For information

Legislative Council Development Panel
Tamar Development Project

PURPOSE

In response to the request of the Legislative Council (LegCo) Development Panel, this paper provides detailed information regarding the Tamar Development Project.

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 standard[1], 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.

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[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.

Noise Impact of Road P2

20. Road P2 is outside the scope of the Project. As the portion of Road P2 at Tamar will be sunken, its noise impact on Tamar will be minimal.

PUBLIC ACCESS

LegCo Complex

21. The extent and scope to which the LegCo Complex is open for public access is subject to the consideration and decision of LegCo. On the advice of the LegCo Secretariat, we have incorporated specific parameters for public access in our tender document. For example, there should be two entrances to the LegCo Complex – one for Members only and one for all users. The internal layout of the LegCo Complex has to provide clear and secured separation of public and non-public areas.

CGC

22. While Tamar will form a prime civic core and will be accessible to the public as far as practicable, the CGC requires appropriate security measures commensurate with those applicable to a government headquarters. Security arrangements (e.g. measures to segregate different users of the buildings and installation of closed-circuit televisions) will be incorporated as appropriate to ensure security.

23. We appreciate the public's aspirations to have greater access to CGC. As set out in the tender document, the design includes a "Multi-purpose Hall" in the CGC Office Block. One of the functions of the Hall is to hold different activities, including those for public participation. The Multi-purpose Hall is located on 2/F of CGC Office Block. Visitors can enjoy the view of the Green Carpet and Victoria Harbour through the glass wall at the foyer.

24. In principle, we hope to open the Hall as much as possible, but the detailed arrangements (such as the opening hours and extent of opening-up) would be subject to the detailed design of the complex and the security and operational considerations.

25. There is no particular feature (with a width measuring not less than 10 meters) in the CGC which serves to segregate the government complex from the public. What has been set out in the tender document is that there should be a strip of amenity space between the open space and the CGC. The purpose of the space is to show the demarcation between the two for easy management.

Open Space

26. Half of the Tamar site is designated as open space, which is easily accessible to the public. The entire open space is suitable for different kinds of public activities. Subject to detailed design, there will be an open lawn (Green Carpet), a civic piazza; a LegCo garden; an amphitheatre; a Tamar corner; a sculpture garden; and a floating platform and lily pond, etc.

27. As detailed designs of individual facilities have yet to be worked out, we will consider making suitable arrangements for public gatherings having regard to considerations such as the public's aspiration to gather at Tamar, the technical feasibility, and the operational and

security needs.

OTHER DESIGN ISSUES

Site Coverage

28. The entire site area is about 42,000 m^2, of which about 21,000 m^2 is for open space and the remaining two hectares are for CGC and LegCo Complex.

Building Height

29. Mindful of the public's aspirations for as much open view as possible to the ridgeline and the harbour, we voluntarily tightened up the height restrictions of the buildings[2] in the tender document to 130 mPD – 160 mPD, to ensure at least a 20% building-free zone below the ridgeline.

30. The height, disposition and orientation of all buildings of the Tamar development have been carefully considered so as to preserve the existing views to the ridgeline and mountain backdrop and to the Victoria Harbour. CGG Office Block is the tallest building of the development with building height of 125.2 mPD. No part of the building structure will intrude into any part of the 20% building free zone below the ridgeline.

31. The Tamar complex is in general much lower than nearby buildings. A comparison of the heights of CGC and LCC and nearby buildings is summarized below –

Name of building	**Building height (mPD)**
CGC	
- Office Block	125.2
- Low Block	30.3
LegCo Complex	57.5
Citic Tower	131
Bank of America Tower	143

[2] Under the approved Central District (Extension) OZP No. S/H24/6, the maximum permisable building height of development of the G/IC zone of the Tamar site is 180 mPD.

Name of building	Building height (mPD)
United Centre	149
Far East Finance Centre	177
Lippo Centre	Tower 1 : 179 Tower 2 : 191
Admiralty Centre	Tower 1 : 131 Tower 2 : 109

Principal Datum of LCC

32. The main entrance foyer of LCC is at 5.35 mPD subject to detail design.

SCOPE FOR MODIFICATION

33. We are keenly aware of the public's interests in the Tamar project. Upon the re-launch of the project in 2005, we consulted LegCo and the public through attending meetings of LegCo and Central and Western District Council; meetings with deputations, and attending forums and media programmes. During the process, we had collected public views and had incorporated them into the tender requirement as appropriate. The following are examples in which public views had been taken into full account –

(a) **Harbour view and development density –** In view of the public aspirations for more open view to the ridgeline, better access to the harbour and less development density, we have -

- tightened up the height restriction from 180 mPD, which is approved in the relevant Outline Zoning Plan (OZP), to 130 mPD – 160 mPD, leaving at least a 20% building-free zone below the ridgeline;

- required the tenderers to take into due account relevant planning guidelines/principles[3] with a view to protecting

[3] These guidelines/principles include –
(a) the Urban Design Guidelines under the Hong Kong Planning Standards and Guidelines;
(b) the Vision and Goals for Victoria Harbour promulgated by the Town Planning Board. This aims to make the harbour "attractive, vibrant, accessible and symbolic"; and

the harbour;

- encouraged the tenderers to explore the option of providing car park and certain communal facilities underground such as plant rooms;

- critically reviewed the space requirements for CGC and trimmed this by 10% in terms of Net Operating Floor Area or 8.5% in terms of Construction Floor Area compared with that proposed in 2003; and

- included elevated walkways to facilitate pedestrian access to the waterfront.

Consequently, the building height of the tallest building of the project is only 125.2 mPD and no part of the building structure will intrude into any part of the 20% building free zone below the ridgeline. The "Open Door" and "Green Carpet" design allows easy access of the public to the waterfront through the open space. Open space now accounts for half of the area of the Tamar site, more than that stipulated in the original OZP[4].

(b) **Environmental concerns –** In view of public concerns on environmental friendliness, we have –

- incorporated in the tender requirements measures to encourage the use of new methods and technologies that are environmentally friendly and conducive to efficient and effective building management and maintenance in the long term; and

- required the tenderers to undertake Air Ventilation Assessment to assess the impacts on the pedestrian wind environment and ensure good air ventilation effects.

Consequently, the contractor has come up with a number of green features (as detailed in earlier paragraphs) and a design that facilitates air ventilation.

(c) the Harbour Planning Principles formulated by the Harbourfront Enhancement Committee. This emphasizes creating "a harbour for the people and a harbour of life".

[4] According to the approved Central District (Extension) OZP No. S/H24/6, 2 ha out of the 4.2 ha Tamar site (i.e. less than half of the site) is zoned as Open Space.

34. Noting that the project has attracted much public interest, we further made an unprecedented arrangement in March – May 2007 for the public to view the tender designs at the tender evaluation stage and collected public views. An independent consultant has been engaged to collate the public views on the design and aesthetic aspects and compile a report for consideration by the Special Selection Board in conducting the tender assessment. The design now chosen has received many positive comments from the public.

35. Since this is a design-and-build (D&B) contract, the Government is obliged to accept the tender design as submitted, save for those changes covered by the Schedule of Amendments agreed with the Contractor prior to the award of contract. When we finalise the design details with the Contractor, minor revisions of the design not involving changes to the Employer's Requirements may be implemented with the consent of the Contractor. While the Government has the power to order Variation to the Employer's Requirements under the Contract, any Variation may give rise to time and cost implications for the project. Major revisions cannot be entertained because under the Agreement on Government Procurement of the World Trade Organization (WTO GPA), significant alteration of the rights and obligations of the contracting parties may result in a wholly new contract that requires re-tendering of the contract. We will ensure that the project will be implemented timely and in full compliance of the tender / contract requirements.

COSTS

36. The contract sum for the D&B contract is $4,940 million. This is a contract for the design and construction of the entire Tamar site.

OTHER ISSUES

Key Milestones

37. The Project lasts for some 39 months and the milestones would include finalization of detailed design, completion of foundation and substructure works, completion of superstructure works, completion of mock-up and sample floors, completion of interior fitting-out works, completion of external works, testing and commissioning and handover. While the exact timing of each stage is being worked out, we are

committed to keeping LegCo updated on the Project. We plan to report to the Panel regularly on progress achieved.

38. With the LegCo Complex an important integral part of the Project, we look forward to continuing the close working relationship with the LegCo Commission and LegCo Secretariat in implementing the Tamar project. Amongst others, Architectural Services Department will set up a Project Control Group to maintain close liaison with the contractor and monitor the implementation of the project. As an important user of the Tamar complex, representatives from LegCo Secretariat will be invited to join the Project Control Group. For important stages such as Detailed Design Approval of plans prepared by the Contractor, we will consult the LegCo Commission through the LegCo Secretariat. LegCo Members may provide comments via LegCo Secretariat in the same way as they did in formulating the Project Brief and tender requirements.

Chief Secretary for Administration's Office
Administration Wing
February 2008