

ITEM FOR FINANCE COMMITTEE

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

Leisure and Cultural Services Department

New Subhead “Design and installation of an integrated exhibition system for Hong Kong Space Museum”

Members are invited to approve a new commitment of \$32,000,000 for replacing all existing aged exhibits in the exhibition halls of the Hong Kong Space Museum.

PROBLEM

Many exhibits in the exhibition halls of the Hong Kong Space Museum (the HKSM) are outdated as a result of rapid development in astronomy and space science, and their conditions have deteriorated to an unacceptable level due to normal wear and tear. These have hampered the continued provision of quality exhibition service to the public.

PROPOSAL

2. The Director of Leisure and Cultural Services, with the support of the Secretary for Home Affairs, proposes to renovate the exhibition halls of the HKSM and to design and install a new integrated exhibition system to enhance the HKSM’s educational function and its appeal to the public at an estimated cost of \$32,000,000.

JUSTIFICATION

The need to replace the existing exhibits

3. The HKSM is a museum of astronomy and space science managed by the Leisure and Cultural Services Department (LCSD). It has two permanent

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exhibition halls, namely the Hall of Space Science on the ground floor and the Hall of Astronomy on the first floor, as well as a space theatre that presents Omnimax films and planetarium shows. The two exhibition halls were first opened in 1980 and were renovated once in 1990 after about ten years of operation. After being operated for another 17 years, many of the exhibits are either outdated as a result of rapid development in astronomy and space science or deteriorated due to normal wear and tear. Some salient examples are as follows –

- (a) about 20% of all the exhibits in the HKSM are outdated. Most space exploration missions carried out in the last two decades are left out in the current exhibits;
- (b) the International Space Station model in the Hall of Space Science is based on previous prototype design and does not reflect the latest configuration. New theories and discoveries in cosmology such as dark energy and dark matter are not covered as well;
- (c) the condition of about 40% of the exhibits has deteriorated to an unacceptable level. For example, the launching mechanism of the multi-stage rocket model frequently fails despite regular maintenance; and
- (d) about 65% of the interactive exhibits would be beyond repair if they break down as many spare parts are no longer available in the market. These components include special devices, mechanical parts, specialised Laserdisc players and Intel 80286 computers with custom-made cards, built-in touch screens and hard-coded software.

4. The Director of Audit's Report in 2006 has also recommended that the LCSD should introduce new exhibits in the HKSM.

Proposed project scope

5. Based on the reasons above, we propose to replace the existing exhibits of the two exhibition halls. Apart from dismantling of all the existing aged exhibits, the proposed project will include improvement of the infrastructure, designing, prototyping, fabrication and installation of new exhibits in a new immersive environment to simulate the experience of travelling through space and time. We also propose to install a new automatic exhibit control system to integrate individual exhibits which will be served by a digital audio, video and data network system.

6. The main theme of the new exhibition halls and the detailed exhibit design will be chosen based on the input of professional exhibit designers in consultation with honorary museum advisers. Preliminarily, taking the two exhibition halls together, we propose that about 60 sets of exhibits, of which about 70% are interactive, will be installed in the 1 600-square metre exhibition halls. Taking into account the results of visitor surveys in 2000 and 2005 and the desirability of complementing the school curriculum, we propose to adopt the following theme areas and exhibit highlights –

- (a) for the exhibition hall on the ground floor, the basic design concept is to make use of the existing circular, unidirectional nature of the gallery to relate the evolution and development of our universe. To enhance the experience, a dimmed and mysterious environment will be created by the use of lighting, wall murals and elaborated decorations. For example, in the proposed “Reach for Your Star” exhibit, visitors will be able to choose to navigate to another planet or even another galaxy to appreciate the sky from a different perspective and dimension by venturing into a simulated starry night sky. In the proposed “Make Your Own World” exhibit, visitors can interact with each other to create a universe with different mass and energy that is seen to evolve differently from our own by experimenting with controls on a multi-sensory platform; and
- (b) for the exhibition hall on the first floor, the major theme will be on space exploration and the Sun-Earth relationship. To highlight the high-tech nature of space technology, lighting and environmental decorations will be used to create a futuristic and surrealistic environment. For example, in the proposed “How You Feel in Space” exhibit, visitors will experience disorientation in weightless space and appreciate unusual physical properties of matter by entering an upside down virtual space station.

FINANCIAL IMPLICATIONS

Non-recurrent expenditure

7. Based on similar projects undertaken in other museums in Hong Kong^{Note}, the unit cost of exhibit renewal is about \$20,000 per square metre. On this basis, we estimate that the non-recurrent expenditure of replacing the exhibits

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^{Note} The project costs of the Energy Efficiency Centre (opened in 1996) and the Occupational Safety and Health Gallery (opened in 1998) in the Hong Kong Science Museum are as follows –

| Gallery | Area (m ²) | Cost (\$) | Cost/Area(\$/m ²) |
|--------------------------------|------------------------|------------|-------------------------------|
| Energy Efficiency Centre | 450 | 8,797,000 | 19,549 |
| Occupational Safety and Health | 450 | 10,474,000 | 23,276 |

of the 1 600-square metre exhibition halls in the HKSM will be \$32,000,000, broken down as follows –

| | Estimated cost \$'000 |
|---|-----------------------------------|
| (a) Design of exhibition halls and exhibit systems | 5,000 |
| (b) Prototyping and testing of interactive and computer exhibit systems | 500 |
| (c) Installation and integration of exhibit systems – | 16,500 |
| (i) audio-visual and computer production and installation | 5,000 |
| (ii) graphic panel production and installation | 1,500 |
| (iii) exhibit procurement, fabrication and installation | 10,000 |
| (d) Automatic exhibit control system | 1,200 |
| (e) Digital audio, video and data network for interactive system | 1,000 |
| (f) Infrastructure, flooring and electrical work | 4,800 |
| | <i>Subtotal</i> <u>29,000</u> |
| (g) Contingency [about 10% of items (a) to (f)] | <u>3,000</u> |
| | Total <u>32,000</u> |

8. On paragraph 7(a), the estimate of \$5,000,000 is for the conceptual and detailed design services of the new exhibition hall environment and about 60 sets of new exhibits.

9. On paragraph 7(b), the estimate of \$500,000 is for the prototyping and testing services of the interactive exhibits and computer exhibits.

10. On paragraph 7(c), the estimate of \$16,500,000 is for the procurement, production and installation of about 60 sets of new exhibits, of which about 70% are interactive.

11. On paragraph 7(d), the estimate of \$1,200,000 is for the design, production and installation of an automatic exhibit control system to allow a centralised control of all exhibits.

12. On paragraph 7(e), the estimate of \$1,000,000 is for the design, procurement and construction of a digital audio, video and data network for serving the interactive exhibits.

13. On paragraph 7(f), the estimate of \$4,800,000 is for the dismantling of the old exhibits, renovation of the infrastructure, environmental decoration, flooring and electrical work.

14. The estimated cash flow requirement is set out below –

| Financial Year | Estimated cost (\$'000) |
|-----------------------|------------------------------------|
| 2008-09 | 500 |
| 2009-10 | 1,000 |
| 2010-11 | 10,000 |
| 2011-12 | <u>20,500</u> |
| Total | <u>32,000</u> |

Other non-recurrent expenditure

15. The proposal will necessitate the employment of two Assistant Curator II on non-civil service contract terms for three years from 2008-09 to 2010-11 at an estimated cost of \$1,999,000. The staff are required for assisting in research, exhibit development, tendering, managing the project, quality control and user-acceptance. The LCSD would absorb the additional cost from within its existing resources.

Recurrent expenditure

16. There will be no additional recurrent expenditure for the proposed integrated exhibition system project.

/Impact

Impact on revenue

17. As it is planned that the exhibition halls of the HKSM will be closed for a period of six months for dismantling the existing exhibits and environmental decoration, and for installing and testing of the new integrated exhibition system, there would be an estimated loss of revenue from ticket income amounting to about \$700,000. It is estimated that the attendance will increase by 15 to 20 percent for the first three years after the renewal and a corresponding increase in revenue of about \$210,000 to \$280,000 per year.

IMPLEMENTATION PLAN

18. We expect that the entire integrated exhibition system project will take about three years to complete while renovation works will involve closing the exhibition halls for about six months. Subject to funding approval by the Finance Committee (FC), the project will commence in 2008-09 and installation of the new exhibition system will complete in 2011-12. The proposed implementation plan is as follows –

| Activity | Target Completion Date |
|---|-------------------------------|
| (a) Research on topics and exhibits | September 2008 |
| (b) Tendering for design | June 2009 |
| (c) Conceptual design and exhibit prototyping | March 2010 |
| (d) Preparation of detailed design | March 2010 |
| (e) Tendering for exhibit fabrication | December 2010 |
| (f) Exhibit fabrication | June 2011 |
| (g) Dismantling of outdated exhibits and installation of exhibits | December 2011 |

PUBLIC CONSULTATION

19. On 6 May 2008, we circulated an information paper for consideration by the Legislative Council Panel on Home Affairs. Members did not raise any objection to the submission of the funding proposal to the FC.

/BACKGROUND

BACKGROUND

20. The HKSM plays an important role in achieving the educational goal to promote astronomy and space science to the public. In 2007, more than 98 000 students (including 451 school groups) and about 275 000 visitors visited the two exhibition halls of the HKSM. A total of about 61 000 students also participated in the various educational activities on astronomy and space science organised by the HKSM in the same year.

Home Affairs Bureau
May 2008