

For discussion
on 10 February 2011

Legislative Council Panel on Security
Redevelopment Plan for the Fire Services Training School

PURPOSE

This paper briefs Members on the plan to redevelop the Fire Services Training School (FSTS) at a site in Pak Shing Kok, Tseung Kwan O.

BACKGROUND

2. Established in 1968, the existing FSTS in Pat Heung covers an area of 29 000 sq. m. It is used to provide 26-week initial training of all new recruits, and some refresher and advanced training courses for serving firefighters. The FSTS was originally designed to provide only basic firefighting and rescue training facilities, including three drill towers and a drill yard.

3. To facilitate improvements in rescue techniques, the FSD has been adding training facilities to the FSTS over the past years. Additional training facilities installed include three fire training chambers to provide simulations of structural fire scenes, a fire training chamber to train rescue strategy, three small-scale fire rigs for the simulation of vehicle fire, transformer fire and screen fire respectively. A breathing apparatus training block was also put in place in the FSTS a few years ago to provide better tactical training to new recruits in a simulated and controlled smoke-logged environment.

4. However, our firefighters are facing more complex and wide-ranging emergency scenarios nowadays. In order to meet the fast changing training needs and equip frontline staff with advanced firefighting and rescue techniques, it is necessary to redevelop the FSTS with specialised simulators to facilitate training. At the meeting on 3 June 2008, we briefed Members vide LC paper no. CB(2)2086/07-08(04) on the conceptual plan to redevelop the FSTS.

PROPOSAL

5. The Government plans to redevelop the FSTS in Area 78, Tseung Kwan O (Pak Shing Kok). It will cover an area of 160 000 sq. m., which includes about 50,000 sq. m. of slope area. The proposed FSTS will provide more than 570 residential training places. It will be equipped with advanced simulators for the training of firefighting strategies and techniques for different types of fire in a controlled and safe environment. Facilities for ambulance training will also be provided to cope with the training needs of FSD's ambulance service. In addition, a driving training block will be built at the proposed training school for driver training of fire appliances and ambulances. The scope of the redevelopment project includes -

- (a) Outdoor training facilities: training simulators, such as railway fire and rescue simulator, simulated carriageway, tanker overturned simulator, vehicle fire rig, ship fire and water rescue simulator, oil tank simulator, Liquefied Petroleum Gas (LPG) tank simulator, fuel and LPG refilling station simulator, aircraft fire simulator, ruined building and rescue training tower, drill tower, and compartment fire behaviour training simulator. There will also be a drill yard for exercises and drills for major incidents;
- (b) Indoor training facilities: a burn house, an indoor pool for rescue training, fire investigation training rooms, a laboratory, simulated reality rooms for ambulance training, and training rooms for First Responders, etc.;
- (c) Physical training facilities: exercise rooms, running trails and an indoor sports complex;
- (d) Teaching block: lecture rooms, resource centres, Incident Command System Training Centre, demonstration rooms for fire service installations and equipment, and a workshop;
- (e) Public education centre: the centre will be equipped with a multi-media interactive fire fighting training system, interactive information facilities and earthquake simulator, etc. Moreover, first-aid training rooms will also be provided in the centre to educate the public some basic knowledge on emergency care;
- (f) Administrative facilities: offices, conference rooms, interview

rooms and pantries;

- (g) Driving training block: lecture rooms, driving simulator rooms, automotive spare parts stores and an outdoor driving training compound; and
- (h) Supporting facilities: appliance rooms, stores, dormitories, canteens, kitchens cum kitchen stores, locker-cum-changing rooms, fire apparatus stores, dangerous goods stores, uniform rooms, first aid rooms, toilets-cum-ablutions, plant rooms and car park.

6. The site plan of the project is at **Annex**.

JUSTIFICATIONS

Specialised simulators and training grounds

7. Hong Kong is densely populated with a proliferation of high-rise buildings. Large-scale infrastructure and facilities have presented new and significant challenges for firefighting and rescue operations. To prepare our firefighters for complex emergency scenarios, there is a need to make greater use of simulation-based training, which is commonly employed by advanced fire brigades around the world (e.g. in the United States, United Kingdom, Australia and Singapore). In this regard, we plan to install a range of specialised simulators and training grounds in the proposed training school. This will allow the trainees to be trained in a realistic setting, acquire advanced firefighting and rescue techniques, and work in a more coordinated and effective manner. The proposed simulators and the justifications for each of them is set out in the table below :

Simulators	Justifications
Simulated railway and tunnel fires cum rescue	Due to geographical factors, many railways and roads in Hong Kong have to pass through tunnels in order to be connected to a transport network. Incidents occurred inside the tunnels have the potential risks of causing significant loss of lives and property, and hence it is necessary for

Simulators	Justifications
	<p>firefighters to enhance their firefighting and rescue skills in this respect. The simulated railway and tunnel will allow the trainees to practice the techniques and dispatch strategies for managing rail and tunnel fires, which include working in confined spaces, extinguishing different types of car fire (such as extinguishing fire by using foam), evacuation of drivers and passengers.</p>
<p>Simulated carriageway</p>	<p>The simulated carriageway will provide a training venue for simulating large scale vehicle incidents. With this facility, firefighters and ambulancemen can practice the rescue techniques required to deal with road accidents. A simulated expressway will be built for the simulation of traffic accidents involving various kinds of vehicles (including heavy goods vehicles, private cars and buses etc.) which will be used to train firefighters and ambulancemen on stabilisation techniques, cutting techniques and pre-hospital emergency care.</p>
<p>Tanker overturned simulator</p>	<p>The fire caused by traffic accidents involving an oil tanker will be more serious than those involving general vehicles. To enhance the ability of firefighters in handling tanker fires and explosions, the proposed simulator will be an oil tanker, which can simulate fuel spillage (e.g. LPG or petrol), as well as fire and explosion of tankers resulting from a traffic accident.</p>
<p>Vehicle fire rig</p>	<p>Designed to train officers to deal with different types of vehicle fire, the rig will make use of gas fuel to simulate an engine fire, compartment fire and fuel tank fire.</p>
<p>Ship fire simulator and water rescue facility</p>	<p>The ship fire simulator is capable of simulating various fire scenarios as a ship, such as an engine fire, generator fire and compartment fire. As the internal environment and structure of a ship are</p>

Simulators	Justifications
	quite different from those of a building, firefighters face much greater challenges when performing firefighting and rescue duties onboard a ship. Therefore, the simulator will include various internal features of a ship such as an engine, a boiler furnace, high pressure steam and heated oil piping, for the simulation of different scenarios for training purpose.
Oil tank simulator	There are a number of large oil storage depots in Hong Kong. The simulator will enhance trainees' overall firefighting techniques and suppression tactics to be used in fighting oil tank fires.
LPG tank simulator	This facility can help trainees learn the proper way to handle explosion and rupture caused by rapidly increased internal pressure of an LPG container in the event of fire. With the LPG tank simulator, trainees can learn how to react properly to prevent boiling liquid expanding vapour explosion (BLEVE) from occurring.
Fuel and LPG refilling station simulator	In Hong Kong, there are many fuel and LPG refilling stations, with many of them located in densely populated areas. Though these stations are required to be equipped with the appropriate fire services installation in accordance with fire safety legislation, we still could not completely rule out the possibility of fire. Fuel and LPG refilling station simulator can strengthen training in this regard.
Aircraft fire simulator	Air traffic in Hong Kong is very busy. The likelihood of a significant casualty is high in case of an aircraft accident. As the firefighting and rescue techniques for aircraft accidents are quite different from those used in other types of major incident, the installation of an aircraft fire simulator will strengthen training and enhance firefighters' skills

Simulators	Justifications
	in this respect.
Urban search and rescue training area	In the event of natural disasters (such as earthquakes, typhoons and landslides), or major emergencies like aircraft or train crashes, building collapse and terrorist attacks, the Urban Search and Rescue Team will conduct search and rescue operations under adverse circumstances as quickly as possible. To enhance the operational capability of the team, there is a need to provide the officers concerned with advanced and intensive training on urban search and rescue, and search in a confined space.
Drill tower	As there are numerous high-rise buildings in Hong Kong, firefighters should always be prepared to conduct high angle rescue operations. It is therefore proposed that a 12-storey drill tower with curtain walls and gondolas be built at the FSTS to provide the necessary facilities for such training.
Compartment fire behavior training simulator	With a proliferation of high-rise buildings in Hong Kong, our firefighters often have to deal with indoor fires and face the constant threats of flashovers and backdraughts ¹ . The proposed facility comprises different training units that demonstrate “flashover” and “backdraught” effects. It will help enhance the response capability and readiness of firefighters for working under such extreme circumstances.
Burn house simulator	The variation in the materials used, partitioning, and the furniture and storage in premises in various types of buildings have increased the difficulty on

¹ Flashover is a temperature-induced phenomenon that occurs in the early stage of fire development. As the fire develops, individual items in the room will burst into flames when the temperature reaches 650 Celsius or above. The flames reaching the ceiling at one end of a room will be transformed to a rapid, almost simultaneous ignition of all flammable items. Backdraught occurs in the later stage of a fire. When the fire burns in a condition of limited ventilation, flammable gaseous products will accumulate. These products do not necessarily ignite. However, when air is induced into the room, it is possible for the flammable products to ignite in a fierce condition.

Simulators	Justifications
	<p>the part of the firefighters in carrying out fire fighting and rescue duties. In view of this, advanced indoor real fire training facilities should be provided to enhance their firefighting capability in various fire scenes. The proposed burn house simulator will simulate different indoor fire scenarios, including basements, hotels, industrial buildings, residential blocks and karaokes. Real fires, visual and audio effects, and artificial smoke will be simulated to help firefighters acquire better fire-fighting techniques in a safe and controlled environment.</p>

Driving training block

8. The FSD has always attached great importance to safe driving. To ensure that all personnel responsible for driving duties meet the relevant requirements, the staff concerned are required to receive training and pass a driving test before being assigned to operate fire appliances and ambulances. At present, the FSD does not have a designated training ground for driving. While driving theory courses are given in Yau Tong Fire Station, practical training is conducted at a temporary training ground in Kai Tak. In order to enhance the effectiveness and safety of driving training, we suggest incorporating a driving training ground within the proposed FSTS.

Ambulance Service Training

9. Established in 1992, the Ambulance Command Training School in Ma On Shan is used to provide the 26-week basic training programme for ambulancemen new recruits, as well as the refresher and recertification courses like paramedic training for serving ambulance personnel. At present, the training school can only accommodate a maximum of 86 trainees for residential training at the same time. It has been running at full capacity and cannot cope with the increasing number of trainees. On the other hand, the limited space of drill yard can only accommodate around 40 trainees for drilling at the same time. In order to provide more effective training, there is a need to provide for additional ambulance training facilities at the proposed training school.

10. Moreover, the fire and ambulance personnel are often equipped to work closely and in cooperation in handling of emergencies. The new training school, by providing both fire and ambulance training, will provide members of the fire and ambulance services with more opportunities to train together, thereby enhancing their coordination and ability in responding to disaster.

PUBLIC CONSULTATION

11. We consulted the Sai Kung District Council (SKDC) on the location and facilities of the FSTS on 1 April 2008. In addition, we further consulted the SKDC on the proposed amendments to the Tseung Kwan O Outline Zoning Plan (No. S/TKO/17) on 4 May 2010. SKDC suggested implementing measures to mitigate the noise and traffic impact caused by the project. FSD has explained at the meeting in May 2010 that, the Administration had commissioned a consultant to conduct an environmental impact assessment. It was found that, due to the long distance between the proposed training school and the residential areas, the noise will not have much impact to the residents in vicinity. Besides, when designing the training school, the Administration will place buildings providing real fire trainings near hill side to reduce the noise level. With respect to the traffic issue, since the training vehicles will not be in Tseung Kwan O frequently, it will not influence the traffic in the area. Members have noted the information and raised no objection to the project.

ENVIRONMENTAL IMPLICATIONS

12. The project is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). We completed a Preliminary Environmental Review (PER) and obtained Environmental Protection Department (EPD)'s approval in early July 2010. The PER concluded that subject to the provision of suitable mitigation measures, the project would have no long term adverse environmental impact.

13. During construction, we will control noise, dust and site runoff nuisances to within established standards and guidelines through the implementation of mitigation measures in the relevant contracts. These include, but not limited to, the use of silencers, mufflers, acoustic lining or

shields as appropriate for noise control, frequent cleaning and watering of the site, and the provision of wheel-washing facilities. After commissioning of the FSTS, suitable measures, such as underground tank to collect water used in drills for recycling and smoke cleaning system to treat the smoke generated from real fire training, will be implemented.

14. We have also considered measures in the planning and design stages to reduce the generation of construction waste where possible. We will require the contractor to use inert construction waste on site as far as possible, in order to minimise the disposal of inert construction waste to public fill reception facilities. We will encourage the contractor to maximise the use of recycled or recyclable inert construction waste, and the use of non-timber formwork to minimise the generation of construction waste.

LAND ACQUISITION

15. The project does not require land acquisition.

FINANCIAL IMPLICATIONS

16. According to the price level in September 2010, the preliminary estimated project cost is \$3.4 billion² at money-of-the-day prices. We will embark upon the related tendering procedures by the end of 2011. With reference to the price submitted in the tender, we will seek funding approval from the Public Works Subcommittee (PWSC) and Finance Committee (FC) in mid 2012. The additional annual recurrent expenditure arising from this project is estimated to be \$96 million.

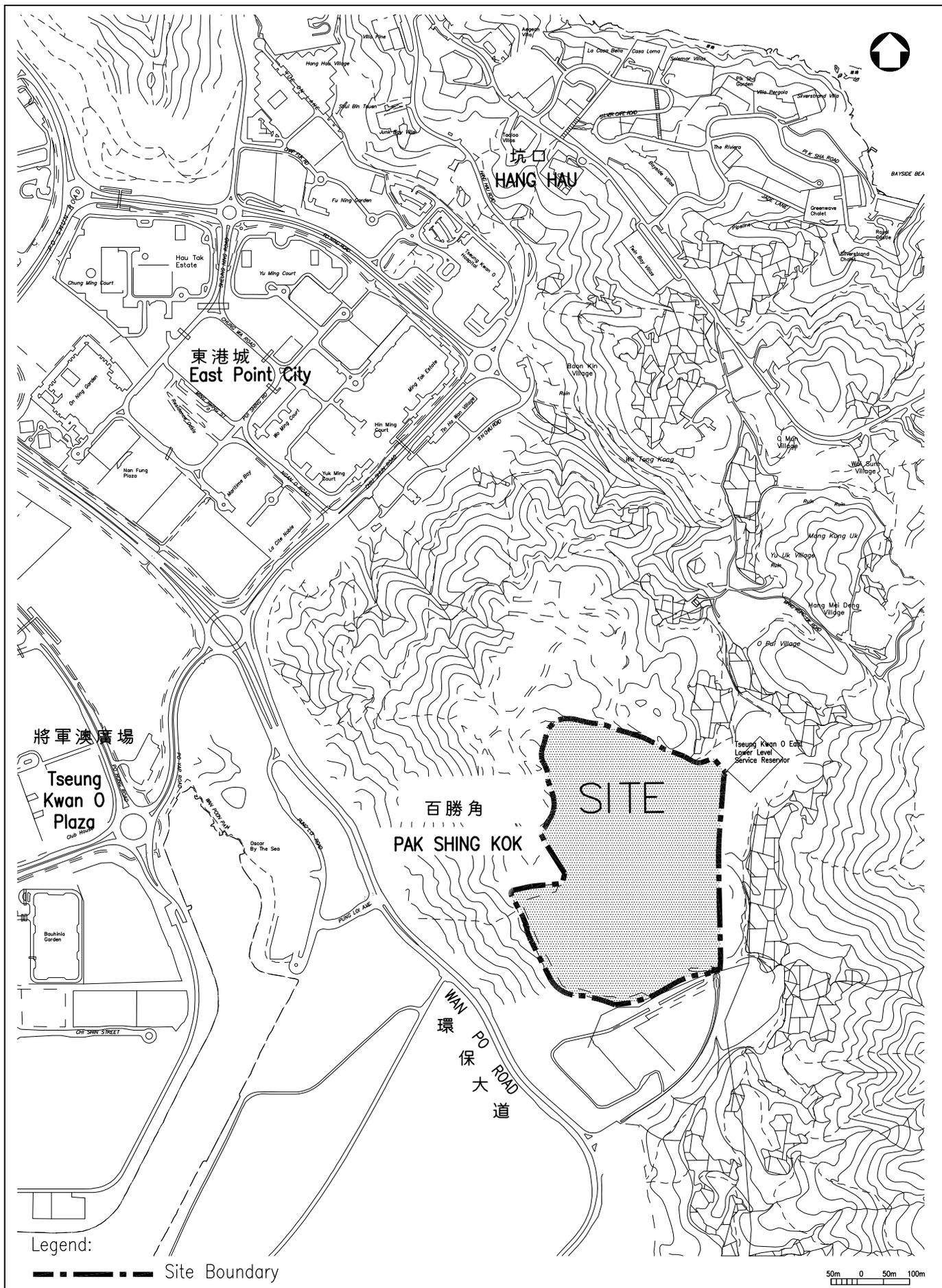
IMPLEMENTATION

17. We plan to submit the proposal to PWSC and seek funding approval from the FC in mid-2012. Subject to funding approval, we plan to

² This is a preliminary estimated project cost. We cannot rule out the possibility that the actual project cost will be higher. The Tender Price Index of the Architectural Services Department has risen by 12% between the third quarter in 2009 and the third quarter in 2010. We expect that the prices of construction materials and construction workers' wages will continue to rise between now and end 2011 when tendering will be conducted. However, it is difficult to assess the rate of increase at this stage.

start construction works of the proposed FSTS in the latter half of 2012, and it will be completed by the second half of 2015. After commissioning of the new training school, the existing FSTS in Pat Heung will be closed.

Security Bureau
Fire Services Department
January 2011



Legend:

--- Site Boundary

50m 0 50m 100m

title REDEVELOPMENT OF FIRE SERVICES TRAINING SCHOOL CUM DRIVING TRAINING SCHOOL AT PAK SHING KOK, AREA 78, TSEUNG KWAN O SITE LOCATION PLAN	drawn by Y.L. LAM	date 08/09	drawing no. AB/7235/XB001	scale 1:10000
	approved C.F. HO	date 08/09	 ARCHITECTURAL SERVICES DEPARTMENT	
	office ARCHITECTURAL BRANCH			