

ITEM FOR FINANCE COMMITTEE

CAPITAL WORKS RESERVE FUND HEAD 708 - CAPITAL SUBVENTIONS AND MAJOR SYSTEMS AND EQUIPMENT

Lands Department New Subhead “Replacement of Aerial Camera System”

Members are invited to approve a new commitment of \$41,580,000 to replace the film-based aerial camera system by one set of large format digital aerial camera system.

PROBLEM

We need to plan for the timely replacement of the existing film-based aerial camera system to ensure the continued provision of aerial photography service in Hong Kong.

PROPOSAL

2. The Director of Lands, with the support of the Secretary for Development, proposes to create a new commitment of \$41,580,000 to replace the existing film-based aerial camera system by a large format digital aerial camera (LFDAC) system.

JUSTIFICATION

Functions of the Aerial Camera System

3. The Lands Department (LandsD) has been using the existing aerial camera system for providing various types of aerial photography service for all government bureaux/departments (B/Ds) and the general public since 1995.

/Aerial

Aerial photographs are widely used in mapping, land administration and development, civil engineering projects, environmental monitoring, security operation, aircraft crash investigation, etc. On average, the aerial camera system shoots more than 10 000 aerial photographs at different flying heights covering the whole territory of Hong Kong every year. LandsD maintains more than 252 000 aerial photographs.

Need for Replacement

4. The aerial camera system has been in service for over 15 years. With regular maintenance, the system is expected to maintain satisfactory service in the coming two years. However, its performance will gradually deteriorate afterwards when the supply of essential consumables and spare parts become scarce. Therefore, we have to plan for its replacement before any major maintenance difficulties arise so as to ensure the continuation of aerial photography service.

Proposed New System and Its Benefits

5. The proposed new system is a LFDAC system using state-of-the-art technology. It will improve the efficiency and effectiveness of LandsD's aerial photography operations and enable LandsD to provide better services as detailed below –

- (a) The proposed LFDAC system, with more updated technology, can produce better quality aerial photographs and photogrammetric products (e.g. digital orthophoto^{Note}), enhance working performance under less favourable weather conditions and thereby increase the number of aerial photographs that can be taken every year by 10% to 15%, and shorten the production time of aerial photographs.
- (b) Aerial photographs can be captured directly in a digital format. It will save the trouble of loading/unloading the film magazine of the existing system on board, and enable the efficient dissemination of the digital aerial photographs to B/Ds and the general public through the computer network and the Internet directly without the need for film-developing.
- (c) Training time for new operators can be shortened because of automated functions and easier operation of the LFDAC system.

/(d)

^{Note} An orthophoto is a type of map showing the pictorial information of buildings, roads, mountains and other ground features compiled from aerial photographs.

- (d) The LFDAC system can capture near-infrared images and provide more products and services useful for photo interpretation, particularly for identification of vegetation's health conditions, water bodies, geological features, hill fire sites, etc.

FINANCIAL IMPLICATIONS

Non-recurrent Expenditure

6. We estimate that the total non-recurrent expenditure for the acquisition, installation and commission of the LFDAC system is \$41,580,000 over a three-year period from 2011-12 to 2013-14, with breakdown as follows –

	2011-12 \$'000	2012-13 \$'000	2013-14 \$'000	Total \$'000
(a) Digital aerial camera	5,000	15,000	4,000	24,000
(b) Image processing and photogrammetric software and hardware	1,000	4,000	1,000	6,000
(c) Office-based offline data storage system	1,800	3,200	1,000	6,000
(d) Modification of aircraft	200	500	300	1,000
(e) Training	100	600	100	800
Sub-total:	8,100	23,300	6,400	37,800
(f) Contingency (10%)	810	2,330	640	3,780
Total:	<u>8,910</u>	<u>25,630</u>	<u>7,040</u>	<u>41,580</u>

7. On paragraph 6(a) above, the estimate of \$24,000,000 is to meet the cost for the acquisition of a digital aerial camera.

8. On paragraph 6(b) above, the estimate of \$6,000,000 is to meet the cost for the acquisition of computer hardware and software to perform post-processing on raw digital images of aerial photographs, colour enhancement on post-processed images and photogrammetric measurement work.

9. On paragraph 6(c) above, the estimate of \$6,000,000 is to meet the cost for the acquisition of an office-based data storage system for storing, retrieval and manipulation of the digital images of aerial photographs.

10. On paragraph 6(d) above, the estimate of \$1,000,000 is to meet the fixation, fitting out or minor modification work conducted on two to-be-acquired aircraft of the Government Flying Service (GFS) on which the digital aerial camera will be mounted for performing aerial photography work on a shared-use basis. The estimate is made based on the condition that the proposed digital aerial camera unit can be acquired and provided to GFS before completion of the design and building work for the two to-be-acquired aircraft.

11. On paragraph 6(e) above, the estimate of \$800,000 is to meet the cost for conducting training for the relevant officers to use the digital aerial camera and other computer software and hardware.

Recurrent Expenditure

12. The net additional recurrent expenditure arising from the project is \$3,100,000 per annum in a full year from 2014-15, after expiry of free maintenance warranty in 2013-14. The resource requirement will be reflected in the Estimates of the relevant years, with breakdown as follows –

	2014-15 onwards \$'000
Proposed digital aerial camera system	
(a) Digital aerial camera unit maintenance	2,800
(b) Computer hardware and software maintenance	1,500
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	4,300
(c) Less: Annual savings	(1,200)
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Total:	<u>3,100</u>

13. On paragraph 12(a) above, the estimated annual expenditure of \$2,800,000 is for the provision of maintenance for the digital aerial camera unit.

14. On paragraph 12(b) above, the estimated annual expenditure of \$1,500,000 is for the provision of maintenance of computer hardware and software, including the items described in paragraphs 6(b) and 6(c) above.

15. On paragraph 12(c) above, the savings of \$1,200,000 represent the recurrent costs of the existing system which will off-set part of the recurrent costs of the proposed system.

Impact on Fees and Charges

16. We will recover the capital and recurrent costs of the proposed LFDAC system from users according to the “user pays” principle. Upon commissioning of the LFDAC system, we will apply new fee items in relation to the provision of new mode of service including aerial photography and survey services and digital aerial photographs captured by the proposed new aerial camera. We cannot at this stage quantify the new fee levels as we do not have information on pricing, throughput and usage of the system, which will be subject to tender outcomes.

IMPLEMENTATION PLAN

17. We plan to implement the replacement project according to the following schedule -

Activity	Target completion date
(a) Preparation of tender documents, invitation/evaluation/award of tenders, etc. for various components of the proposed aerial camera system	January to June 2012
(b) Delivery of the proposed aerial camera system	September 2012
(c) Installation and testing	December 2012
(d) Application for Civil Aviation Department certificate	June 2013
(e) Training	June 2013
(f) Commissioning	July 2013

18. The LFDAC system will be fixed on GFS's new fixed-wing aircraft and will dovetail with GFS's replacement programme of its fixed-wing aircraft targeted for commissioning in 2013.

PUBLIC CONSULTATION

19. We consulted the Legislative Council Panel on Development on the proposal vide an information paper issued on 21 March 2011 (reference: LC Paper No. CB(1)1648/10-11(01)). Members noted the proposal and raised no objection at the Panel meeting on 29 March 2011.

Development Bureau
May 2011