

**For discussion on
27 October 2009**

**Legislative Council Panel on Development
Tamar Development Project**

PURPOSE

In May 2009, we briefed the Development Panel of a request by the Legislative Council Commission (LCC) to provide additional area in the future Legislative Council (LegCo) Complex in the Tamar Development Project (the Project). This paper provides an update on the request and seeks Members' support to increase the approved project estimate for the Project from \$5,168.9 million by \$359.8 million to \$5,528.7 million in money-of-the-day (MOD) prices. Apart from meeting the additional space requirements and new requests from LegCo, the increased project estimate will cover costs for incorporating new items in the Project in the light of technology changes and demands from the community.

BACKGROUND

2. In June 2006, the Finance Committee (FC) approved the upgrading of the Project to Category A at an estimated cost of \$5,168.9 million in MOD prices.
3. The approved scope of the project comprises the design and construction of –
 - (a) the Central Government Complex (CGC), with a total construction floor area (CFA) of 124 680 square metres (m²) and consisting of –
 - (i) a low block for accommodating the Chief Executive's Office, the Executive Council and Secretariat, and ancillary facilities; and
 - (ii) office block(s) for accommodating offices with core policy formulation functions, including offices for the Chief Secretary for Administration, the Financial Secretary and other policy bureaux, with other ancillary facilities;
 - (b) the LegCo Complex, with a total CFA of 36 230 m² and

consisting of –

- (i) a low block for accommodating the LegCo Chamber, and ancillary facilities; and
 - (ii) high block(s) for accommodating Members' offices, staff offices of the LegCo Secretariat, and ancillary facilities;
- (c) an open space with a minimum area of two hectares, which will be landscaped and designed for the leisure of the public;
- (d) 500 car parking spaces¹, loading and unloading areas, and other ancillary facilities such as mechanical plant rooms with a total CFA of 41 000 m² for the CGC and the LegCo Complex; and
- (e) two covered pedestrian footbridges connecting –
- (i) the southern part of the Tamar development with Admiralty, close to the transport interchange; and
 - (ii) the eastern part of the Tamar development with the existing footbridge system linking the CITIC Tower.

4. Design and construction of the above works commenced in February 2008. The overall works have been progressing well and are scheduled for completion in mid 2011².

5. On receipt of LCC's request, we have critically reviewed the whole project. We propose to increase the APE of the Project from \$5,168.9 million by \$359.8 million to \$5,528.7 million to cover the additional cost for the design and construction of the following items –

¹ The 500 car parking spaces include 380 parking spaces for the CGC and 120 car parking spaces for the LegCo Complex.

² While the scheduled completion of overall works according to the contract period of 39 months is May 2011, projected completion (including projected "Extension of Time" (where contractually provided and approved) is August 2011.

Proposed increased
amount in MOD prices
(\$ million)

(A) *New requests from LegCo*

- | | | |
|-----|--|-------|
| (a) | Additional area for LegCo Complex to meet its need for enhanced communal facilities and the Secretariat's office | 124.0 |
| (b) | Enhanced electronic equipment for LegCo | 23.2 |
| (c) | Installation of glass partitions at Public Galleries of LegCo Complex | 11.1 |

(B) *Other new items*

- | | | |
|-----|--|------|
| (d) | Additional environmental and energy conservation measures in LegCo Complex, CGC, Open Space and Elevated Walkways | 84.2 |
| (e) | Enhanced provision in LegCo Complex, CGC and Open Space for barrier free access in view of the Building (Planning) (Amendment) Regulation 2008 | 14.8 |
| (f) | Acquisition and installation of artworks in LegCo Complex, CGC and Open Space | 32.4 |
| (g) | Provision of a café at the fringe area of Open Space for public enjoyment | 8.3 |
| (h) | Additional consultancy fees | 9.5 |
| (i) | Additional contingencies | 30.8 |
| (j) | Additional provisions for price adjustment | 21.5 |

Total

359.8

6. Noting that there is a need from a proper project management perspective to complete the project on time and within budget, adding new items to a project after commencing construction poses significant challenges to the management of the project as they will certainly have cost and possibly time implications. On top of the capital cost for the new items to be added, there will be substantial costs for additional design work, acceleration costs, additional preliminaries, disruption and contractor's risk. The reasons for the increase in the approved project estimate are set out in paragraphs 7 to 25 below.

A. New Requests from LegCo

Additional Area for LegCo Complex

7. A recent review by the LegCo Secretariat has revealed that the net operational floor area of the LegCo Complex originally in the Project is inadequate to meet the requirements for new facilities and new/enhanced services to be provided. Additional office space for the increase of staff is also required to cope with extra workload for the new services arising from the commissioning of the new LegCo Complex. LCC has therefore made a request for additional area at the LegCo Complex for certain communal facilities and for LegCo Secretariat's office. A summary of the additional area to be provided is as follows –

Item	Use	Area (Net Operational Floor Area (NOFA))
<i>Communal facilities</i>		
(a)	expansion of the existing LegCo Library with a Constitutional Library	220m ²
(b)	establishment of additional LegCo Archives	140m ²
(c)	studio for use by sign language interpreters for proceedings of LegCo	50m ²
(d)	extra photographers' room	53m ²
<i>Secretariat office</i>		
(e)	(i) Creation of posts in 2007 and 2008 (ii) Posts to be created in 2009 and 2010 (iii) Reserve area for future expansion of staff offices	952m ²

8. With this additional NOFA (1 415 m²), the corresponding CFA of LegCo Complex according to the latest design layout will be increased by about 2 675m². In view of the rising cost of the construction market and the

reasons hereinafter elaborated, the estimated cost of the additional NOFA stands at \$113.0 million. Apart from the construction cost, the estimate also covers the additional design and related cost arising from the latest revision of the adjacent affected areas and the layout in other areas as requested by LegCo Secretariat for making better use of the total office space available. The associated additional cost for furniture and equipment items is about \$11.0 million. In total, the additional NOFA and related costs will cost about \$124 million.

9. Since the Project is already at an advanced stage, certain preparatory works for Item 6(a) to (d) (i.e. additional superstructure and pile cap works)³ had to be ordered by the end of May 2009 to avoid any abortive works afterwards. With the support-in-principle of the Development Panel, we ordered the preparatory works in May 2009, the estimated cost of which amounts to \$3 million and has been absorbed within the existing project vote.

Electronic Equipment for LegCo

10. In view of the latest technology advancement and in order to better equip the new LegCo Complex to cater for enhanced services, LCC considers that more funding is required for procuring electronic equipment for LegCo Complex. These enhanced electronic equipment provisions include high-definition (HD) grade equipment for TV Production System and Press Conferencing System which are essential for the live broadcast and webcast of LegCo meetings, HD grade projectors for presentation at meetings, and additional Electronic Voting System for meetings⁴ etc. The cost is about \$23.2 million.

³ The preparatory works involve -
(a) additional strap beams to tie up the pile caps;
(b) additional rebars to columns;
(c) additional starter bars for slab;
(d) strengthening of steel column from 1/F to 1M/F for photographers' room and studio of sign language interpreters; and
(e) additional conduits in columns and slabs.

⁴ There are two Electronic Voting Systems (EVSs) in the Chamber and Conference Room A of the existing LegCo Building. With the increasing need for voting to be taken at committee meetings, the EVS in the Chamber of the LegCo Building is currently also used by committees. With the commissioning of the new LegCo Complex, most meetings of committees will be held in conference rooms, and one additional set of EVS is required to be installed in conference rooms.

Glass Partitions at Public Galleries

11. The LegCo Secretariat has revisited the design of security measures in the LegCo Complex and made reference to the experience of overseas parliaments following the recent incidents occurred at the Public Gallery in the Chamber of the existing LegCo Building. The Crime Prevention Bureau (CPB) of the Hong Kong Police Force has been consulted on the installation of glass panels in the Public/Press Galleries of the new LegCo Complex. Based on the recommendations of CPB, LCC decided that full height glass panels should be installed in the Public Galleries in the Chamber and Conference Rooms A, B and C of the new LegCo Complex which would be an effective deterrent to the throwing of objects into the respective Chamber and Conference Rooms. The cost is about \$11.1 million.

B. Other New Items

Additional Environmental and Energy Conservation Measures

12. To demonstrate the Administration's commitment to protect the environment, we are committed to make the Project a green and sustainable project. Accordingly, the Project has already incorporated a variety of environmental friendly features, e.g. high energy efficient sea-water cooled chiller plants, green roof, photovoltaic panels, daylight sensors and computerized lighting controls, etc. (See details in the extract of Development Panel paper of February 2008 at the *Annex*). When completed, the Project is expected to achieve the highest rating, i.e. Platinum, under the Hong Kong Building Environment Assessment Method (HK-BEAM).

13. As the technologies of environmental and energy conservation measures are rapidly developing, we have critically reviewed the feasibility of incorporating more new features in the Project so that it remains the paragon of green government building at the time of its commissioning. In considering further environmental features to be included in the Project, it may be necessary to look beyond cost-benefit and consider the intangible long-term benefits that will be brought to the environment.

14. As in the case of other new technologies, certain new environmental technologies are currently only used commercially in a limited scale. Together with the various cost implications factors as mentioned in paragraph 6, they are thus higher in cost and may have a very long payback period.

15. We therefore need to strike a balance between promoting environmental friendliness through the Project and completing the Project on time and within a reasonable range of the budget. Based on this principle, we have examined the possibility of incorporating more new energy conservation measures in this Project, some of which will have a long payback period but which we consider worth adopting to demonstrate our willingness to promote and try out new technology for protecting our environment. We have identified the following additional environmental and energy conservation measures for incorporation in the Project –

- (a) Energy efficient features include –
 - use of task lighting design for office in CGC
 - replace compact fluorescent lamp of lower efficacy and tungsten halogen lamp with LED for pelmet lighting
 - use of occupancy sensor for lighting control of staircase, toilet, lift lobby and pantry
 - use of temperature controlled mechanical ventilation in plant rooms

- (b) Renewable energy technologies include –
 - use of light pipe
 - use of solar hot water system
 - use of thin film photovoltaic panels

- (c) Other feature including provision for battery charging facilities for electric vehicles and enhanced provision of recycling bins in pantries

16. The total estimated cost for adoption of the proposed additional environmental and energy conservation measures, as listed in paragraph 15, is around \$84.2 million. The additional energy efficient features will achieve an additional 3.6% energy savings in the annual energy consumption. The average payback period is about 44 years.

Barrier Free Access (BFA)

17. Government Buildings (including this Project) are exempted buildings under the Building Ordinance (Cap. 123). However, it is the Government's practice to follow the relevant regulations on a voluntary basis. When the contract was awarded in January 2008, the design for the Project was therefore required to comply with the "Design Manual: Barrier Free Access 1997" issued by the Buildings Department.

18. In December 2008, the Building (Planning) (Amendment) Regulation (the Regulation) came into effect. It sets out revised requirements based on the Design Manual: Barrier Free Access 2008 for the provision of facilities in certain categories of buildings to provide for better access to and use of facilities of such buildings and their facilities by persons with a disability.

19. We propose to take this opportunity to bring about the relevant provisions up to the latest standard to meet the community's expectations yet without affecting the overall project programme. Having examined the layout of the LegCo Complex, CGC and Open Space, we propose to incorporate all the obligatory items under the Regulation which include the following major items –

- (a) external staircase – enhanced requirement for the height and width of risers in external staircase;
- (b) entrance door – provision of automatic sliding or swing door in main entrance to a building;
- (c) disabled toilet and urinal – provision of larger disabled toilet and clear space with grab bars in one of the urinals;
- (d) internal door – provision of unobstructed space in doors at public areas and common areas to enhance wheel chair accessibility; and
- (e) other non-layout obligatory design requirements in building service installation, signs, illumination, handrail, drop curb, raille and tactile etc.

20. Having consulted the LegCo Secretariat, we consider that the following enhancement items on top of the obligatory requirements may be incorporated in the Project where appropriate –

- (a) talking sign system or touch activated audio signs at key locations accessible by the public for people with visual impairment;
- (b) equipment in some designated area/seats in meeting rooms for people with visual impairment, e.g. CCTV magnifiers and Power Braille computer display units ;
- (c) wireless microphone and earphone in some meeting rooms for wheelchair-bound people;
- (d) automatic doors for areas accessible by the public (including toilets); and
- (e) enlarged toilet cubicles for easy maneuver of elderly people and people with physical disabilities, where appropriate.

21. The cost for implementing the above items in LegCo Complex, CGC and the Open Space, where appropriate, is about \$14.8 million.

Artworks

22. Art is a significant part of a vibrant and dynamic international city like Hong Kong. Both LegCo and the Administration consider it important to install appropriate artworks in LegCo Complex, CGC and Open Space.

23. Possible options to acquire artworks include –

- (a) commissioning of tailor-made pieces by local and international artists through open and/or invited competitions;
- (b) purchasing of finished works;
- (c) loan from LCSD's museums or public/private organizations; and/or
- (d) accepting donation.

24. Apart from displaying art pieces, we will also designate a small corner in CGC for displaying background history of the Tamar site. Additional funding is needed for the artworks acquisition and installation; as well as the supporting facilities for the information corner. The cost is about \$32.4 million.

Café

25. There are already two hectares of Open Space within the existing scope of the Project for public enjoyment. To better serve visitors to the Open Space, we propose to provide a café at the fringe area of the Open Space. The café will provide light refreshment to Tamar visitors and the public. Related cost is about \$8.3 million.

Integration and Application of Information Technology in new LegCo Complex

26. LCC approved in December 2008 the conduct of the Information Systems Strategic Plan Study to prepare for the move of LegCo to the new LegCo Complex and to meet its long-term business need. Recommendations of the Study include the establishment of IT infrastructure and systems migration, and the implementation of applications which are essential to the operation of LegCo business. Funding application for the IT implementation and relocation project will be separately submitted to this Panel for consultation and the FC for approval.

TIMETABLE

27. If funding is approved by the FC by the end of the year, the additional works as detailed above will be completed together with the rest of the Tamar Development Project.

ADVICE SOUGHT

28. Members are invited to support the proposal as mentioned in paragraph 5 above.

Administration Wing, Chief Secretary for Administration Office
Legislative Council Secretariat
Architectural Services Department
October 2009

Extract of Development Panel paper of February 2008

ENVIRONMENTALLY FRIENDLY FEATURES

2. The Tamar Development Project has incorporated a variety of environmentally friendly features to make it a green and sustainable project and a paragon of green government building. When commissioned, we are confident that the Tamar complex would be one of the greenest government buildings in Hong Kong.

Overall Design

3. The overall design illustrates a careful consideration of the surrounding environment. The buildings, i.e. the LegCo Complex, the Low Block and the Office Block of the Central Government Complex (CGC), are positioned in the eastern, western and southern sides of the site respectively. The disposition of the buildings forms a major breezeway from the harbour to the inner city area. The design of the CGC Office Block as an “Open Door” with principal north-south orientation optimizes the harnessing of daylight and inter-block shading against sunlight for indoor spaces.

4. The north-south layout of the open space, i.e. the Green Carpet, enhances visual permeability through the site and maintains good air ventilation in the area even after the buildings are constructed.

Green Features

5. The design has proposed the adoption of a number of green features such as –

- Green roofs and sky gardens;

- Photovoltaic panels;
- Water features, such as a lily pond outside LegCo dining hall, reflecting pool and a floating platform adjacent to the CGC Low Block, to provide evaporation cooling effect; and
- Vertical planting walls at suitable areas such as CGC Low Block to improve thermal insulation of the building and street landscape environment. Other vertical planting will be applied to outdoor parapet walls.

Energy-saving features

Building Services

6. The use of energy-efficient building services will help reduce the consumption of energy in operations. The following features have been proposed –

- High energy efficient sea water cooled chiller plants – it employs sea water for heat rejection, which is a more energy efficient air-conditioning system than the air cooled system and water cooled system using cooling towers;
- Use of variable speed drives for the air-conditioning equipment – the chilled water and conditioned air supply of air-conditioning system will be varied with the aid of variable speed drives to meet the actual loading demand in the building, achieving optimum energy usage;
- Free-cooling design in the air-conditioning system – the free-cooling feature allows reduction of air-conditioning system operation as well as the energy consumption when the outdoor air condition is suitable for cooling the building;
- Heat wheels installation to reclaim waste heat from exhaust air – the heat wheel installation is used to pre-cool the fresh air supply to the buildings by reclaiming the energy from the exhaust air before the latter is discharged out of the buildings in order to save energy;

- High efficiency motors – motors installed will be of the highest energy efficiency class; and
- Service-on-demand escalator – it operates only when the presence of passengers is detected to achieve energy saving.

Water-saving measures

7. There will be a rainwater recycling system whereby rainwater will be collected and directed to a holding tank for irrigation of planting areas, thereby reducing the use of potable water. The irrigation is undertaken through a subsurface drip system that avoids spray to and contact with humans, and minimizes loss of water due to evaporation.

8. Other proposed features that save the use of water include –

- dual flushing cistern of 4/6 litres – there are two buttons in the flushing system, one for a full flush and one for a half flush;
- urinal flushing with infra-red sensor; and
- water tap with infra-red sensor.

Lighting

9. The design has proposed the use of Daylight Sensor Control for office lighting. The lighting level of peripheral offices will be automatically adjusted according to the daylight penetrated to the office so as to save lighting electric energy. There will also be a Computerized Lighting Control system integrated with timer control function to monitor and control lighting.

10. A Motion Sensor Control will be incorporated to detect occupancy condition of the office space. It will automatically switch off office lighting as well as the air-conditioning system when there is no occupancy in office to save energy.

11. The following will be used to further enhance energy savings in respect of lighting –

- High efficiency lamp source and electronic ballast (e.g. T5 fluorescent lamp); and

- LED Exit Signs.

Reduction of peak demand of electrical load

12. A demand side management control will be built in the Building Energy Management system which will facilitate the building management staff to monitor the operating performance of building services installations and to prioritise optimum operation of the corresponding equipment to reduce the peak demand of electricity.

Waste management

13. To maintain a clean working environment and facilitate recycling, there will be an Automatic Refuse Collection System which collects and transports presorted waste and recyclables in a fully automated enclosed vacuum system. Contact with refuse and containers is minimized, thereby improving safety and hygiene. Separate hoppers will be provided in the refuse chute room(s) on each floor for different types of waste. A refuse storage and material recovery chamber will also be provided separately.

Building materials

14. The project has also incorporated a number of environmentally friendly/energy-efficient building materials, including –

- Double-layer ventilated facade design – air movement is generated between the glass facades, providing natural ventilation and cooling effect to the building;
- Non-reflective, clear and tinted insulated glass unit with low-E (low emissivity) coating will be adopted in all buildings and shading devices will be provided;
- Modular system (e.g. demountable partitions, raised floor), in which modular units can be reused in layout alterations, minimizing wastage;
- Reusable formwork (i.e. the “moulds” to form concrete slabs, columns or beams, etc.) are to be made of metal or other reusable materials instead of timber. Metal formwork is

durable and hence more reusable. Metal formwork is usually adopted for repetitive structural units such as those for multi-storey office buildings with repetitive typical floor plans.

- Timber products (i.e. timber panel, timber flooring, etc.) from sustainable forest or plantation; and
- Wood materials with low emission of formaldehyde (methanol) complying with Class E1 of international standard¹, non-PVC wall covering and building materials such as paint, carpet adhesive etc. with low VOC (Volatile Organic Compounds).

Curtain Wall

15. The external envelope of CGC Office Block, CGC Low Block and LegCo Complex will adopt a curtain wall facade. The estimated window area is around 25,000sqm to 30,000sqm subject to design development. We will use insulated glass units with Low-E (Low emissivity) coating as glazing to reduce heat transmission into the buildings, thereby reducing solar heat gain and air-conditioning loading/cooling costs.

Air Ventilation Assessment

16. The “Open Door” design which places the two office blocks as an Open Door at the south of the site will maintain the breezeways between the waterfront and Admiralty and allows prevailing winds to penetrate into the inner city. The northerly winds will be able to penetrate through the “gateway” along the Green Carpet. The north-easterly and easterly winds can also penetrate through the building mass of a permeable design with various openings and lifted building blocks to allow fresh air to pass through.

17. Furthermore, the design will enable air ventilation similar to the existing conditions in the surrounding areas to be maintained and will improve the average ventilation in some adjacent streets. It will also provide sufficient shelters to pedestrians from strong winds and at the same time maintain suitable air ventilation.

¹ The generally accepted guideline figure for the amount of formaldehyde that should not be exceeded in ambient air from all formaldehyde emitting sources is 1.5mg/L according to International Health Standard (Harmonized European Standard BS EN 13986).

Carbon Audit and Energy Saving

18. The extent to which energy can be saved in each of the above green features depends on environmental and operational factors such as outdoor weather conditions and building energy consumption profile. It is difficult to arrive at a meaningful estimation of the specific amount of energy saved in each of the green features at this stage. The actual energy can only be metered and benchmarked with other government buildings for the energy performance after the buildings are occupied. That said, these green features together demonstrate the Government's commitment to environmental friendliness and set a good example for both private and public sectors to follow in building design and construction.

19. In his 2007 Policy Address, the Chief Executive announced that the Government would set an example by conducting a carbon audit and implement an emissions reduction campaign in the new CGC at Tamar. We will conduct a carbon audit in accordance with guidelines drawn up with reference to international approaches and protocols and strive to reduce Tamar's greenhouse gas emission as far as possible.