

HOSPITAL AUTHORITY'S MANAGEMENT OF PUBLIC HOSPITAL PROJECTS

Executive Summary

1. The Hospital Authority (HA) is a statutory body established under the Hospital Authority Ordinance (Cap. 113) to manage and establish public hospitals in Hong Kong. The Food and Health Bureau (FHB) is the policy bureau responsible for the overall health policies in Hong Kong including the development of public hospitals. As of September 2017, the HA managed 42 public hospitals and institutions (providing a total of about 28,000 beds) to provide public hospital services grouped under seven clusters. According to the HA, these hospital buildings covered a total floor area of 2.7 million square metres (m²) and 59% of the floor area had been in use for more than 30 years. To sustain the provision of public hospital services, the HA has initiated and undertaken public hospital projects with a view to achieving the objectives of: (a) meeting growing demand for healthcare services; (b) modernising the physical facilities of public hospitals; and (c) making the buildings safer.

2. Public hospital projects are broadly classified into two categories: (a) major hospital projects (each costing over \$75 million) which include the construction of new hospitals or the redevelopment/expansion of existing hospitals; and (b) minor hospital projects (each costing \$75 million or below) in existing hospitals to improve the conditions and environment of ageing facilities and to enhance their service capacity. During the 5-year period from 2012-13 to 2016-17, six major hospital projects had been completed. The funding approved by the Legislative Council's Finance Committee (FC) (i.e. Approved Project Estimate (APE)) of these projects totalled \$12.5 billion and ranged from \$590.5 million to \$3,910.9 million. The 2016 Policy Address announced a 10-year Hospital Development Plan costing \$200 billion to meet new demand and improve existing services. For minor hospital projects, in December 2013, the FC approved a one-off grant of \$13 billion to the HA for carrying out minor works projects over a 10-year period starting from 2014-15, subject to a financial ceiling of \$75 million for each individual works item. For the 3-year period from 2014-15 to 2016-17, the HA initiated a total of 1,092 minor works projects and, as of March 2017, the total expenditure was \$3.3 billion.

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3. The Audit Commission (Audit) has recently conducted a review to examine the HA's management of public hospital projects with a view to identifying room for improvement. The review examined two major public hospital projects completed during the past 5 years (see para. 2) and minor hospital projects. For major hospital projects, Audit selected: (a) the Redevelopment of Caritas Medical Centre (Phase 2) (hereinafter referred to as "CMC Phase 2") for review of its project management in view of its APE having increased significantly by over 40% (see para. 5); and (b) North Lantau Hospital (Phase 1) (hereinafter referred to as "NLTH Phase 1") for review of its commissioning of facilities because facilities of this new hospital have not been fully commissioned three years after its commencement of operation in September 2013.

Project management of the Redevelopment of Caritas Medical Centre (Phase 2)

4. CMC, managed under the HA's Kowloon West Cluster, is an acute general hospital (with around 1,200 beds as of October 2017) providing a full range of medical services mainly to residents of the Sham Shui Po District. It commenced operation in 1964 and its hospital blocks had over the years become old, dilapidated and sub-standard. The Government decided to redevelop CMC in two phases. Phase 1 redevelopment was completed in 2002. CMC Phase 2 commenced in 2007 and was substantially completed in October 2015. The Phase 2 project mainly included the demolition of four hospital blocks, construction of a new hospital block to accommodate 260 rehabilitation beds, ambulatory care and clinical support facilities, a rehabilitation garden, car parks and access roads, and refurbishment of another block to accommodate administrative functions. The HA acted as the works agent for the project and engaged four consultants for the design, tender preparation and contract administration of the project (paras. 2.2 to 2.5).

5. ***Increase in project cost and delay in project completion.*** In May 2007, the FC approved funding of \$1,218.1 million for implementing CMC Phase 2. The FHB informed the FC that the new hospital block and the rehabilitation garden would be completed by August 2011 and March 2012 respectively. The HA planned to implement CMC Phase 2 under a single works contract with a total construction period of 56 months. In July 2007, the HA invited tenders, but the bids of all five conforming tenders received were 47% to 56% higher than the original estimate, resulting in the HA cancelling the tender exercise in November 2007. In June 2011, the FHB resubmitted a funding application and the FC approved increasing the APE

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of CMC Phase 2 by \$501.5 million (41 %) from \$1,218.1 million to \$1,719.6 million, mainly due to the increase in construction costs and higher provision for price adjustment. In the event, the new hospital block and the rehabilitation garden under CMC Phase 2 were substantially completed in November 2013 and October 2015 respectively, 27 months and 43 months later than the original target completion dates for which the FC was informed in 2007 (paras. 2.6 to 2.8).

6. ***Need to enhance the accuracy of cost estimate.*** According to the FHB and the HA, one of the reasons for the higher-than-expected prices of all conforming tenders received by the HA at its first tender exercise conducted in 2007 was that the HA's project consultants might not have adequately gauged the rapid upsurge in construction prices and fully reflected the prevailing market sentiments in the project cost estimate. There is a need for the HA to take measures to ensure that the project cost is estimated as accurately as possible (paras. 2.8 to 2.10).

7. ***Need to enhance vetting of consultants' design and contract strategy.*** Owing to the higher-than-expected tender prices, from November 2007 to October 2008, the HA and its consultants conducted a design review (2008 Design Review) with a view to identifying savings in respect of the project design, project specifications and contract strategy. The 2008 Design Review identified cost savings of at least \$236 million (19% of the original APE of \$1,218.1 million) and improved competitiveness of tenders by revising the building design and the contract strategy (i.e. splitting the works into three (instead of one) works contracts). In Audit's view, the HA needs to take measures to enhance the vetting of its consultants' design and contract strategy (paras. 2.8 and 2.11 to 2.14).

8. ***Room for improvement in the HA's site investigations and coordination work.*** During June 2009 to August 2013, after conducting a tender exercise for each contract, the HA awarded three contracts to three contractors respectively for implementing the works under CMC Phase 2 at a total contract sum of \$1,570.2 million. There is scope for the HA to conduct more thorough site investigations and strengthen the coordination between works and medical staff, as revealed by: (a) an Extension of Time (EOT) of 174 days was granted to a contractor due to the additional time needed to revise the design and divert the planned works arising from the discovery of underground cables and pipes not indicated in the related utility records; and (b) an EOT of 20 days was granted to the contractor for works suspension on 20 occasions upon urgent requests of medical staff due to the noise and vibrations of the construction on eye-surgery operations being conducted

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at nearby hospital buildings. These incidents might have been avoided as, according to the HA, the appointments for eye-surgery operations were made on average one to two months ahead of time (paras. 2.17 to 2.22).

9. *Need to step up efforts to ensure construction site safety and reporting of all site accidents.* Audit examination found that the accident frequency rate during the construction period of one of the three contracts for implementing CMC Phase 2 was 0.92 reportable accident per 100,000 man-hours worked, which was significantly higher than the limit of 0.5 stipulated by the HA and the limit of 0.6 adopted by the Development Bureau (DEVB) for government works projects. Audit noted that three reportable accidents which occurred during the construction period involving three workers employed respectively by three sub-contractors of the contractor were not reported to the HA and its consultant. There is a need for the HA to step up efforts to ensure safety of construction sites and reporting of all site accidents (paras. 2.28, 2.29 and 2.32 to 2.34).

10. *Need to review HA guidelines for assessing a contractor's site safety performance.* For public works projects carried out by government works departments, the related DEVB's Technical Circular requires that a contractor's overall site safety performance should be rated as "Very Poor" if any 1 of the 5 prescribed events (e.g. failure to revoke a suspension notice issued by the Labour Department within 14 days after it was issued) occurs. However, Audit noted that the HA's guidelines for assessing contractors' performance on site safety had not stipulated any prescribed events which would trigger giving an adverse overall safety rating to a contractor (paras. 2.37 and 2.38).

Commissioning of facilities of the North Lantau Hospital (Phase 1)

11. According to the FHB, NLTH was developed to meet the long-term demand for hospital services on Lantau Island. It would be developed in two phases. In January 2010, the FC approved funding of \$2,482 million for the construction of NLTH Phase 1 to provide a public hospital (including an accident and emergency department, 180 beds and specialist out-patient clinics). Upon the full development of the North Lantau New Town, the Government would provide an additional 170 beds under the Phase 2 development in a site adjacent to the Phase 1 development. The construction works of NLTH Phase 1 were substantially completed in

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December 2012 and the hospital commenced operation in September 2013 under the management of the HA's Kowloon West Cluster (paras. 3.2 and 3.3).

12. ***Commissioning of some medical services later than the proposed dates.*** In November and December 2011, the HA management respectively informed the HA's Medical Services Development Committee (MSDC) and the HA Board that NLTH Phase 1 would start to provide service in phases from the third quarter of 2013 and migrate to full service in the third quarter of 2016. Audit examination found that 5 types of medical services at NLTH Phase 1 (namely, 24-hour accident and emergency service, day rehabilitation centre, specialist out-patient clinics on orthopaedics and traumatology and surgery, day surgery centre and 20 in-patient beds) were commissioned later than the respective commissioning dates as proposed by the HA management to the HA's MSDC in 2011. Furthermore, as of June 2017, some medical services had not yet been commissioned at the hospital, including: (a) specialist out-patient services for gynaecology and paediatrics (proposed for commissioning in the third quarter of 2014); (b) 20 day-beds for day-surgery patients (proposed for commissioning in the first quarter of 2014); and (c) a total of 120 in-patient beds (proposed for commissioning by the third quarter of 2016). According to the HA, the key constraints for commissioning of medical services at NLTH Phase 1 were attributed to manpower shortage and competing needs across the HA (paras. 3.4, 3.5, 3.8 and 3.13).

13. ***Need to keep under review anticipated timeline for commissioning medical services and report progress to HA Board/Committees and FHB.*** After commissioning of the operation of NLTH Phase 1 in September 2013, the HA management reported annually to the HA Board and quarterly to the FHB the medical services that had already been commissioned at the hospital. However, information on the anticipated timeline for commissioning the remaining medical services at NLTH Phase 1 (see para. 12) had not been provided to the HA Board and the FHB (para. 3.15).

14. ***Hospital building not fully utilised.*** In December 2012, a total floor area of 13,729 m² was constructed for the hospital building of NLTH Phase 1. Audit analysis found that, as of June 2017, 2,867 m² (21% of the total area of 13,729 m²) of the hospital building were vacant or had not been utilised for the intended functions. These 2,867 m² comprised 2,204 m² for wards, 466 m² for canteen and kitchen area and 197 m² for the day surgery centre (paras. 3.21 and 3.22).

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15. ***Under-utilisation of medical equipment.*** Since the commissioning of NLTH Phase 1 in 2013, the HA had procured 10 major medical equipment items (each costing \$1 million or above) at a total cost of \$32.7 million. Audit noted that the utilisation of 7 of the 10 major medical equipment items in 2016 was below 60% of the expected utilisation (ranging from 6% to 58%). Audit also noted that, as of June 2017, the HA had not yet put into use some other medical equipment items (each costing less than \$1 million) at NLTH Phase 1 since their procurement, and the warranty periods of all such items had already expired (paras. 3.30 to 3.34).

Management of minor hospital projects

16. ***High proportion of unplanned minor works projects.*** For the 3-year period from 2014-15 to 2016-17, the HA initiated a total of 1,092 minor works projects incurring a total expenditure of \$3.3 billion. According to the HA's internal guidelines, at least 90% of the new minor works projects initiated during a financial year should be planned projects included in the relevant 3-year rolling plan approved by the HA's Chief Executive. However, Audit examination found that, during 2014-15 to 2016-17, only 64% to 77% of the new minor works projects initiated each year had been included in the relevant approved 3-year rolling plan, falling short of the HA's 90% target (paras. 4.3 to 4.6).

17. ***Need to report survey results of building condition of public hospitals.*** Audit found that the HA's seven clusters were responsible for conducting building condition surveys of public hospitals on an annual basis, but the clusters had not provided the survey results to the HA's Chief Executive for vetting and approval of the 3-year rolling plan for minor works projects (para. 4.8).

18. ***Need to closely monitor works progress.*** In December 2013, the FHB informed the FC that the HA could annually initiate around 500 new minor works projects over the 10-year period from 2014-15 to 2023-24 (i.e. totally 5,000 projects in 10-year time). However, Audit noted that only 1,092 projects were initiated in the 3-year period from 2014-15 to 2016-17, representing an average of 364 projects per year (i.e. 73% of 500 projects). Audit also noted that, as of August 2017 (i.e. after passage of about 3.4 years of the 10-year period), only 62 (12% of the HA's estimate of 500) wards had been renovated, and 9 (17% of the HA's estimate of 52) electrical installations and 13 (4% of the HA's estimate of 364) lifts had been upgraded (paras. 4.2, 4.11 and 4.12).

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19. ***Delay in completing works orders and need to enhance management of minor works.*** Audit examination of 654 works orders issued to HA minor-works contractors in 2015-16 and 2016-17 found that there were delays in completing 303 (46%) of the 654 orders. For one case with the longest delay of 17 months among the 654 works orders, Audit noted that the additional time was required for variation orders issued, design changes of an electrical system by the HA after works commencement and late handover of works site by the HA. This case shows that there is scope for the HA to take measures to enhance the planning and implementation of works orders (paras. 4.16 to 4.18).

20. ***Better use of technology to effectively monitor project implementation.*** Audit noted that the HA's information system could not provide comprehensive management information for effectively monitoring the implementation of minor works projects (e.g. information on the progress in implementing works orders). According to the HA: (a) due to the limitations of the information system, the HA staff primarily process works orders manually; and (b) it planned to launch a new information system in April 2018 with a view to maintaining and providing more comprehensive information of works orders related to minor works projects (paras. 4.31 to 4.33).

Audit recommendations

21. **Audit recommendations are made in the respective sections of this Audit Report. Only the key ones are highlighted in this Executive Summary. Audit has recommended that the Chief Executive, HA should:**

Project management of the Redevelopment of Caritas Medical Centre (Phase 2)

- (a) **when implementing hospital projects in future:**
 - (i) **take measures to ensure that the project cost is estimated as accurately as possible (para. 2.15(a));**
 - (ii) **take measures to enhance the vetting of the HA consultants' design and contract strategy (para. 2.15(b));**

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- (iii) **conduct more thorough site investigations with a view to identifying unrecorded utilities as far as possible, particularly for those projects involving redevelopment of old hospital buildings and at critical works locations (para. 2.25(a)(i));**
 - (iv) **strengthen the coordination between works and medical staff on the scheduling and interfacing of construction works and medical operations at nearby hospital buildings (para. 2.25(a)(ii)); and**
 - (v) **step up efforts to ensure safety of construction sites and reporting of all site accidents with a view to minimising site accident rate (para. 2.43(a)(i) and (ii));**
- (b) **conduct a review of the HA's guidelines for assessing contractors' performance on site safety, making reference to the related government requirements (e.g. stipulating a list of prescribed events that would trigger giving an adverse overall safety rating to a contractor) (para. 2.43(b));**

Commissioning of facilities of the North Lantau Hospital (Phase 1)

- (c) **regarding NLTH Phase 1 and major hospital projects to be implemented in future:**
- (i) **keep track of the medical service demand of residents at the related districts, and commission the planned medical services of the completed hospital projects in a timely manner to meet the demand as soon as practicable (para. 3.17(a)); and**
 - (ii) **regularly report to the HA Board (or its relevant Committees) and the FHB the progress of commissioning the medical services vis-à-vis the anticipated timeline for monitoring purpose (para. 3.17(b));**
- (d) **before the vacant areas at NLTH Phase 1 could be utilised, explore measures to put such areas into gainful uses in the interim period (para. 3.28(a));**

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- (e) for areas temporarily used for other unintended functions (e.g. storage) at NLTH Phase 1, review whether such areas could be put into better alternative use (para. 3.28(b));
- (f) for medical equipment not put into use since their procurement, take measures to put them into gainful use (para. 3.35(b));
- (g) when implementing hospital projects in future, take measures to ensure that the procurement programme for medical equipment dovetails with the commissioning of the related medical services as far as possible (para. 3.35(c));

Management of minor hospital projects

- (h) strengthen the planning of minor works projects to meet the HA's 90% planning target (para. 4.9(a));
- (i) monitor the ageing conditions of public hospital buildings and take measures to ensure that the survey results of the building condition of public hospitals are reported to the HA's Chief Executive for vetting and approval of the 3-year rolling plans (para. 4.9(b));
- (j) closely monitor the progress of minor works projects to ensure timely completion and take measures to initiate more projects to improve the conditions of the HA's ageing facilities (para. 4.27(a));
- (k) take measures to enhance the planning and implementation of works orders, including the finalisation of works design before commencement of works and the timely handover of works sites (para. 4.27(b)); and
- (l) take measures to ensure that the HA's new information system is timely launched, and to better use technology to generate comprehensive management information for monitoring the implementation progress of minor works projects and the related works orders (para. 4.37(a)).

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22. Audit has also *recommended* that the Secretary for Food and Health should keep under review the HA's commissioning of all medical services at completed hospital projects with a view to meeting the demand for public hospital services (para. 3.18).

Response from the Hospital Authority and the Government

23. The Chief Executive, HA and the Secretary for Food and Health agree with the audit recommendations.