

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 703 – BUILDINGS

Government Office – Intra-governmental services

120KA – Building a government data centre complex

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **120KA**, entitled “Building a government data centre complex – pre-construction consultancy services”, to Category A at an estimated cost of \$52.6 million in money-of-the-day prices; and
- (b) the retention of the remainder of **120KA** in Category B.

PROBLEM

We need to carry out the design and site investigation works for the proposed government data centre complex (the Complex) at King Lam Street, Cheung Sha Wan, so as to support the development of data centre services in government bureaux and departments (B/Ds).

/PROPOSAL

PROPOSAL

2. The Director of Architectural Services, with the support of the Secretary for Commerce and Economic Development, proposes to upgrade part of **120KA** to Category A at an estimated cost of \$52.6 million in money-of-the-day (MOD) prices for undertaking the design and site investigation works (pre-construction works) for the Complex.

PROJECT SCOPE AND NATURE

3. We propose to upgrade part of **120KA** to Category A, comprising –

- (a) design of the works described in paragraph 5(a) to (c) below;
- (b) associated site investigation works and minor studies; and
- (c) preparation of tender documents and assessment of tenders for the works described in paragraph 5(a) to (c) below.

—— A site and location plan of the project is at Enclosure 1.

4. Subject to the funding approval of the Finance Committee (FC), we plan to commence the pre-construction works in the fourth quarter of 2015 for completion by late 2017.

5. We will retain the remainder of **120KA** in Category B and will seek funding for the works according to the implementation programme of the project. The scope of the remainder mainly comprises –

- (a) construction of a purpose-built data centre building with a construction floor area of about 12 400 square metres (m²) on a site of about 1 400 m² to provide data centre halls with around 1 400 racks for placement of servers and information technology (IT) facilities of B/Ds, as well as the accommodation for supporting the data centre operations;

/(b)

- (b) provision of critical infrastructural facilities such as uninterruptible power supply system, network cabling infrastructure and supplementary cooling and hot/cold aisle solutions; and
- (c) associated environmental mitigation measures.

JUSTIFICATION

Ageing government data centre design and facilities

6. The use of IT services in the Government is growing at a fast pace to cope with the ever increasing public demand for reliable and convenient e-Government services. The Government is therefore adopting cloud computing¹ to meet the rising computing demand in a fast, flexible and scalable manner. Such IT equipment, including that in respect of cloud computing, demands high electrical power and cooling capacity.

7. More than 60% of the existing government data centres have already been set up and used for over 15 years. Their out-of-date designs cannot cope with the stringent demands on electrical power and cooling capacity requirement of new IT equipment. There are also considerable constraints (e.g. insufficient headroom and lack of space) that hinder in-situ improvement. A newly designed complex can, on the other hand, provide a suitable environment to support the cloud computing infrastructure. It can also enhance the agility, reliability, security, capacity and availability of government data centre services and bring about performance and energy efficiency improvements with the aid of the latest technologies.

/Synergising

¹ Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

Synergising government data centre facilities and services

8. Currently, government data centres are hosted in different locations and usually co-located with the relevant B/Ds in general office buildings. These data centres are built at different times. About 80% of the government data centres have reached their capacity limits in terms of space, power and cooling efficiency. The Complex seeks to address the long-term need of hosting government IT services in a holistic manner, with a view to reaping the benefits arising from economy of scale and technology advancement. The Complex will –

- (a) reprovision existing government data centres with relocation needs, including those centres which have to be relocated as part of the phased relocation exercise for the three government office buildings at the Wan Chai waterfront;
- (b) accommodate data centre services for B/Ds which need to switch their IT operations from outsourced data centres to government data centres so as to avoid potential risks of service interruption and significant increase in service cost arising from contract renewal or change of service providers; and
- (c) enhance data centre capacities.

9. At present, we expect the Complex would provide accommodation for four existing government data centres² as well as new data centre services for five B/Ds³. Through the consolidation of data centre facilities and operations, the Complex can improve synergy and flexibility in terms of resource sharing so that the Government as a whole will spend less in both capital investment and recurrent operation in data centre services.

/Enforcing

² Belong to the Census and Statistics Department, Leisure and Cultural Services Department, Office of the Government Chief Information Officer and The Treasury.

³ The five B/Ds are the Education Bureau, Food and Health Bureau (Electronic Health Record Sharing System), Hong Kong Observatory, Hong Kong Police Force and Immigration Department.

Enforcing IT security and service availability

10. All existing government data centres are operating in full compliance with the Government's security policies, guidelines and procedures. The Complex will adopt the same security standards. In addition, the Complex being a purpose-built facility operating in permanent government-owned premises and dedicated to the use of government data centre purposes will facilitate easy control and monitoring to ensure that such standards are met. Together with the built-in security features that will be brought by the new data centre design, the Complex will provide strong control on the data centre building, facilities, systems and data. With high availability design that could maintain continuous operation at times of major incidents caused by, for example, equipment or power failure, the Complex could better mitigate the potential risks of data centre service outage.

Greener operation of government data centre services

11. Electricity consumption of data centres is high. Practices of green data centre design, building, management and operation are widely adopted worldwide. Due to non-purpose-built, legacy designs and ageing facilities, energy efficiency level of the current government data centres is lagging behind their local commercial counterparts. The Complex will be built with advanced green technologies and modern power-saving design that will reduce operational cost, energy consumption and carbon footprint.

FINANCIAL IMPLICATIONS

12. We estimate the cost of the proposed pre-construction works to be \$52.6 million in MOD prices (see paragraph 14 below), broken down as follows –

/(a)

		\$ million
(a)	Consultants' fees for design and preparation of tender documents	40.2
(b)	Site investigation works and minor studies	2.3
(c)	Contingencies	4.3
	Sub-total	46.8 (in September 2014 prices)
(d)	Provision for price adjustment	5.8
	Total	52.6 (in MOD prices)

13. A breakdown of the estimates for the consultants' fees by man-months is at Enclosure 2.

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

Year	\$ million (Sept 2014)	Price Adjustment Factor	\$ million (MOD)
2015-16	7.0	1.05725	7.4
2016-17	30.0	1.12069	33.6
2017-18	9.8	1.18793	11.6
	46.8		52.6

/15.

15. 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 2015 to 2018. Subject to funding approval, we will engage consultants to undertake the proposed consultancy on a lump-sum basis based on pre-defined scope of the works with appropriate provision for price adjustment for the duration of the consultancy concerned. We will deliver the site investigation works under a re-measurement contract, with provision of price adjustment as necessary, because the quantity of works to be involved may vary depending on actual ground conditions and design development.

16. The proposed pre-construction works will not give rise to any recurrent consequences.

PUBLIC CONSULTATION

17. We consulted the Sham Shui Po District Council on 2 September 2014. Members of the district council supported the project and advised that the Complex should put in place sufficient security measures to protect against physical attacks, and incorporate green features such as vertical greening and solar panels.

18. We consulted the Legislative Council Panel on Information Technology and Broadcasting on 8 December 2014. Panel Members supported in-principle the submission of the funding proposal of the pre-construction works for examination by the Public Works Subcommittee.

ENVIRONMENTAL IMPLICATIONS

19. This project is not a designated project under the Environmental Impact Assessment (EIA) Ordinance (Chapter 499). We undertake to carry out a Preliminary Environmental Review for the project and agree the findings with the Director of Environmental Protection. The proposed pre-construction works will not cause long-term adverse environmental impact. We shall implement suitable mitigation measures to control any short-term environmental impacts arising from site investigations.

20. The site investigation works will only generate an insignificant quantity of construction waste. We will require the consultant to fully consider measures to minimise the generation of construction waste and reuse or recycle construction waste as much as possible in the implementation of the construction project.

HERITAGE IMPLICATIONS

21. The proposed pre-construction works will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites or buildings, sites of archaeological interest and Government historic sites identified by the Antiquities and Monuments Office.

LAND ACQUISITION

22. The proposed pre-construction works do not require any land acquisition.

BACKGROUND INFORMATION

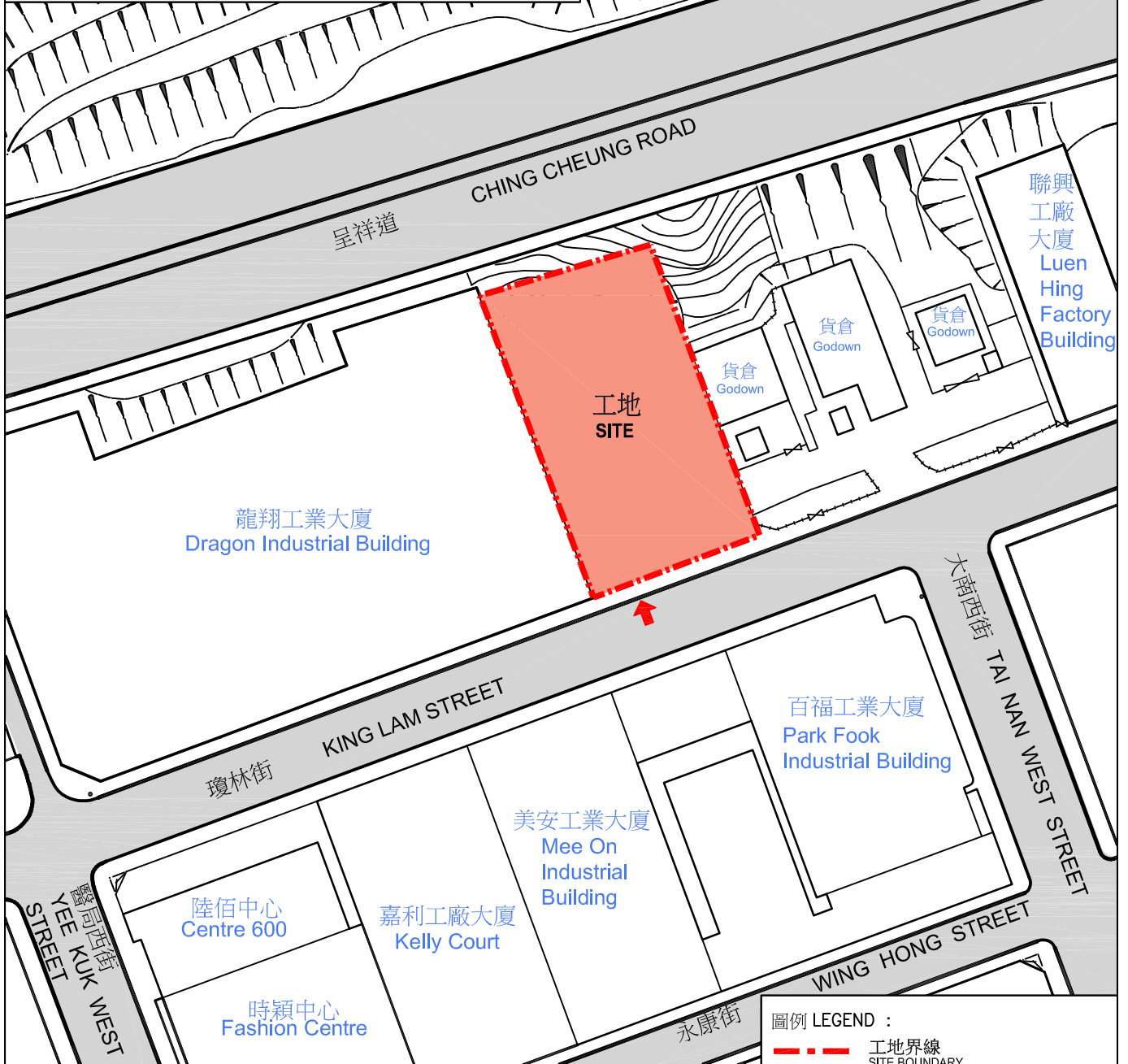
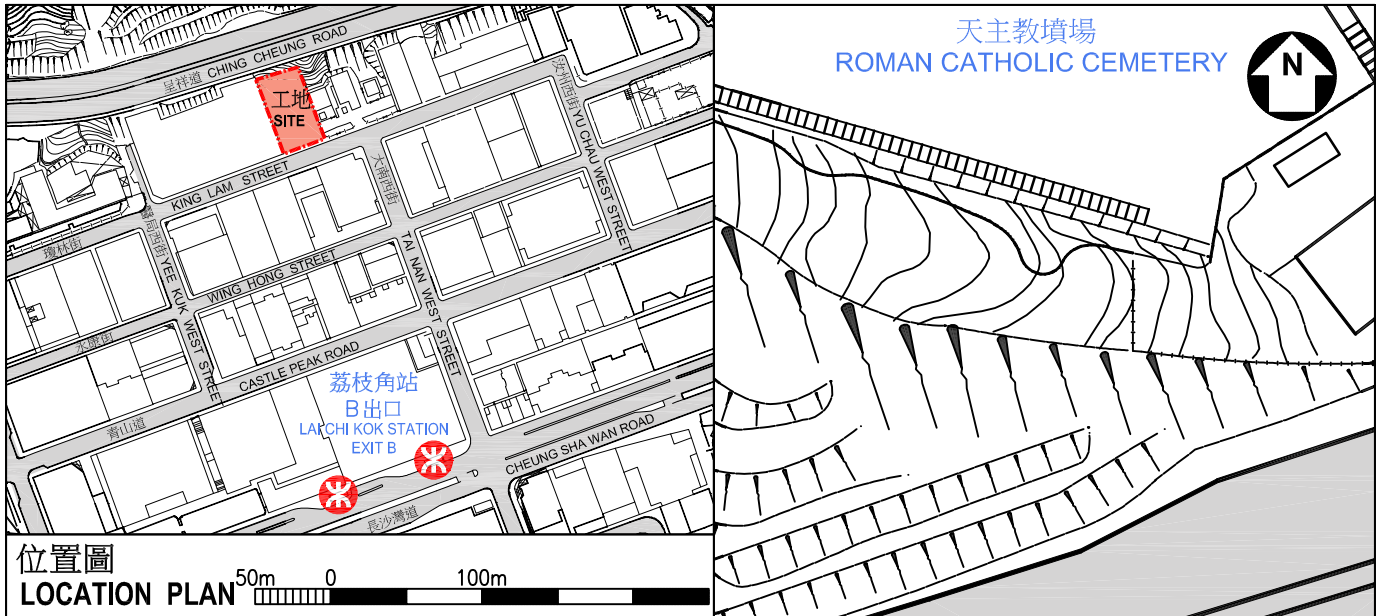
23. We upgraded **120KA** to Category B in September 2013.

24. We engaged consultants to undertake topographical survey, underground utilities survey, quantitative risk assessment, appraisal of major building services systems and geotechnical engineering services in May 2014. The total cost of the aforesaid works and consultancy services is about \$1.1 million and is 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 completed all the aforesaid works and consultancy services in February 2015.

25. The proposed pre-construction works will not involve any tree removal or planting works. We will require the consultants to take into consideration the need for tree preservation and formulate tree removal proposals during the design stage of the project. We will also include tree planting proposals, where possible, during the construction phase.

26. We estimate that the proposed pre-construction works will create about 26 jobs (one for labourer and another 25 for professional/technical staff) providing a total employment of 430 man-months.

Commerce and Economic Development Bureau
April 2015



圖例 LEGEND :

-  工地界線
SITE BOUNDARY
-  車輛出入口
VEHICULAR INGRESS / EGRESS

工地平面圖
SITE PLAN

120KA
興建政府數據中心大樓
BUILDING A GOVERNMENT DATA CENTRE COMPLEX

 ARCHITECTURAL SERVICES DEPARTMENT 建築署

120KA (Part) – Building a government data centre complex

**Breakdown of the estimates for consultants' fees
(in September 2014 prices)**

Consultants' staff costs (Note 1)		Estimated man-months	Average MPS* salary point	Multiplier (Note 2)	Estimated fee (\$ million)
Consultants' fees for design and preparation of tender documents	Professional	190	38	2.0	27.1
	Technical	269	14	2.0	13.1
Total					40.2

* MPS = Master Pay Scale

Notes

1. The actual man-months and fees will only be known after the consultants have been selected.
2. A multiplier of 2.0 is applied to the average MPS salary point to estimate the full staff costs including the consultants' overheads and profit as the staff will be employed in the consultants' office. (As at now, MPS salary point 38 = \$71,385 per month and MPS salary point 14 = \$24,380 per month).