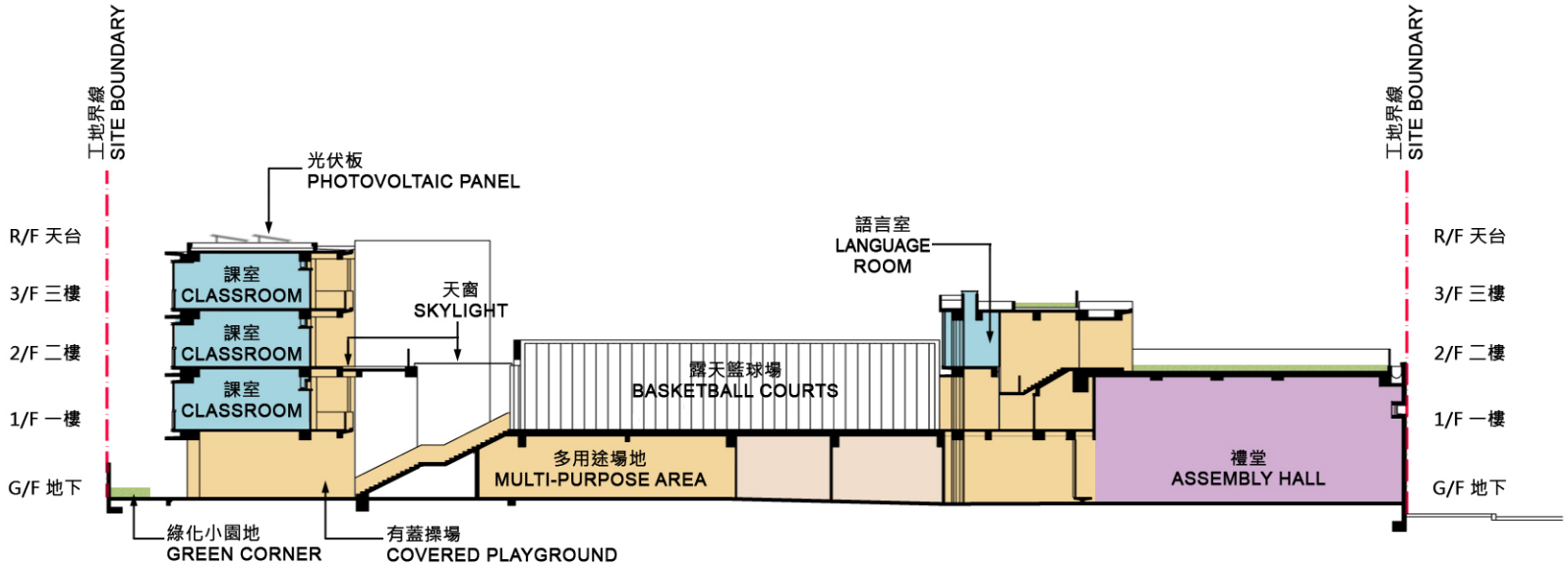


5m 0 10m 25m

圖例 LEGEND

- 通道 / 露天場地 CIRCULATION / OPEN AREA
- 機電房 PLANT ROOM
- 天窗 SKYLIGHT

天台平面圖 ROOF FLOOR PLAN	PROJECT TITLE 項目名稱 350EP 九龍啟德發展計劃（地盤1A-4）1所設有30間課室的小學 A 30-CLASSROOM PRIMARY SCHOOL AT SITE 1A-4, KAI TAK DEVELOPMENT, KOWLOON	ARCHITECTURAL SERVICES DEPARTMENT 建築署



圖例 LEGEND

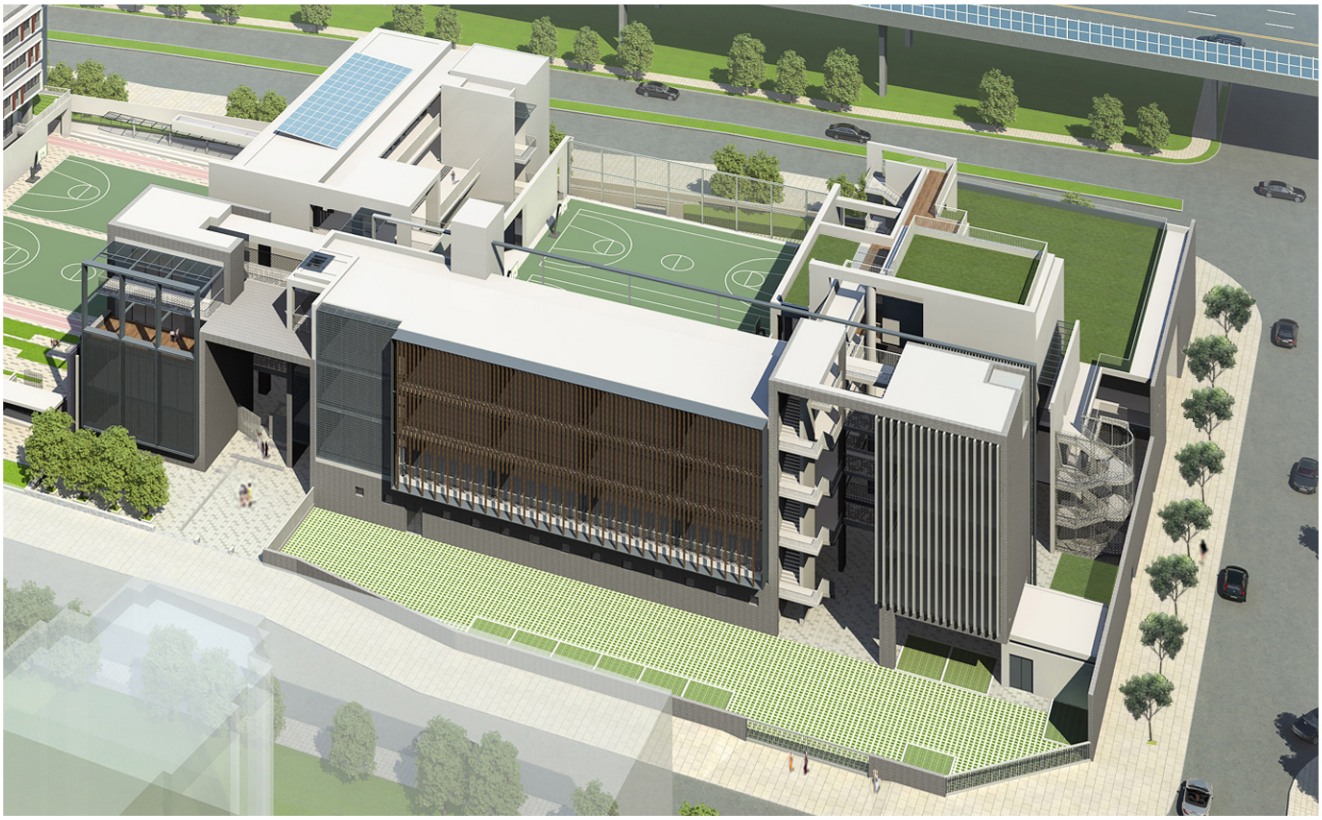
- 教學室 TEACHING ROOM
- 禮堂 ASSEMBLY HALL
- 綠化平台 LANDSCAPE DECK
- 機電房 PLANT ROOM
- 通道 / 露天場地 CIRCULATION / OPEN AREA
- 工地界線 SITE BOUNDARY

5m 0 10m 25m

剖面圖 A-A
SECTION A-A

PROJECT TITLE 項目名稱
350EP
九龍啟德發展計劃（地盤1A-4）1所設有30間課室的小學
A 30-CLASSROOM PRIMARY SCHOOL AT
SITE 1A-4, KAI TAK DEVELOPMENT, KOWLOON

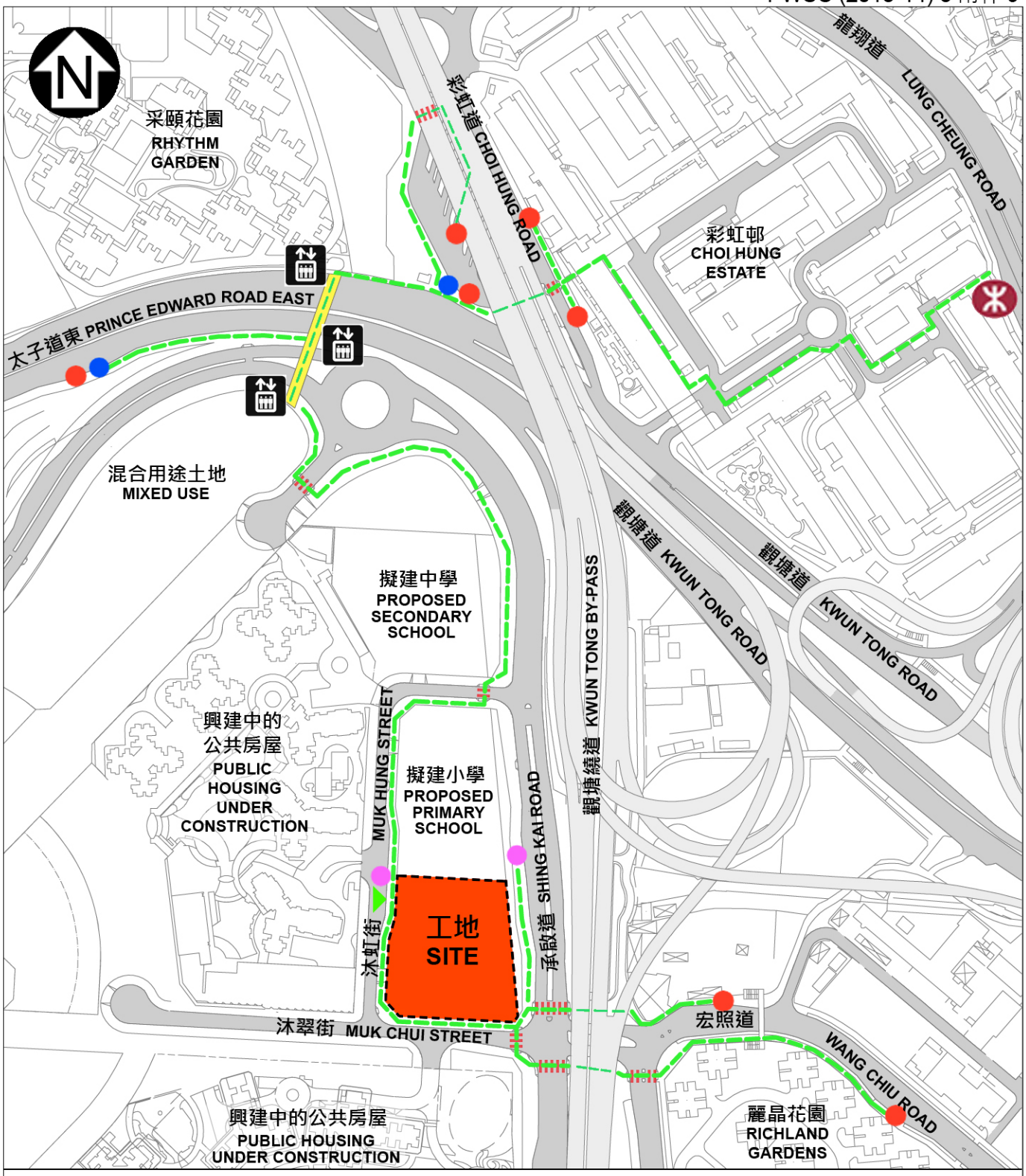
ARCHITECTURAL SERVICES DEPARTMENT 建築署



從西南面望向小學的構思鳥瞰圖
AERIAL VIEW FROM SOUTH WESTERN DIRECTION (ARTIST'S IMPRESSION)

從東南面望向小學的構思透視圖
PERSPECTIVE VIEW FROM SOUTH EASTERN DIRECTION (ARTIST'S IMPRESSION)

構思圖 ARTIST'S IMPRESSION	PROJECT TITLE 項目名稱 350EP 九龍啟德發展計劃（地盤1A-4）1所設有30間課室的小學 A 30-CLASSROOM PRIMARY SCHOOL AT SITE 1A-4, KAI TAK DEVELOPMENT, KOWLOON	ARCHITECTURAL SERVICES DEPARTMENT 建築署



圖例 LEGEND

- 現有巴士站 EXISTING BUS STOP
- 擬建巴士站 PROPOSED BUS STOP
- 現有小巴站 EXISTING MINI-BUS STOP
- 行人過路處 AT-GRADE PEDESTRIAN CROSSING
- 彩虹港鐵站出口 CHOI HUNG MTR STATION EXIT
- 現有有蓋行人天橋 EXISTING COVERED FOOTBRIDGE
- 連接天橋的暢通易達升降機 ACCESSIBLE LIFT CONNECTING FOOTBRIDGE
- 無障礙通道 BARRIER-FREE ACCESS
- 工地界線 SITE BOUNDARY
- 無障礙出入口 BARRIER-FREE EXTRANCE/ EXIT

30m 0 60m 150m

無障礙通道平面圖 PLAN OF BARRIER-FREE ACCESS	PROJECT TITLE 項目名稱 350EP 九龍啟德發展計劃（地盤1A-4）1所設有30間課室的小學 A 30-CLASSROOM PRIMARY SCHOOL AT SITE 1A-4, KAI TAK DEVELOPMENT, KOWLOON	ARCHITECTURAL SERVICES DEPARTMENT 建築署

A comparison of the reference cost of a 30-classroom primary school project with the estimated cost of 350EP

$ million (in Sept 2012 prices)

		Reference cost*	**350EP**	
(a)	Site formation works	–	1.8	(See note A)
(b)	Piling	20.7	54.9	(See note B)
(c)	Building	109.9	113.6	(See note C)
(d)	Building services	32.0	36.2	(See note D)
(e)	Drainage	5.9	6.0	(See note E)
(f)	External works	20.4	21.7	(See note F)
(g)	Additional energy conservation measures	–	5.2	(See note G)
(h)	Furniture and equipment	–	3.0	(See note H)
(i)	Contingencies	18.9	23.9	
	Total	207.8	266.3	
(j)	Construction floor area	11 260 m^2	11 068 m^2	
(k)	Construction unit cost {[(c) + (d)] ÷ (j)}	$12,600/$m^2$	$13,535/$m^2$	

/* **Assumptions** .....

*** 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 118 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 30-classroom primary school site area of 6 200 m^2 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. We will review, and revise if necessary, the reference cost which should be adopted for future projects.

Notes

A. Additional cost is required for site formation for the new school premises.

B. The piling cost is higher because the piles are longer in length and more in numbers. It is estimated that this project will require the use of 175 nos. percussion steel H-piles at an average depth of 60 m.

C. The building cost is higher because of higher greening ratio (30% of overall greening as required at Kai Tak Development), and the provision of insulated windows to satisfy the noise abatement requirements under the Class Assessment Document (CAD) as approved by the Environmental Protection Department (EPD).

D. The building services cost is higher because of the provision of additional air conditioning as a noise mitigation measure under the CAD as approved by the EPD.

E. The cost of drainage is slightly higher because of larger site area.

F. The cost of external works is slightly higher because of larger site area.

G. 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 6.3 years.

H. The cost of furniture and equipment, estimated to be $3.0 million, will be borne by the Government as the school premises are allocated to an existing school for reprovisioning.