CHAPTER 3

Food and Health Bureau
Hospital Authority

Hospital Authority's management of public hospital projects

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HOSPITAL AUTHORITY'S MANAGEMENT OF PUBLIC HOSPITAL PROJECTS

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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 (m^2) 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.

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

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

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

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

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).

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));**

(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));**

(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)).**

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.

PART 1: INTRODUCTION

1.1 This PART describes the background to the audit and outlines the audit objectives and scope.

Background

1.2 The Hospital Authority (HA — Note 1) is a statutory body established under the Hospital Authority Ordinance (Cap. 113) to provide public hospital services in Hong Kong. Under the Ordinance, the HA's functions include managing and establishing public hospitals, and advising the Government of the needs of the public for hospital services and of the resources required to meet those needs.

1.3 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 the HA's seven clusters (see Appendix A). According to the HA, these hospital buildings covered a total floor area of 2.7 million square metres (m^2) and 59% of the floor area had been in use for more than 30 years (see Appendix B).

1.4 Owing to the ageing population in Hong Kong, there has been an increasing demand for healthcare services. According to the HA, physical facilities of its hospitals have a profound influence on the capacity, capability, workflow and efficiency of its hospital services, and such facilities also affect the HA's ability to meet future healthcare demands and accommodate the introduction of new services and technologies. To sustain the provision of public hospital services, the HA has initiated and undertaken public hospital projects with a view to achieving the following objectives:

Note 1: *The HA is governed by the HA Board, the members of which are appointed by the Chief Executive of the Hong Kong Special Administrative Region. As of June 2017, the HA Board consisted of 28 members, comprising 24 non-official members (including the Chairman), 3 public officers (i.e. Permanent Secretary for Food and Health (Health), Director of Health and Deputy Secretary for Financial Services and the Treasury (Treasury)) and 1 principal officer (i.e. the HA's Chief Executive). In general, the HA Board meets 12 times a year.*

(a) meeting growing demand for healthcare services;

(b) modernising the physical facilities of public hospitals; and

(c) making the buildings safer.

1.5 The HA will take into account various factors when planning and developing public hospital projects, including future population growth and ageing in the region, demand for healthcare services, overall provision of healthcare services in various clusters of the HA, and development of public and private healthcare services. Public hospital projects are broadly classified into two categories, namely major hospital projects and minor hospital projects.

Major hospital projects

1.6 According to the HA, a hospital project costing over $75 million is classified as a major hospital project which includes the construction of a new hospital or the redevelopment/expansion of an existing hospital. Upon identifying the need for major hospital projects, the Food and Health Bureau (FHB), being the policy bureau responsible for the overall health policies in Hong Kong including the development of public hospitals, would take the lead in consulting the stakeholders (e.g. the related District Councils and the Panel on Health Services of the Legislative Council (LegCo)) and in seeking funding approval from LegCo Finance Committee (FC) for implementing the projects under the Capital Works Reserve Fund (CWRF — Note 2). The HA acts as the works agent of major hospital projects constructed on non-government land. The Architectural Services Department (ArchSD) acts as the works agent of major hospital projects constructed on government land.

Note 2: *The CWRF was established with effect from April 1982 by a LegCo resolution in January 1982 for financing public works projects and acquisition of land.*

1.7 In his Policy Address of January 2016, the Chief Executive of the Hong Kong Special Administrative Region announced that, to meet new demand and improve existing services, a 10-year Hospital Development Plan costing $200 billion would be implemented. The Government has worked with the HA to devise the Plan which includes the construction of a new hospital and the redevelopment/expansion of 11 existing hospitals to provide some 5,000 additional public hospital beds and over 90 new operating theatres. Apart from the 10-year Hospital Development Plan, the HA is also implementing three major hospital projects (see Appendix C).

1.8 During the 5-year period from 2012-13 to 2016-17, six major hospital projects had been completed (see Table 1). The FC's approved funding (i.e. Approved Project Estimate (APE)) of these projects ranged from $590.5 million to $3,910.9 million. The APE of all these projects remained unchanged except for the project of the Redevelopment of Caritas Medical Centre (Phase 2) (hereinafter referred to as "CMC Phase 2"). The APE of CMC Phase 2 increased by $501.5 million (41%) from $1,218.1 million to $1,719.6 million.

Table 1

Major hospital projects completed
(2012-13 to 2016-17)

Project	Works completion date	APE ($ million)	Actual expenditure as of June 2017 (Note 1) ($ million)
(A) New hospital projects			
1. Tin Shui Wai Hospital	Jul 2016	3,910.9	2,751.6
2. North Lantau Hospital (Phase 1)	Dec 2012	2,482.0	1,911.6
(B) Hospital redevelopment/expansion projects			
1. Reprovisioning of Yaumatei Specialist Clinic at Queen Elizabeth Hospital	Aug 2016	1,891.6	1,410.9
2. Redevelopment of Yan Chai Hospital	Apr 2016	590.5	537.3
3. CMC Phase 2	Oct 2015	1,719.6 (Note 2)	1,589.9
4. Expansion of Tseung Kwan O Hospital	Nov 2013	1,944.9	1,475.6
Total		12,539.5	9,676.9

Source: HA and ArchSD records

Note 1: As of June 2017, of the 6 major hospital projects, the accounts for the construction works of 2 projects (North Lantau Hospital (Phase 1) and Expansion of Tseung Kwan O Hospital) had been finalised. The accounts of the furniture and equipment items of all the 6 projects had not been finalised.

Note 2: In May 2007, the FC approved funding of $1,218.1 million for the project. In June 2011, the FC approved increasing the APE of the project by $501.5 million (41%) from $1,218.1 million to $1,719.6 million.

Minor hospital projects

1.9 The HA carries out minor works projects (i.e. each costing $75 million or below) in existing hospitals to improve the conditions and environment of ageing facilities and to enhance their service capacity. 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.

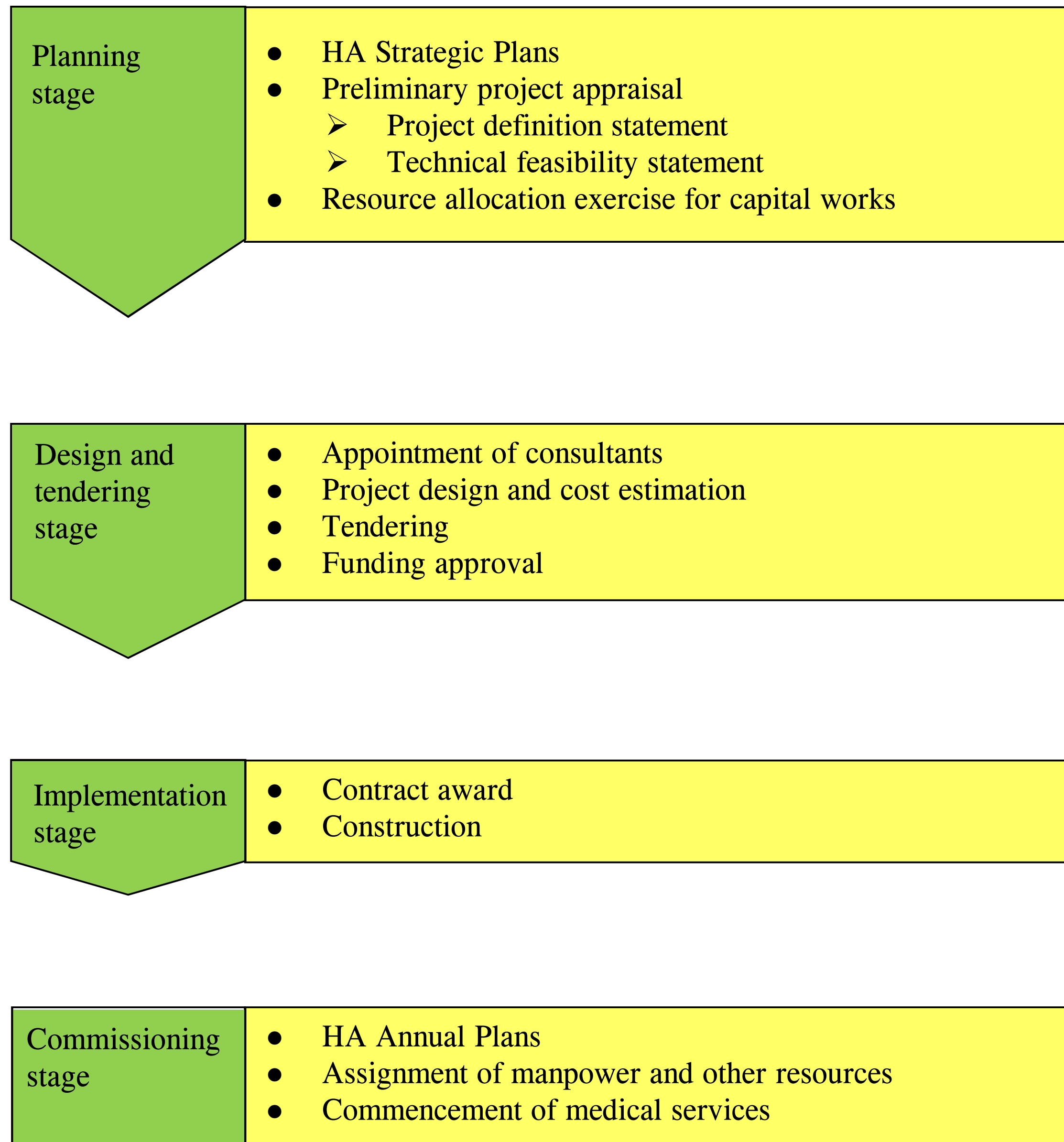
HA's management and governance of hospital projects

1.10 The Capital Planning Department under the Strategy and Planning Division of the HA is responsible for the management of public hospital projects. The HA's Cluster Services Division and seven clusters are responsible for the commissioning of facilities upon the completion of public hospital projects. As of June 2017, the HA's Capital Planning Department had 89 staff (68 professional/technical staff and 21 administrative staff). Appendix A shows an extract of the HA's organisation chart.

1.11 The development of a major public hospital project mainly involves four key stages, namely planning stage, design and tendering stage, implementation stage and commissioning stage. Figure 1 shows the key stages of major hospital projects. For minor hospital projects, the development mainly involves the preparation and approval of a 3-year rolling plan (see para. 4.4) and the implementation of minor works by the HA's contractors (see para. 4.15).

Figure 1

Key stages of major hospital projects



Source: HA records

1.12 The HA's governance on the planning and implementation of public hospital projects is primarily effected through a three-tier mechanism, as follows:

(a) ***HA management.*** For each major hospital project, a Project Steering Committee (Note 3) is set up to steer the project implementation, monitor the works progress and financial position, and endorse the project design. As regards minor hospital projects, the Quarterly Review Meeting (Note 4) is convened to monitor the overall works progress and financial position of the projects;

(b) ***HA Board and Committees.*** For major hospital projects, the HA management provides summary reports to the HA's Supporting Services Development Committee (Note 5) relating to the project progress and up-to-date cost estimates on a quarterly basis. As regards minor hospital projects, the HA management submits the audited financial statements on the use of the one-off grant (see para. 1.9) to the HA Board for approval on an annual basis; and

(c) ***Government level.*** For major hospital projects, the HA provides summary reports to the FHB relating to the project progress on a monthly basis. For each minor hospital project, the HA submits to the FHB information on the project scope, objectives and estimated costs for approval before works commencement.

Note 3: *A Project Steering Committee is chaired by the Hospital Chief Executive of the concerned public hospital or the Director of the HA's Strategy and Planning Division, and comprises the related Cluster Chief Executive (or representatives from the related HA cluster) and representatives from the Hospital Governing Committee (or its parent organisation), the Strategy and Planning Division, the FHB and the ArchSD.*

Note 4: *The Quarterly Review Meeting is chaired by the Director of the HA's Strategy and Planning Division, and attended by representatives from seven HA clusters and the Capital Planning Department.*

Note 5: *The Supporting Services Development Committee is established by the HA Board under the Hospital Authority Ordinance. It is chaired by an HA Board member and comprises 14 other members. The Committee's functions include reviewing and advising the HA Board on the implementation and monitoring of the HA's hospital projects. In general, the Committee meets 4 times a year.*

Audit review

1.13 In April 2017, the Audit Commission (Audit) commenced a review to examine the HA's management of two major public hospital projects (namely CMC Phase 2 and the North Lantau Hospital (Phase 1) — hereinafter referred to as "NLTH Phase 1") and minor hospital projects. Audit selected CMC Phase 2 for review of its project management in view of its APE having increased significantly by over 40% (see Table 1 in para. 1.8). NLTH Phase 1 was selected 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. The two projects were selected to identify any lessons to be learned in managing major public hospital projects.

1.14 The review focuses on the following areas:

(a) project management of the Redevelopment of Caritas Medical Centre (Phase 2) (PART 2);

(b) commissioning of facilities of the North Lantau Hospital (Phase 1) (PART 3); and

(c) management of minor hospital projects (PART 4).

Audit has found room for improvement in the above areas, and has made a number of recommendations to address the issues.

Acknowledgement

1.15 Audit would like to acknowledge with gratitude the full cooperation of the staff of the FHB, the Development Bureau (DEVB), the HA, the ArchSD, the Labour Department (LD) and the Electrical and Mechanical Services Trading Fund (EMSTF) during the course of the audit review.

PART 2: PROJECT MANAGEMENT OF THE REDEVELOPMENT OF CARITAS MEDICAL CENTRE (PHASE 2)

2.1 This PART examines the HA's work in the project management of CMC Phase 2, focusing on:

(a) project planning (see paras. 2.8 to 2.16);

(b) project implementation (see paras. 2.17 to 2.26);

(c) construction site safety (see paras. 2.27 to 2.45); and

(d) construction defects (see paras. 2.46 to 2.53).

Redevelopment of Caritas Medical Centre

2.2 CMC, managed under the HA's Kowloon West Cluster (Note 6), 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. The medical services provided include 24-hour accident and emergency services, in-patient beds, out-patient clinics, rehabilitation and community care services.

2.3 CMC 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 to meet the present-day standard of an acute general hospital and the increase in service demand. Phase 1 redevelopment was completed in 2002 (Note 7).

Note 6: *As of October 2017, the HA's Kowloon West Cluster managed five public hospitals, namely the Princess Margaret Hospital, CMC, the Yan Chai Hospital, NLTH Phase 1 and the Kwai Chung Hospital.*

Note 7: *The works mainly involved the demolition of two sub-standard hospital blocks for the construction of a new block (namely the Wai Shun Block) to accommodate medical facilities including in-patient wards, an accident and emergency department, an intensive care unit and operating theatres.*

2.4 CMC Phase 2 commenced in 2007 and was substantially completed in October 2015. According to the paper submitted to the LegCo Public Works Subcommittee in April 2007, the Phase 2 project mainly included the demolition of four hospital blocks, construction of a new hospital block, a rehabilitation garden and external works, and refurbishment of another block (Note 8). Details are as follows:

(a) demolition of an old hospital block (namely the Wai Ming Block) for the construction of a new ambulatory and rehabilitation block on the same site to accommodate 260 rehabilitation beds, ambulatory care and clinical support facilities;

(b) demolition of another three hospital blocks (namely the Wai Tak Block, the Wai On Block and the Wai Yan Block) for the construction of external works (e.g. a rehabilitation garden, car parks and access roads);

(c) refurbishment of the Wai Oi Block to accommodate administrative functions (e.g. a training and conference centre, security and transport services, and a maintenance department) reprovisioned from the old hospital blocks; and

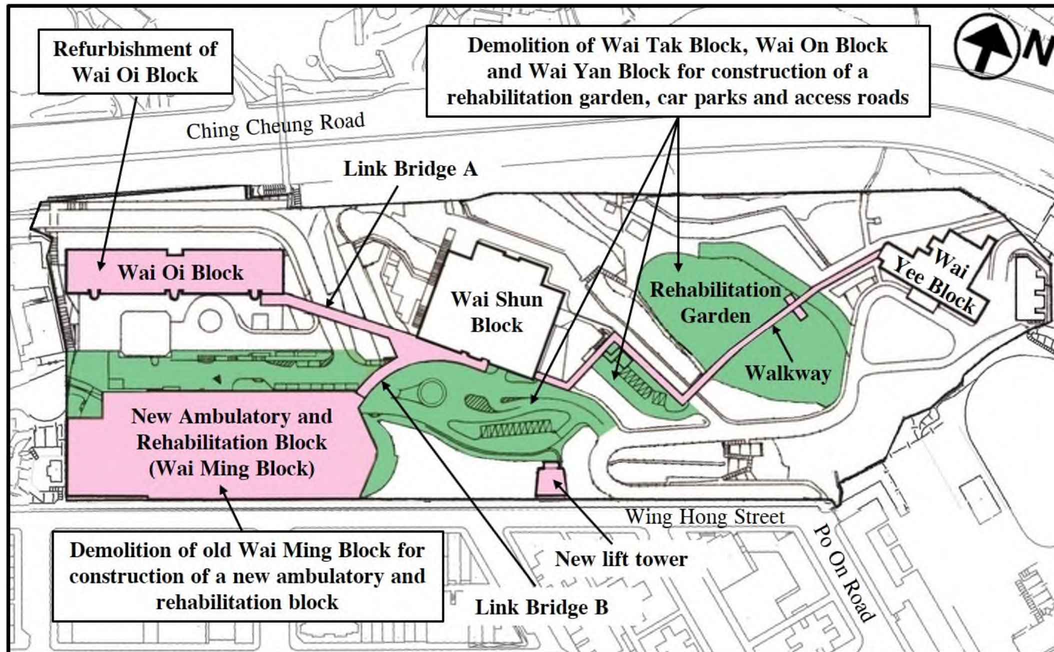
(d) construction of Link Bridges A and B, a walkway and a lift tower to facilitate commuting by hospital staff, patients and the general public.

Figure 2 shows the layout plan of CMC Phase 2.

Note 8: *CMC had 7 blocks after the completion of Phase 1 redevelopment. Except for the Wai Shun Block (constructed under Phase 1 in 2002) and another block (renovated in 1993), the other 5 blocks had been used for a long time. Phase 2 redevelopment involved the redevelopment/refurbishment of all these 5 blocks.*

Figure 2

Layout plan of CMC Phase 2



Legend: New and refurbished hospital blocks and other structures

External works

Source: *HA records*

Remarks: *As of October 2017, CMC had a total of 1,206 beds, comprising 752 beds in the Wai Shun Block, 280 beds in the Wai Ming Block and 174 beds in the Wai Yee Block.*

Roles of FHB and HA in project administration

2.5 The FHB was mainly responsible for seeking funding approval from the FC for implementing CMC Phase 2 and keeping track of the project progress through summary reports provided by the HA (see para. 1.12(c)). The HA acted as the works agent for the project as the hospital was constructed on non-government land (Note 9) (see para. 1.6). The HA engaged four consultants (Note 10) for the design, tender preparation and contract administration of the project.

Increase in project cost and delay in project completion

2.6 In May 2007, the FC approved funding of $1,218.1 million (Note 11) for implementing CMC Phase 2. The FHB informed the FC that the new Wai Ming Block and the rehabilitation garden would be completed by August 2011 and March 2012 respectively. In June 2011, the FHB resubmitted a funding application and the FC approved increasing the APE of the project 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 (Note 12)). The FHB informed the FC that the new Wai Ming Block and the rehabilitation garden would be completed by September 2013 and mid-2014 respectively.

2.7 In the event, the new Wai Ming Block and the rehabilitation garden 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 (or 2 months and 16 months later than the revised target completion

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Note 9: *The concerned land lots were granted to Caritas Hong Kong (the parent organisation of CMC) as private treaty grants.*

Note 10: *The four consultants were engaged to provide consultancy services in CMC Phase 2 relating to the architectural, civil and structural engineering, building services and quantity surveying aspects respectively.*

Note 11: *Caritas Hong Kong, the parent organisation of CMC, had undertaken to contribute $50 million towards the total project cost.*

Note 12: *The additional funding of $501.5 million comprised $358.5 million for increase in construction costs, $10 million for additional external works and $136.1 million for higher provision for price adjustment, with the cost increase having been offset by a saving of $3.1 million due to the reduced extent of decanting works.*

dates for which the FC was informed in 2011) (see para. 2.6). Photographs 1 and 2 show the new Wai Ming Block and the rehabilitation garden.

Photograph 1

The new Wai Ming Block

Source: HA records

Photograph 2

Rehabilitation garden

Source: HA records

Project planning

2.8 In early 2007, the HA planned to implement CMC Phase 2 under a single works contract with a total construction period of 56 months. After the FC's funding approval in May 2007 (see para. 2.6), in July 2007, the HA invited tenders for carrying out the works. In November 2007, as the bids of all five conforming tenders were 47% ($508 million) to 56% ($600 million) higher than the original estimate of $1,070 million and the potential of significantly lowering the tender price was limited, the HA cancelled the tender exercise.

Need to enhance the accuracy of cost estimate

2.9 In April 2009, the FHB and the HA informed the LegCo Panel on Health Services that the higher-than-expected tender price of the project was due to the following reasons:

(a) ***Rapid price inflation in 2007.*** The costs of construction had been escalating since early 2007 as a result of sharp and unexpected increase in the prices of major construction materials;

(b) ***Marking-up of tender prices by tenderers.*** Under a highly inflationary market situation at the time of conducting the tender exercise in 2007, the tenderers considered that the price-fluctuation allowance in the 56-month single works contract (see para. 2.8) was inadequate and they built in additional premium in their tenders to cover inflation risks over the long contract period; and

(c) ***Under-estimation of project cost by HA's consultants.*** 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.

2.10 According to the HA:

(a) regarding the under-estimation of project cost by its consultants (see para. 2.9(c)):

(i) the HA has not instigated any penalty measures on its consultants because the HA considered that the construction market conditions from mid-2007 to 2009 were exceptional; and

(ii) the exceptional market conditions might be demonstrated by the fact that the Government sought the FC's approval in November 2008 for increasing the APEs (up to 54% increase) of 35 public works projects due to upsurge in construction costs; and

(b) since 2007, the HA has taken various measures to achieve good value for money and enhance the accuracy of project cost estimates, including

(i) in December 2013, the HA developed cost benchmarks for different types of hospital facilities; and

(ii) in July 2014, the HA promulgated cost control guidelines for major hospital projects managed by the HA.

In Audit's view, when implementing hospital projects in future, the HA needs to take measures to ensure that the project cost is estimated as accurately as possible.

Need to enhance vetting of consultants' design and contract strategy

2.11 After cancellation of the tender exercise in 2007 (see para. 2.8), 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. In the event, the 2008 Design Review identified cost savings of at least $236 million (19% of the original APE of $1,218.1 million). The details of cost savings are shown in Table 2. According to the HA, the cost savings identified in the 2008 Design Review materialised during the subsequent re-tendering exercises conducted between 2009 and 2013 (see para. 2.17).

Table 2

Cost savings identified in 2008 Design Review

Aspect	Key revision	Cost savings materialised
(a) Project design	• Reducing construction floor area of new Wai Ming Block • Reducing size of rehabilitation garden	$145 million
(b) Project specifications	• Replacing wall and floor finishes by cheaper alternatives • Deleting escalators for out-patient department	$91 million
(c) Contract strategy	• Relaxing qualification requirements of main contractor and sub-contractors • Adjusting contract packaging	No estimation by HA
	Total	$236 million

Source: HA records

2.12 In April 2009, the FHB and the HA informed the LegCo Panel on Health Services that, in view of the higher-than-expected tender price (see para. 2.8), they decided to take the following remedial actions:

(a) ***Adopting a more compact building form.*** The construction floor area of the new Wai Ming Block had been reduced by 5,100 m^2 (Note 13) from 59,100 m^2 to 54,000 m^2 and the number of storeys reduced from 15 to 12. According to the FHB and the HA, the updated design enhanced the area efficiency of the redeveloped hospital block while the original scope of the redevelopment project (see para. 2.4) could be maintained; and

Note 13: *The reduced 5,100 m^2 covered car parking areas (2,900 m^2), engineering plant rooms and building services pipe ducts (1,800 m^2), and lift lobbies, staircases and corridors (400 m^2).*

(b) ***Splitting into smaller works contracts.*** To enhance the competitiveness of tenders and minimise the likelihood of tenderers building in additional premium for extensive contract periods, the redevelopment works would be split into three works contracts (instead of a single works contract — see para. 2.8), namely: (i) Foundation Contract; (ii) Main Building Works Contract; and (iii) Remaining Works Contract. In addition, the decanting works necessary for demolition of the old hospital blocks and the refurbishment works of the Wai Oi Block would be carried out by an HA term contractor (Note 14).

2.13 Audit noted that the 2008 Design Review identified significant cost savings and improved competitiveness of tenders by revising the building design and the contract strategy (see paras. 2.11 and 2.12). According to the HA, in May 2016, it engaged an international expert team to carry out a consultancy study on the planning efficiency of local and overseas hospitals.

2.14 In Audit's view, when implementing hospital projects in future, the HA needs to take measures to enhance the vetting of its consultants' design and contract strategy.

Audit recommendations

2.15 **Audit has *recommended* that the Chief Executive, HA should, when implementing hospital projects in future:**

(a) **take measures to ensure that the project cost is estimated as accurately as possible; and**

(b) **take measures to enhance the vetting of the HA consultants' design and contract strategy.**

Note 14: *The decanting works commenced in July 2009 and were completed in February 2010, and refurbishment works commenced in June 2012 and were completed in June 2015.*

Response from the Hospital Authority

2.16 The Chief Executive, HA has said that the HA agrees with the audit recommendations. He has also said that the HA will continue to identify appropriate new initiatives to be undertaken with a view to ensuring that no budget problem is encountered in its major hospital projects, as has been the case in the past 10 years.

Project Implementation

2.17 During June 2009 to August 2013, after conducting a tender exercise for each contract, the HA awarded the three contracts (see para. 2.12(b)) to three contractors respectively for implementing the works under CMC Phase 2 at a total contract sum of $1,570.2 million. Audit examination found that the Extension of Time (EOT) granted under one of the three contracts revealed room for improvement in the HA's site investigations and coordination work (see paras. 2.18 to 2.22).

Need to conduct more thorough site investigations

2.18 Audit noted that, for a contract for implementing CMC Phase 2:

(a) during the construction stage, underground electricity cables obstructing certain construction works were discovered by the contractor. According to the HA, the cables had not been indicated in the related utility records and the HA consultants and the contractor subsequently took action to revise the design for relocating the works involved, causing delay to the contractor's works. In the event, an EOT of 80 days was granted to the contractor; and

(b) during the connection of a stormwater pipe into a public manhole, an underground gas pipe obstructing the pipe connection works was discovered by the contractor. According to the HA, the gas pipe had not been indicated in the related utility records and the contractor subsequently took action to divert the gas pipe, causing delay to the contractor's works. In the event, an EOT of 94 days was granted to the contractor.

2.19 Audit noted that a total EOT of 174 (80 + 94) days was granted to the contractor due to clash of works with unrecorded utilities. As a result, it took a longer time to complete the related construction works. In August 2017, the HA informed Audit that:

(a) the contractor had relied on the utility records from utility companies collected during the design stage and the underground utility surveys carried by the HA's consultants for planning its construction works. In order not to adversely affect the prevailing traffic flow and hospital operation, further site investigations (e.g. trial trench works) were only arranged during the construction stage;

(b) having reviewed the delays caused by underground utilities, the HA considered that additional site investigations could be conducted during the early stage of construction works (such as conducting on-site visual inspection for estimating the possible alignment of unrecorded utilities, carrying out utility diversion works in advance when obstruction was found and diversion was inevitable, and carrying out site investigations in advance to reveal the underground condition at the critical works locations); and

(c) the additional site investigations in (b) above would have cost implications and might cause possible disruptions to the prevailing traffic flow and hospital operation, which should be carefully weighed against the potential benefits of carrying out additional site investigations.

2.20 While noting the HA's explanations above, in Audit's view, when implementing hospital projects in future, particularly for those projects involving redevelopment of old hospital buildings and at critical works locations, there is scope for the HA to conduct more thorough site investigations with a view to identifying unrecorded utilities as far as possible.

Need to strengthen coordination work

2.21 Audit also noted that, for the same contract in paragraph 2.18, works were suspended on 20 occasions upon urgent requests of medical staff due to the noise and vibrations of the construction on eye-surgery operations being conducted at nearby hospital buildings. According to the HA, the noise and vibrations caused by the related construction works were within the statutory and contractual requirements. In the event, an EOT of 20 days was granted to the contractor.

2.22 In August 2017, the HA informed Audit that the appointments for eye-surgery operations were made on average one to two months ahead of time. Therefore, the 20 occasions of eye-surgery operations were known in advance. In Audit's view, when implementing hospital projects in future, there is scope for the HA to strengthen the coordination between works and medical staff on the scheduling and interfacing of construction works and medical operations at nearby hospital buildings (e.g. requesting works suspension at an earlier time or exploring alternative locations for the conduct of operations). There are also merits for the HA to explore the feasibility of specifying more stringent noise and vibration limits in future hospital works contracts affecting medical operations at nearby hospital buildings during the construction works with a view to minimising the impact of works-induced noise and vibrations on nearby hospital buildings.

Need to complete assessment of EOT claims within a reasonable time

2.23 During March 2015 to January 2016, a contractor for implementing CMC Phase 2 made 8 EOT claims for reasons other than inclement weather for the related works. Audit noted that, up to July 2017, the assessments of these claims had not been completed. According to the HA:

(a) regarding 2 EOT claims (involving 160 days in total) submitted by the contractor in March 2015 and December 2015 respectively, the contractor had not provided supplementary information as requested by the HA consultant in April 2016; and

(b) regarding the remaining 6 EOT claims (involving 297 days in total) submitted by the contractor during December 2015 to January 2016, the contractor provided supplementary information in June 2017 as requested by the HA consultant in April 2016. In July 2017, the HA consultant requested the contractor to provide further supplementary information.

2.24 According to the contract provisions, the HA consultant shall within a reasonable time determine, grant and notify in writing the EOT, and if the contractor fails to submit information requested by the HA consultant, he shall consider granting EOT based on the information available to him. As of July 2017, about 1.5 to 2.5 years after the contractor's submission of EOT claims, the claims were still under assessment. In Audit's view, the HA needs to take measures to ensure that the assessment of EOT claims is completed within a reasonable time period.

Audit recommendations

2.25 **Audit has *recommended* that the Chief Executive, HA should:**

(a) **when implementing hospital projects in future:**

(i) **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;**

(ii) **strengthen the coordination between works and medical staff on the scheduling and interfacing of construction works and medical operations at nearby hospital buildings; and**

(iii) **explore the feasibility of specifying more stringent noise and vibration limits in hospital works contracts affecting medical operations at nearby hospital buildings during the construction works; and**

(b) **take measures to ensure that the assessment of EOT claims is completed within a reasonable time period.**

Response from the Hospital Authority

2.26 The Chief Executive, HA has said that the HA agrees with the audit recommendations. He has also said that:

(a) provisions regarding identification of unrecorded underground utilities and specification of noise and vibration limits have been and will continue to be incorporated in the HA's construction contracts as appropriate, for example:

(i) for the Expansion of the Hong Kong Red Cross Blood Transfusion Service Headquarters, the results and recommendations of a consultancy study conducted by a local university in June 2011 regarding construction-induced vibrations were incorporated as contractual requirements; and

(ii) for the foundation and associated works contract awarded in May 2016 for the Redevelopment of Kwong Wah Hospital, the contractor had been required to expose by hand-digging, verify and divert as necessary all existing underground utilities before commencement of foundation works; and

(b) the HA will review the relevant provisions in its construction contracts and consultancy agreements to see whether appropriate measures can be incorporated to ensure early completion of EOT assessments.

Construction site safety

2.27 According to the HA:

(a) it is committed to protecting the safety of its staff, patients, visitors, works agents, contractors and key stakeholders who work in or have access to the capital works projects managed by the HA; and

(b) it views the safety records of its construction sites very seriously, and the aim is for all the sites to achieve zero fatal accident at all times and minimise site accident rate.

2.28 In April 2012, the HA stipulated a limit on accident frequency rate at 0.5 reportable accident (Note 15) per 100,000 man-hours worked. This limit is applicable to each HA's works project. According to the HA, with a view to driving for better safety performance, its limit on accident frequency rate is more stringent than the limit of 0.6 reportable accident per 100,000 man-hours worked adopted by the DEVB for public works projects carried out by the Government.

Need to step up efforts to ensure construction site safety

2.29 Audit noted that, during the construction period of the three contracts for implementing CMC Phase 2, the accident frequency rates of two contractors (being 0.38 and 0.41 reportable accident per 100,000 man-hours worked) were within the HA's limit of 0.5. The accident frequency rate of the remaining contractor of 0.92 reportable accident per 100,000 man-hours worked was significantly higher than the HA's limit. It was also considerably higher than the limit adopted by the DEVB for government works projects (see para. 2.28). During the eight quarters of the 2-year construction period, the contractor's accident frequency rates of two quarters (i.e. 0 and 0.47 reportable accident per 100,000 man-hours worked in the first and fourth quarters respectively) were below the HA's limit of 0.5, whereas the rates of the other six quarters (ranging from 0.53 to 1.47) were above the HA's limit. Audit noted that, during the construction period, various safety-related events of the contractor took place, including:

(a) 21 reportable accidents occurred involving a total of 2,556 days of sick leave (Note 16) being granted to the injured workers, with sick leave granted in each accident ranging from 7 to 349 days (Note 17);

(b) on the next day after a falling-from-height accident causing multiple rib fractures of a construction worker occurred in April 2013, the LD issued a

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Note 15: *According to the HA, the number of reportable accidents refers to the number of workers involved in fatal cases or injury with incapacity for more than three days.*

Note 16: *Two of the 21 reportable accidents were related to two workers employed respectively by two sub-contractors of the contractor. The HA informed Audit in October 2017 that it did not maintain information related to the number of days of sick leave being granted to the two workers.*

Note 17: *According to the HA, no fatal case occurred during the construction period.*

suspension notice under the Occupational Safety and Health Ordinance (Cap. 509) requesting the contractor to immediately suspend the related construction works to alleviate the imminent safety risks. The suspension notice was revoked by the LD 22 days after the issue of the notice, and the contractor resumed the construction works concerned; and

(c) another four incidents, all concerning falling objects (e.g. wooden log and concrete debris) from height and affecting the general public and hospital operations, occurred during April to July 2013. No person was injured in these incidents.

2.30 According to the HA, it had taken various remedial actions since April 2013 with a view to minimising recurrence of similar accidents in the contract, including:

(a) reminding the contractor to conduct site safety inspections on a weekly basis, and to submit accident reports and review safety measures immediately after the occurrence of each accident; and

(b) requesting the HA consultant to assign a building professional to conduct regular site visits and closely monitor the safety performance of the contractor.

2.31 However, Audit noted that, even after the HA's remedial actions mentioned above, the accident frequency rate still reached 0.99 reportable accident per 100,000 man-hours worked during July to August 2013 and exceeded the HA's limit of 0.5 (and also the DEVB's limit of 0.6). In October 2017, the HA informed Audit that:

(a) it had taken various measures over the years to enhance construction site safety, including:

(i) in February 2014, the HA engaged a consultant specialised in construction site safety to conduct a review on the safety performance of the HA's capital works contracts;

(ii) since June 2015, the HA had stipulated in construction contracts the requirement to conduct regular safety audits by independent registered safety auditors; and

(iii) in September 2016 and July 2017, the HA organised training courses on effective safety management for its executive staff on hospital projects to enhance their safety awareness and culture; and

(b) in 2016, the HA achieved zero fatal accidents and an overall accident frequency rate of 0.31 reportable accident per 100,000 man-hours worked at its construction sites.

2.32 In Audit's view, when implementing hospital projects, the HA needs to step up efforts to ensure safety of construction sites with a view to minimising site accident rate.

Need to strengthen measures to ensure reporting of all site accidents

2.33 According to the contract provisions, the contractor with high accident frequency rate (see para. 2.29) shall submit a monthly report for consideration by the HA and its consultants at the meeting of the Site Safety and Environmental Management Committee (SSEMC — Note 18). The monthly report should include all accidents involving death or personal injury irrespective of severity or damages to properties in or adjacent to the construction site. However, according to the LD's records, 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 included in the pertinent monthly reports submitted to the SSEMC (Note 19).

Note 18: *The SSEMC was chaired by an HA consultant and included representatives from the CMC staff, the HA and the pertinent contractors. The Committee held meetings at monthly intervals.*

Note 19: *Under the Employees' Compensation Ordinance (Cap. 282), notice of any accident which results in death, total or partial incapacity of an employee shall be given to the LD by an employer within a specified time after the accident. The three sub-contractors of the contractor respectively gave the LD a notice of the corresponding accident.*

2.34 Audit noted that the SSEMC's functions included reviewing accident frequency rates and statistics of a contractor and its sub-contractors, and establishing safe working provisions and procedures. Any under-reporting of site accidents would undermine the SSEMC's performance of its functions. In Audit's view, when implementing hospital projects in future, the HA needs to strengthen measures to ensure that contractors report all site accidents to the HA and its consultants.

Need to review HA guidelines for assessing a contractor's site safety performance

2.35 According to the HA's Capital Works Procedural Manual, performance reports of a contractor are prepared generally on a quarterly basis to assess the performance of the contractor in 10 aspects including site safety (Note 20). In a quarterly performance report, each aspect is given 1 of the 5 ratings, namely "Very Good", "Good", "Satisfactory", "Poor" or "Very Poor", and an overall performance rating will be given for the performance report.

2.36 According to the HA, a contractor's performance is assessed based on its "Guidance Notes for Completion of Contractors' Performance Reports". Under the Guidance Notes, the site safety performance of a contractor is assessed under 6 safety sub-aspects (Note 21). An overall safety rating will be given based on the assessment results of these 6 sub-aspects.

Note 20: *The other 9 aspects are workmanship, progress, environmental pollution control, organisation, general obligations, industry awareness, resources, design and attendance to emergency. A "Very Poor" rating in workmanship, progress, site safety or environmental pollution control will result in an "Adverse" performance report.*

Note 21: *The 6 sub-aspects are:*

- *(a) Provision of maintenance of plant;*
- *(b) Provision and maintenance of working environment;*
- *(c) Provision of information, instruction and training;*
- *(d) Provision and implementation of safe systems of work;*
- *(e) Employment of safety officer/supervisor; and*
- *(f) Site accident record.*

2.37 In this connection, it is relevant to note that, for public works projects carried out by government works departments, the related DEVB's Technical Circular (Note 22) requires that a contractor's overall site safety performance should be rated as "Very Poor" if any 1 of the 5 following prescribed events occurs:

(a) failure to revoke a suspension notice issued by the LD within 14 days after it was issued;

(b) repeated non-compliance with safety procedures despite warnings given by site supervision staff and the LD, and failure to rectify the situation within a reasonable time;

(c) more than 2 improvement notices and/or suspension notices were issued by the LD to the contractor within the performance reporting period in respect of separate incidents or safety inspections;

(d) any suspension of works ordered by site supervision staff under the relevant contract provisions on grounds of site safety; and

(e) failure to rectify within a reasonable time any situation of imminent danger identified by an independent registered safety auditor and/or site supervision staff.

2.38 Audit noted that the overall safety rating of an HA contractor is based on the assessment results of 6 sub-aspects (see para. 2.36). The HA's guidelines had not stipulated any prescribed events which would trigger giving an adverse overall safety rating to a contractor. As the prescribed events in the DEVB's Technical Circular may also be applicable to the HA's contractors, there is merit for the HA to consider stipulating such prescribed events for assessing the overall safety rating of its contractors in future.

Note 22: *The related requirements are stipulated in Works Bureau Technical Circular No. 26/2000 on "Score Card for Assessment for Site Safety Performance" issued by the then Works Bureau in September 2000, and updated by the then Environment, Transport and Works Bureau in February 2007 and the DEVB in November 2012. The site safety performance of government works contractors is also assessed under the same 6 sub-aspects in the HA guidelines (see Note 21 to para. 2.36).*

2.39 In Audit's view, to enhance the assessment of contractors' performance on site safety, the HA needs to conduct a review on its guidelines, 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).

Accident statistics not regularly reported to HA Board/Committees

2.40 During the 5-year period from 2012-13 to 2016-17, the HA management had only reported the accident statistics of its hospital projects to the HA's Capital Works Subcommittee (Note 23) on two occasions:

(a) in August 2012, reporting the overall accident rate per 1,000 workers from 2007 to 2011; and

(b) in November 2016, reporting the accident statistics from November 2013 to October 2016, including number of fatalities, average accident frequency rate and suspension notices issued by the LD.

2.41 Audit noted that:

(a) the HA management had not reported the related accident statistics during January 2012 to October 2013 to the HA Board or the above Subcommittee; and

(b) contractors' safety performance (including comparison of the actual accident frequency rates against the HA's accident limit) was not regularly reported to the HA Board or the above Subcommittee for monitoring purpose. In this connection, Audit noted that the DEVB published the accident statistics of government works departments on an annual basis.

Note 23: *In March 2012, the HA's Supporting Services Development Committee (see Note 5 to para. 1.12(b)) established the Capital Works Subcommittee. It is chaired by a member of the Committee and comprises 8 other members. The Subcommittee's functions include advising and making recommendations to the Committee on the planning, implementation and monitoring of the HA's major hospital projects. In general, the Subcommittee meets 4 times a year.*

2.42 In Audit's view, when implementing hospital projects in future, the HA management needs to report the accident statistics regularly to the HA Board/its relevant Committees and publish them for enhancing transparency and public accountability.

Audit recommendations

2.43 **Audit has *recommended* that the Chief Executive, HA should:**

(a) **when implementing hospital projects in future:**

- (i) **step up efforts to ensure safety of construction sites with a view to minimising site accident rate;**

- (ii) **strengthen measures to ensure that contractors report all site accidents to the HA and its consultants; and**

- (iii) **report the accident statistics regularly to the HA Board/its relevant Committees, and publish them for enhancing transparency and public accountability; and**

(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).**

Response from the Hospital Authority and the Government

2.44 The Chief Executive, HA has said that the HA agrees with the audit recommendations. He has also said that:

(a) the HA will continue to identify appropriate measures to be taken for further safety enhancements, including measures to ensure that its contractors report all site accidents to the HA and its consultants;

(b) the HA will report and publish its accident statistics regularly in future; and

(c) in October 2017, the HA concluded a review initiated in May 2016 on its performance appraisal system in order to align with the corresponding practices adopted by government works departments.

2.45 The Secretary for Development concurs with the audit recommendations for the HA to enhance its safety management system and the assessment of contractors' performance on site safety.

Construction defects

2.46 Under the three contracts for CMC Phase 2:

(a) the maintenance period is 12 months counting from the date of substantial completion of a works section, and all the maintenance works shall be carried out by the pertinent contractor at their own expense during the maintenance period or within 14 days after its expiry;

(b) the HA consultants may require the pertinent contractor to make good any defects or other faults identified within the maintenance period, and the contractor shall carry out such works within the maintenance period or as soon as practicable thereafter;

(c) if the pertinent contractor fails to carry out any defect rectification works, the HA shall be entitled, after giving a reasonable written notice to the contractor, to have such works carried out by its own workers or by other contractors, and the HA shall be entitled to recover from the contractor the expenditure incurred; and

(d) upon expiry of the maintenance period, and when all the outstanding and defect rectification works have been completed, the HA consultants shall issue a maintenance certificate to the pertinent contractor.

Delay in rectification of construction defects

2.47 According to the HA, of the three contracts for implementing CMC Phase 2:

(a) for one contract, no construction defect was identified; and

(b) for the other two contracts, as of 30 June 2017, 247 defect items (2.4% of a total 10,091 items) remained outstanding although the corresponding maintenance periods had already lapsed. The outstanding defect items were mainly related to water seepage, building works and electrical and mechanical (E&M) works.

2.48 In July 2017, the HA informed Audit that the outstanding defects had not been timely rectified due to various reasons, including:

(a) adequate resources had not been deployed by the pertinent contractors during the respective maintenance periods;

(b) only limited access had been provided for the pertinent contractors to carry out defect rectification works because of the existing hospital operations;

(c) it was difficult to identify the sources of water seepage (a major type of construction defects); and

(d) although some replacement items were of small monetary value, it required a long time for the manufacturing and delivery processes.

2.49 In Audit's view, it is less than satisfactory that, as of June 2017, 8 months and 3 years after expiry of the respective maintenance periods of the two contracts, the defect rectification works were still outstanding. In October 2017, the HA informed Audit that it had put in place various measures over the years for quality assurance of construction works, including:

(a) in November 2014, the HA initiated a pilot scheme on the direct employment of resident site staff to help retain expertise in the quality supervision of hospital projects;

(b) in June 2016, the HA initiated a programme of quality assurance audits conducted by in-house cross-team project staff; and

(c) in May 2017, the HA promulgated the Resident Site Staff Handbook to align quality-supervision practices at different construction sites.

2.50 Audit considers that the HA needs to step up measures to ensure that the outstanding defects under the two contracts are rectified as soon as possible. When implementing a hospital project in future, the HA also needs to take measures to ensure that all defect rectification works are completed in a timely manner.

Need to conduct thorough investigations to identify hidden construction defects posing safety risks

2.51 Furthermore, in March 2017, a piece of square-shaped loose concrete (with sides of about 300 millimetres and a thickness of about 10 millimetres) was found falling from the ceiling of a structure. No person was nearby the structure and there was no injury during the incident. According to the investigation report of the contractor concerned, the loose concrete was considered as a hidden construction defect and therefore had not been identified beforehand. In the same month, at the request of CMC staff, the contractor attempted and could not identify other hidden construction defects. Audit considers that, when implementing a hospital project in future, the HA needs to conduct thorough investigations before commissioning of the related hospital facilities with a view to identifying all the construction defects posing safety risks to hospital users.

Audit recommendations

2.52 **Audit has *recommended* that the Chief Executive, HA should:**

(a) **step up measures to ensure that the outstanding defects under the contracts of CMC Phase 2 are rectified as soon as possible; and**

(b) **when implementing a hospital project in future:**

(i) **take measures to ensure that all defect rectification works are completed in a timely manner; and**

(ii) **conduct thorough investigations before commissioning of the related hospital facilities with a view to identifying all the construction defects posing safety risks to hospital users.**

Response from the Hospital Authority

2.53 The Chief Executive, HA has said that the HA agrees with the audit recommendations. He has also said that:

(a) as of end September 2017, all except 9 defect items under the contracts of CMC Phase 2 had been rectified. The 9 outstanding defect items will be rectified by end October 2017; and

(b) the HA will continue to identify appropriate measures to be taken for further quality assurance of construction works in order to minimise the need for defect rectification works after works completion.

PART 3: COMMISSIONING OF FACILITIES OF THE NORTH LANTAU HOSPITAL (PHASE 1)

3.1 This PART examines the HA's work in commissioning of facilities of NLTH Phase 1, focusing on:

(a) commissioning of medical services (see paras. 3.4 to 3.20);

(b) utilisation of hospital building (see paras. 3.21 to 3.29); and

(c) utilisation of medical equipment (see paras. 3.30 to 3.36).

North Lantau Hospital

3.2 In December 2009, the FHB informed the LegCo Public Works Subcommittee that:

(a) ***NLTH.*** In accordance with the general planning standard, an acute hospital would be planned for a district when the population of the district reached 200,000. The FHB decided to develop a new hospital in North Lantau before the population in the district reached the relevant level under the general planning standard:

  (i) to cope with the projected population growth of the Lantau Island from 100,000 in 2006 to 123,100 by 2015 and further to around 220,000 upon the full development of North Lantau New Town in the long term; and

  (ii) having considered that the Hong Kong International Airport and some major tourist facilities are situated in North Lantau.

NLTH would be developed in two phases (see (b) and (c) below);

(b) ***Phase 1.*** It would be a government project to provide a public hospital (including an accident and emergency department, 180 beds and specialist out-patient clinics), which would be sufficient to meet the demand for public hospital services for the projected population of 123,100 on Lantau Island by 2015. The estimated annual recurrent expenditure arising from this project was $300 million. Construction works for the Phase 1 development were planned for completion in December 2012; and

(c) ***Phase 2.*** To meet the long-term demand for hospital services on Lantau Island 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 (Note 24).

3.3 In January 2010, the FC approved funding of $2,482 million (comprising $2,082 million for works and $400 million for furniture and equipment items) for the construction of NLTH Phase 1 (Note 25). The ArchSD was responsible for the construction of NLTH Phase 1 as it is located on government land (see para. 1.6). In December 2012, the construction works were substantially completed (Note 26). In September 2013, the hospital commenced operation under the management of the HA's Kowloon West Cluster (see Note 6 to para. 2.2). NLTH Phase 1 comprises one hospital building block (see Photograph 3). The HA's work in commissioning the facilities of NLTH Phase 1 is shown in paragraphs 3.4 to 3.36. Audit has found room for improvement in the HA's related work.

Note 24: *The Government would explore the introduction of public-private-partnership for the private sector to provide other medical facilities and services in the available area in addition to the 170 beds provided by the Government. In the event that the above partnership arrangement would not materialise for the Phase 2 development, the Government would still proceed with the Phase 2 development in due course as a government project.*

Note 25: *According to the FHB's paper seeking funding approval from the FC, the unit construction cost was considered reasonable as compared with other similar hospital projects.*

Note 26: *Up to June 2017, the total expenditure was $1,911.6 million (comprising $1,737.1 million for building works and $174.5 million for furniture and equipment items).*

Photograph 3

North Lantau Hospital (Phase 1)

Source: HA records

Commissioning of medical services

3.4 In November 2011, the HA management informed the HA's Medical Services Development Committee (MSDC — Note 27) that:

(a) in view of the tight medical and nursing manpower in the next few years, medical services at NLTH Phase 1 would be introduced in phases, tying in with the supply of manpower and making reference to the graduating seasons of medical and nursing students. A service timeline for commissioning medical services in phases (from the third quarter of 2013 to full operation in the third quarter of 2016) at NLTH Phase 1 was proposed;

Note 27: *The MSDC is established by the HA Board under the Hospital Authority Ordinance. It is chaired by an HA Board member and comprises 13 other members. The functions of the Committee include advising and making recommendations to the HA Board on the directions relating to the development of public hospitals and related services. In general, the Committee meets 6 times a year.*

(b) NLTH Phase 1 would need to have 650 staff (comprising 62 doctors, 174 nurses, 83 allied health professionals (Note 28) and 331 supporting staff) to deliver its medical services when in full operation (Note 29);

(c) in view of the tension in the supply of doctors and nurses at that time, a proactive recruitment plan for doctors, nurses and allied health professionals was crucial to guarantee that the services of NLTH Phase 1 could be up and running upon its phased commissioning. All the channels would be considered for proactively recruiting the required manpower for delivering the planned services for the phased commissioning of NLTH Phase 1, including part-time employment, special honorarium scheme and overseas recruitment; and

(d) it was estimated that NLTH Phase 1 would require an annual budget of about $500 million when in full operation (Note 30). The HA was in the process of securing a bid under the Government's Resource Allocation Exercise to support the operating cost of NLTH Phase 1, and recurrent funding support from the Government would need to be secured before commissioning of the hospital.

The MSDC noted the above-mentioned commissioning plan of NLTH Phase 1.

Note 28: *Allied health professionals included physiotherapists, occupational therapists and speech therapists.*

Note 29: *According to the HA, the manpower of 650 staff was estimated on the basis of:*

(a) scope of service provision (especially for the need to cope with disasters);
(b) minimum number of staff to cover the required service hours (including the staff needed for shift duties at the accident and emergency department); and
(c) reference with the manpower provision for various services in other public hospitals.

Note 30: *According to the HA, the annual recurrent expenditure of $300 million (see para. 3.2(b)) provided to LegCo in December 2009 was a rough estimation based on the latest cost data at that time. In 2011, the hospital management estimated that an annual recurrent expenditure of $476 million (comprising $311 million for personal emoluments and $165 million for other recurrent costs) would be required for full operation of NLTH Phase 1.*

3.5 In December 2011, the HA Board noted 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 (via the submission of a progress report on the items discussed at the meeting of the MSDC held in November 2011).

3.6 In April 2013, the HA management informed the HA Board of the service scope of NLTH Phase 1 in 2013-14, the related challenges and way forward, including:

(a) the hospital would commence certain medical services (Note 31) in September 2013 to tie in with the graduation seasons of medical and nursing students, and to allow sufficient time for team building and staff orientation. The HA would commission the remaining medical services in phases in subsequent years subject to resources available under the prevailing mechanisms;

(b) the difficulties in recruiting junior frontline staff to the hospital were manageable, as there was reasonably convenient transportation to Tung Chung, and good supply of working population (particularly for junior positions) was expected in the district; and

(c) the HA management was optimistic on the recruitment of staff for the hospital in view of the encouraging responses in staff briefing forums and recruitment exercises. Job rotation of medical staff within the Kowloon West Cluster would be arranged for training opportunity and exposure to different frontline settings.

3.7 As mentioned in paragraphs 3.4 to 3.6, the HA management informed the HA Board and its MSDC the proposal for commissioning the medical services in phases in NLTH Phase 1. Table 3 shows a comparison of the service timeline as proposed to the MSDC in 2011 and the actual commissioning dates of key medical services at NLTH Phase 1.

Note 31: *The medical services included accident and emergency services, general out-patient services, specialist out-patient services for medicine and psychiatrics, and community care services.*

Table 3

Proposed and actual commissioning dates of key medical services at NLTH Phase 1

<table>
<tr><th rowspan="2">Key medical service</th><th colspan="2">Commissioning date</th></tr>
<tr><th>Proposed to HA's MSDC in 2011</th><th>Actual</th></tr>
<tr><td colspan="3">(A) Accident and emergency department</td></tr>
<tr><td>(i) 8-hour service</td><td>3rd quarter of 2013</td><td>September 2013</td></tr>
<tr><td>(ii) 24-hour service</td><td>1st quarter of 2014</td><td>September 2014</td></tr>
<tr><td>(B) General out-patient clinic</td><td>3rd quarter of 2013</td><td>September 2013</td></tr>
<tr><td>(C) Community care services</td><td>3rd quarter of 2013</td><td>September 2013</td></tr>
<tr><td>(D) Day rehabilitation centre</td><td>1st quarter of 2014</td><td>September 2014</td></tr>
<tr><td colspan="3">(E) Specialist out-patient clinics</td></tr>
<tr><td>(i) Medicine, psychiatrics</td><td>3rd quarter of 2013</td><td>September 2013</td></tr>
<tr><td>(ii) Orthopaedics and traumatology, surgery</td><td>3rd quarter of 2013</td><td>September 2014</td></tr>
<tr><td>(iii) Gynaecology, paediatrics</td><td>3rd quarter of 2014</td><td>Not yet commissioned as of June 2017</td></tr>
<tr><td colspan="3">(F) Day surgery centre with 20 day-beds</td></tr>
<tr><td>(i) Day surgery centre</td><td>1st quarter of 2014</td><td>October 2014</td></tr>
<tr><td>(ii) 20 day-beds</td><td>1st quarter of 2014</td><td>Not yet commissioned as of June 2017</td></tr>
<tr><td colspan="3">(G) Wards for in-patients (160 beds in total)</td></tr>
<tr><td>(i) 20 beds</td><td>1st quarter of 2014</td><td rowspan="2">September 2014 (for 40 beds)</td></tr>
<tr><td>(ii) Another 40 beds</td><td>3rd quarter of 2014</td></tr>
<tr><td>(iii) Another 20 beds</td><td>3rd quarter of 2015</td><td rowspan="3">Not yet commissioned as of June 2017 (for 120 beds)</td></tr>
<tr><td>(iv) Another 40 beds (Note)</td><td>4th quarter of 2015</td></tr>
<tr><td>(v) Another 40 beds (Note)</td><td>3rd quarter of 2016</td></tr>
</table>

Legend: [shaded box] Shaded boxes indicate commissioning of medical services later than the respective commissioning dates as proposed by the HA management to the HA's MSDC in 2011.

Source: HA records

Note: According to the HA management's proposal to the MSDC in 2011, the actual provision of these 80 (40+40) in-patient beds would be dependent on the service needs at the prevailing time.

Commissioning of some medical services later than the proposed dates

3.8 As shown in Table 3, the 24-hour accident and emergency service (item (A)(ii)), the day rehabilitation centre (item (D)), the specialist out-patient clinics on orthopaedics and traumatology and surgery (item (E)(ii)), the day surgery centre (item (F)(i)) and 20 in-patient beds (item (G)(i)) of NLTH Phase 1 were commissioned later than the respective commissioning dates as proposed by the HA management to the HA's MSDC in 2011. While the HA management informed the HA Board and the MSDC that it proposed to commission all medical services in the third quarter of 2016, 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 — see item (E)(iii));

(b) 20 day-beds for day-surgery patients (proposed for commissioning in the first quarter of 2014 — see item (F)(ii)); and

(c) a total of 120 in-patient beds (proposed for commissioning by the third quarter of 2016 — see item (G)(ii) to (v)).

3.9 Audit noted that, according to the results of the 2016 Population By-census conducted by the Census and Statistics Department, the actual population of the Lantau Island was about 123,300 in 2016, which was very close to the population forecast of 123,100 by the FHB in 2009 when seeking funding approval from LegCo for NLTH Phase 1 project (see para. 3.2(b)). According to the FHB's paper submitted to LegCo in 2009, the Lantau population of about 123,000 would require a public hospital of 180 beds in order to meet their demand for public hospital services. However, as of June 2017, only 40 beds (22% of the planned 180 beds) were commissioned at NLTH Phase 1 to provide public hospital services for the 123,000 Lantau residents.

3.10 According to the HA, Lantau residents requiring medical services not yet provided by NLTH Phase 1 have primarily been referred to other public hospitals managed by the HA's Kowloon West Cluster for treatment (Note 32). The majority of Lantau residents had been referred to the HA's Princess Margaret Hospital (PMH — about 27 kilometres from NLTH involving travelling time of about 25 minutes by private car/taxi or about 50 minutes by public transport) for treatment.

3.11 According to HA records, as of 30 June 2017, 1,044 Lantau residents and 899 Lantau children had made appointments for specialist out-patient services for gynaecology and paediatrics respectively at the PMH, as these services had not yet been provided at NLTH Phase 1 (Note 33). In this connection, Audit noted that a LegCo member and some members of the Islands District Council had indicated on various occasions in 2017 that the patient transfer and referral arrangements from NLTH Phase 1 to PMH involved long travelling time and hence caused inconvenience to Lantau residents.

3.12 Audit noted that, in April 2013, the HA management informed the HA Board that it was optimistic on the staff recruitment for the phased commissioning of NLTH Phase 1 in 2013-14 in view of the encouraging responses in staff briefing forums and recruitment exercises (see para. 3.6(c)). In the event, as of 31 March 2017, only 397 staff were deployed to the hospital for providing the commissioned medical services. The 397 staff comprised 245 staff deployed through

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Note 32: *According to the HA:*

(a) it organises the provision of medical services on a cluster approach by grouping its medical facilities and services together to form a network within a cluster in ensuring that patients will receive a continuum of medical care within the same cluster and throughout their episode of illness;

(b) apart from achieving integration and collaboration among various clinical services within a cluster, the cluster arrangement also serves to ensure cost-effective use of resources within the same cluster; and

(c) medical needs of Lantau residents are addressed by NLTH Phase 1 and the Princess Margaret Hospital together with other hospitals and facilities of the HA's Kowloon West Cluster.

Note 33: *According to the HA, in June 2017, a daily average of 154 Lantau residents were receiving in-patient medical services in the PMH (being the only acute tertiary hospital in the Kowloon West Cluster), of which a daily average of 143 Lantau residents were admitted due to complexity of their clinical situation requiring medical treatment in an acute tertiary hospital.*

internal transfer within the HA and 152 staff recruited from external sources, representing 61% of the 650 staff required for the full operation of the hospital (see Appendix D).

3.13 During May to September 2017, the HA informed Audit that:

(a) for all the HA's service initiatives, including the phased commissioning of medical services at NLTH Phase 1, the key constraints for commissioning of the service initiatives were attributed to two key factors (i.e. manpower shortage and competing needs across the HA — see Appendix E for details). As a result, only some of the service initiatives would be allocated with the necessary resources (including manpower) for implementation; and

(b) patient's convenience was not the only factor for consideration in setting up hospital or specialist out-patient services. Patients might also choose to seek services at public hospitals in other districts for various reasons (e.g. proximity to workplace). Nonetheless, certain groups of patients might benefit more from medical services in the vicinity of their residential locations (e.g. general out-patient service, community elderly service and community psychiatric service). The priority in establishing these services had reflected a balance among various factors, including patients' convenience and cost-effectiveness.

3.14 In Audit's view, regarding NLTH Phase 1 and major hospital projects to be implemented in future, the HA needs to keep track of the medical service demand of residents at the related districts and commission the planned medical services of the completed hospital projects (including NLTH Phase 1) to meet the demand as soon as practicable.

Need to keep under review anticipated timeline for commissioning medical services and report progress to HA Board/Committees and FHB

3.15 As indicated in paragraphs 3.4 and 3.5, in 2011, the HA management informed the HA Board and its MSDC the proposal for commissioning the medical services in phases in NLTH Phase 1, and the manpower needed to deliver all the medical services. Audit noted that, after commissioning of the operation of the hospital 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, Audit found that information on the anticipated timeline for commissioning the remaining medical services at NLTH Phase 1 (see para. 3.8(a) to (c)) had not been provided to the HA Board and the FHB.

3.16 In Audit's view, the HA management needs to regularly report the progress of commissioning the remaining medical services at NLTH Phase 1 against its anticipated timeline to the HA Board (or its relevant Committees) and the FHB. Moreover, when implementing major hospital projects in future, the HA management needs to keep under review the anticipated timeline for commissioning medical services and regularly report to the HA Board (or its relevant Committees) and the FHB the progress vis-à-vis the anticipated timeline for monitoring purpose. The FHB also needs to 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.

Audit recommendations

3.17 **Audit has *recommended* that the Chief Executive, HA should, regarding NLTH Phase 1 and major hospital projects to be implemented in future:**

(a) **keep track of the medical service demand of residents at the related districts, and commission the planned medical services of the completed hospital projects (including NLTH Phase 1) in a timely manner to meet the demand as soon as practicable; and**

(b) **keep under review the anticipated timeline for commissioning all medical services at completed hospital projects (including NLTH Phase 1), and 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.**

3.18 **Audit has *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.**

Response from the Hospital Authority and the Government

3.19 The Chief Executive, HA has said that the HA agrees with the audit recommendations in paragraphs 3.17 and 3.18. He has also said that:

(a) the HA will continue to keep track of the medical service demand of the completed hospital projects (including NLTH Phase 1) by analysing the service utilisation of residents in the respective catchment areas of the cluster hospitals. This information will be used to formulate appropriate service opening plan of the completed hospital projects (including NLTH Phase 1) in the HA's annual planning exercise;

(b) the HA will review the anticipated timeline for the phased opening of NLTH Phase 1 and hospital projects to be completed in future by anticipating the realistic competing needs, assessing related manpower supply and adjusting the proposed timeline at different stages of their phased opening. The updated proposal together with the overall progress of the service opening of NLTH Phase 1 and hospital projects to be completed in future will be separately reported to the HA Board or its relevant Committees (including the FHB representative serving at the HA Board/Committees) at regular intervals; and

(c) apart from the existing reporting mechanism on the phased opening of medical services at completed hospital projects to the HA Board or its relevant Committees (including the FHB representative serving at the HA Board/Committees) and the quarterly reports to the FHB, the HA will additionally report the remaining facilities/services yet to be opened so as to keep the FHB abreast of the overall progress of the service commissioning.

3.20 The Secretary for Food and Health agrees with the audit recommendation in paragraph 3.18. She has also said that:

(a) the HA reports to the FHB the progress of its major capital works projects and commissioning of medical services in hospital projects through various channels (e.g. through the FHB's monthly meetings with the HA and the HA's quarterly progress review reports to the FHB). Ad-hoc meetings would also be held where necessary on the commissioning of services in completed hospital projects. For example, the FHB and the HA have worked closely and held ad-hoc meetings on the planned commissioning of services at the Hong Kong Children's Hospital in 2018;

(b) regarding NLTH Phase 1, although there is no regular report from the HA specifically on the commissioning of the remaining medical services, the FHB has maintained close liaison with the HA, and both parties have jointly considered the planning of the remaining services at NLTH Phase 1 and its Phase 2 development (see para. 3.2(c)) in view of the rising demand for medical services in the district arising from the proposed Tung Chung New Town Extension project; and

(c) the FHB will, in consultation with the HA, consider how the communication and reporting mechanism regarding the progress of commissioning of services at completed hospital projects can be regularised and enhanced.

Utilisation of hospital building

3.21 In December 2012, the construction works for NLTH Phase 1 were substantially completed. A total floor area of 13,729 m^2 was constructed for the hospital building.

Hospital building not fully utilised

3.22 As indicated in paragraph 3.8, certain medical services at NLTH Phase 1 were not commissioned as of June 2017. As a result, the hospital building was not fully utilised. Audit analysis found that, as of June 2017, 2,867 m^2 (21% of the total area of 13,729 m^2) of the hospital building were vacant or had not been utilised for the intended functions. These 2,867 m^2 comprised 2,204 m^2 for wards, 466 m^2 for canteen and kitchen area, and 197 m^2 for the day surgery centre.

3.23 Audit's site visit to NLTH Phase 1 on 30 June 2017 found that, for wards and the day surgery centre, some of the areas were vacant or used for temporary storage (see Photographs 4 and 5).

Photograph 4

A vacant ward area

Source: Photograph taken by Audit staff on 30 June 2017

Photograph 5

A ward area used for temporary storage

Source: Photograph taken by Audit staff on 30 June 2017

3.24 Audit also noted that the HA had made gainful use of a ward area at NLTH Phase 1 of about 112 m^2 (4% of the total area of 2,867 m^2 which were vacant or had not been utilised for the intended functions) temporarily as a gymnasium for physiotherapy patients (see Photograph 6). In October 2017, the HA informed Audit that, in addition to using the vacant ward area temporarily as rehabilitation areas, other vacant ward areas were also being used temporarily as staff training venue for the hospital and the HA's Head Office. In Audit's view, for the remaining vacant areas, the HA needs to explore measures to put such areas into gainful uses in the interim period. For areas temporarily used for other unintended functions (e.g. storage), the HA also needs to review whether such areas could be put into better alternative use.

Photograph 6

A ward temporarily used as a gymnasium

Source: Photograph taken by Audit staff on 30 June 2017

3.25 As regards the area earmarked for canteen and kitchen (see Photograph 7), Audit noted that, in August 2013, the HA conducted a tender exercise to invite caterers to bid for the provision of canteen service for NLTH Phase 1 but no tender was returned in that exercise. Up to August 2017, the HA had not conducted any further tender exercise for the service.

Photograph 7

Vacant canteen and kitchen area

Source: Photograph taken by Audit staff on 30 June 2017

3.26 In August 2017, the HA informed Audit that:

(a) in the 2013 tender exercise, the potential canteen operators considered that the canteen at NLTH Phase 1 was not a viable business owing to the operation scale, projected sales volume, capital investment and geographic location; and

(b) since 2015, as an interim measure, the hospital management had arranged an operator to provide cafeteria services to provide meals, light refreshment and beverages to the general public and hospital staff.

3.27 According to the HA, catering service has always been an important part of a public hospital. In Audit's view, given that various medical services (e.g. 24-hour accident and emergency service and day rehabilitation centre — see Table 3 in para. 3.7) have been provided to the general public at NLTH Phase 1 since the last tender exercise in August 2013 and the increase of its staff from 164 in September 2013 to 397 in March 2017, the HA needs to revisit the feasibility of providing the canteen service. Before the canteen and kitchen area could be used for the intended purpose, the HA also needs to explore measures to put the area into gainful uses in the interim period.

Audit recommendations

3.28 **Audit has *recommended* that the Chief Executive, HA should:**

(a) **before the vacant areas at NLTH Phase 1 could be utilised, explore measures to put such areas into gainful uses in the interim period;**

(b) **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; and**

(c) **revisit the feasibility of providing the canteen service at NLTH Phase 1, and before the canteen and kitchen area could be used for the intended purpose, explore measures to put the area into gainful uses in the interim period.**

Response from the Hospital Authority

3.29 The Chief Executive, HA has said that the HA agrees with the audit recommendations. He has also said that:

(a) the HA will continue to explore measures to put the unused areas at NLTH Phase 1 into gainful use where practicable, such as for organising staff/patient activities in the interim period before such areas could be utilised;

(b) the use of some vacant areas for storage is on a temporary basis, and the areas will be cleared upon the implementation of the measures in (a) above or the phased opening of new wards in NLTH Phase 1 targeted in 2018-19 and thereafter; and

(c) further to the unsuccessful tender exercise for the provision of canteen service at NLTH Phase 1 in 2013, the HA's Kowloon West Cluster will conduct another tender exercise in the fourth quarter of 2017.

Utilisation of medical equipment

3.30 Before utilising the funding approved by the FC (see para. 3.3) for procurement of major medical equipment (i.e. costing $1 million or above per equipment item), the HA needs to seek the FHB's approval and provide the justifications, including the expected utilisation (e.g. in terms of the number of examinations to be conducted) of the equipment. Moreover, HA hospitals are required to record the actual utilisation of each major medical equipment item and report the results to its cluster management. For example, the management of NLTH Phase 1 needs to report the actual utilisation of its major medical equipment to the HA's Kowloon West Cluster Technology Committee (Note 34).

Under-utilisation of medical equipment

3.31 Since the commissioning of NLTH Phase 1 in 2013, the HA had procured 10 major medical equipment items at a total cost of $32.7 million for use at the hospital. The utilisation of the 10 equipment items in 2016 is shown in Table 4.

Note 34: *The Committee is chaired by the Hospital Chief Executive of a public hospital managed by the Kowloon West Cluster and comprises hospital end-users and management staff from the same cluster. The Committee usually holds meetings on an annual basis. If the actual utilisation of a major medical equipment is lower than the expected utilisation, the responsible hospitals are required to provide justifications to the Committee.*

Table 4

Utilisation of major medical equipment at NLTH Phase 1 (2016)

Equipment item (Note)	Unit cost (a) ($ million)	Expected utilisation per year (b)	Actual utilisation in 2016 (c)	Utilisation rate $(d) = \frac{(c)}{(b)} \times 100\%$
1. Mobile C-arm X-ray Machine	1.4	110	7	6%
2. Computed Radiography System	2.2	5,000	502	10%
3. Fluoro/Angiographic Unit	6.9	825	182	22%
4. Prescription Dispensing System	3.1	79,500	34,635	44%
5. Anaesthetic Clinical Information System	3.0	2,500	1,154	46%
6. Ultrasound Scanner	1.5	2,200	1,171	53%
7. Automatic Tablet Dispensing and Packaging System	2.6	116,480	67,287	58%
8. Computed Tomography System	7.0	6,000	6,618	110%
9. Digital Radiography System (for accident and emergency department)	2.5	20,000	24,131	121%
10. Digital Radiography System	2.5	9,000	25,115	279%
Total	32.7			

Source: Audit analysis of HA records

Note: Of the 10 major medical equipment items:

(a) 7 items were for the conduct of medical examinations (i.e. items 1, 2, 3, 6, 8, 9 and 10) and their utilisation was measured in terms of the number of examinations conducted;

(b) 2 items were for the dispensing of medicines (i.e. item 4 (utilisation measured in terms of the number of prescriptions handled) and item 7 (utilisation measured in terms of the number of pouches of medicines packed)); and

(c) the remaining 1 item was for the storage of clinical information (i.e. item 5) and its utilisation was measured in terms of the number of clinical cases handled.

3.32 As shown in Table 4, the utilisation of 7 (70%) of the 10 major medical equipment items was below 60% of the expected utilisation, ranging from 6% to 58%. In August and September 2017, the HA informed Audit that:

(a) regarding the 7 major medical equipment items for the conduct of medical examinations (see item (a) of Note to Table 4), they were mainly used for in-patients and x-ray screening services in operating theatres, and were essential for the provision of existing medical services at NLTH Phase 1; and

(b) patients outside the catchment areas of NLTH Phase 1 had been referred from other hospitals of the Kowloon West Cluster for utilising the medical equipment at the hospital. The utilisation of the above 7 equipment items would be expected to further increase upon the full commissioning of medical services at NLTH Phase 1.

In Audit's view, the HA needs to strengthen measures to further improve the utilisation of medical equipment in the interim period.

3.33 Moreover, apart from some major medical equipment, Audit noted that, as of June 2017, the HA had not yet put into use some other medical equipment (costing less than $1 million) at NLTH Phase 1 since their procurement (see Table 5).

Table 5

Medical equipment not put into use since procurement (June 2017)

Item	Date of purchase	Quantity	Unit cost	Useful life	Warranty period
(1) Electric bed (see Photograph 8)	Oct 2013	42	$15,214	10 years	2 years
(2) Wheelchair (see Photograph 8)	Apr 2013	10	$945	5 years	1 year
(3) Blood pressure monitor (see Photograph 9)	Nov 2013	14	$10,400	7 years	1 year
(4) Stand for laundry bag (see Photograph 9)	Jun 2013	20	$2,545	7 years	1.5 year

Source: HA records

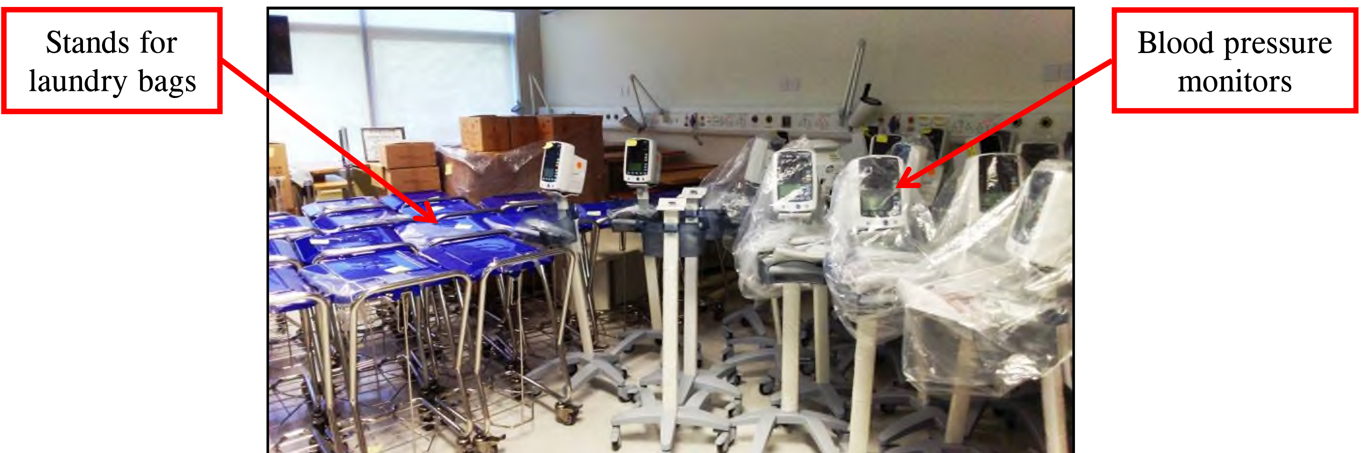
Photograph 8

Electric beds and wheelchairs not put into use since procurement

Source: *Photograph taken by Audit staff on 30 June 2017*

Photograph 9

Blood pressure monitors and stands for laundry bags not put into use since procurement



Source: *Photograph taken by Audit staff on 30 June 2017*

3.34 Audit noted that, as of August 2017, the warranty periods of all the medical equipment (see Table 5 in para. 3.33) had already expired. In September 2017, the HA informed Audit that some of the not-in-use equipment items were required for possible mass-casualty incidents, patients requiring contact precautions and back-up during repair and maintenance of other similar items. In Audit's view, the HA needs to take measures to put such medical equipment into gainful use. When implementing hospital projects in future, the HA needs to take measures to ensure that the procurement programme for medical equipment dovetails with the commissioning of the related medical services as far as possible.

Audit recommendations

3.35 **Audit has *recommended* that the Chief Executive, HA should:**

(a) **for medical equipment already put into use, strengthen measures to further improve their utilisation in the interim period before the full commissioning of medical services at NLTH Phase 1;**

(b) **for medical equipment not put into use since their procurement, take measures to put them into gainful use; and**

(c) **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.**

Response from the Hospital Authority

3.36 The Chief Executive, HA has said that the HA agrees with the audit recommendations. He has also said that:

(a) apart from measures taken to refer appropriate patients to NLTH Phase 1 for treatment, the HA will examine referring patients residing in the HA's Kowloon West Cluster to the hospital to better utilise the spare capacity of the in-use medical equipment and to speed up patients' access to service before the full commissioning of medical service at the hospital;

(b) for medical equipment not put into use since their procurement, the HA anticipates that the equipment will be fully utilised under the service proposal for 2018-19 when additional beds will be commissioned; and

(c) when implementing hospital projects in future, the HA will formulate a procurement plan for specific medical equipment items to dovetail with the commissioning of new beds under the Government's Resource Allocation Exercise. For medical equipment items with common specification across different service areas, the HA will critically evaluate the benefits of bulk purchase against possible obsolescence, post-warranty maintenance and contingency back-up.

PART 4: MANAGEMENT OF MINOR HOSPITAL PROJECTS

4.1 This PART examines the HA's work in the management of minor hospital projects, focusing on:

(a) project planning (see paras. 4.2 to 4.10);

(b) project implementation (see paras. 4.11 to 4.29); and

(c) information management and performance reporting (see paras. 4.30 to 4.38).

Project planning

4.2 In December 2013, the FC approved a one-off grant of $13 billion under the CWRF to the HA for carrying out minor works projects (each costing $75 million or below) starting from 2014-15. In seeking the funding approval, the FHB informed the FC that:

(a) the one-off grant would replace a prevailing block vote under the CWRF (Note 35) to provide sufficient resources and allow more flexible planning for the HA to implement planned improvement works programmes in an intensive manner over the 10-year period from 2014-15 to 2023-24;

(b) the HA could annually initiate around 500 new minor works projects (i.e. totally 5,000 projects in 10-year time), and the projects were grouped into five categories for implementation (Note 36); and

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Note 35: *The CWRF block vote provided funding for the HA to carry out minor works projects on a lump-sum basis annually. According to the FHB, expenditure of the ongoing minor works projects initiated before 2014-15 under the CWRF block vote would be funded by the new one-off grant effective from 2014-15.*

Note 36: *The five categories are: (a) facility rejuvenation; (b) capacity enhancement; (c) safe engineering; (d) universal accessibility; and (e) regular maintenance works and preparatory works for major hospital projects.*

(c) the HA would invest funds which would not be immediately required in low-risk investments while ensuring the provision of adequate liquid funds for meeting expenditure requirements. The one-off grant of $13 billion plus the estimated investment income of $1.9 billion (i.e. $14.9 billion in total) was expected to be able to support the HA's minor works for about 10 years.

4.3 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 $3,315 million (see Table 6).

Table 6

Number of minor works projects initiated and expenditure incurred (2014-15 to 2016-17)

Year	Minor works projects initiated (No.)	Expenditure incurred on minor works (as of March 2017) ($ million)
2014-15	424	890
2015-16	323	1,200
2016-17	345	1,225
Total	1,092 (Note 1)	3,315 (Note 2)

Source: HA records

Note 1: There were 1,036 (95% of 1,092) minor works projects initiated for HA hospitals and 56 (5%) projects for HA clinics.

Note 2: A sum of $916 million (28% of $3,315 million) was incurred for the ongoing minor works projects initiated before 2014-15 under the CWRF block vote and funded by the one-off grant (see Note 35 to para. 4.2(a)).

Remarks: As of March 2017, the balance of the one-off grant was $10.7 billion (the original $13 billion plus investment income of $1 billion minus expenditure of $3.3 billion).

High proportion of unplanned minor works projects

4.4 According to the HA, the general workflow for planning of its minor works projects is as follows:

(a) in August each year, the HA's seven clusters would each submit a tentative list of minor works projects for the current and the next two financial years ("tentative 3-year rolling plan") to the Strategy and Planning Division for vetting;

(b) in March next year, based on the HA's internal budget allocation, the clusters' tentative 3-year rolling plan would be amended accordingly and the HA's Chief Executive would approve the 3-year rolling plan;

(c) for the injection of new minor works projects not included in the approved 3-year rolling plan, the HA's clusters should submit these injected projects to the Strategy and Planning Division for review. The Division would then seek the approval of the HA's Chief Executive if the projects are considered necessary; and

(d) before commencement of a minor works project, the HA would submit a standard form providing information on the project scope, objectives and estimated costs to the FHB for approval.

4.5 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 approved 3-year rolling plan (Note 37). If the percentage is below 90%, the HA's concerned clusters should make greater efforts in properly planning their minor works projects. However, Audit examination found that, during 2014-15 to 2016-17, unplanned projects (i.e. projects not in the relevant approved 3-year rolling plan) accounted for 23% to 36% of the new projects initiated each year (see Table 7).

Note 37: *According to the HA, with a view to ensuring that the HA's clusters properly plan their minor works projects in a timely manner, at least 90% of the new projects initiated during a financial year should be planned projects included in the 3-year rolling plan approved in March of the year preceding the last financial year. For example, for 2016-17, of 345 new minor works projects initiated, 247 projects were included in the 3-year rolling plan approved in March 2015, representing 72% of the total number of projects initiated in 2016-17 (see Table 7).*

Table 7

Planned and unplanned minor works projects
(2014-15 to 2016-17)

Particulars	2014-15	2015-16	2016-17
(a) No. of planned minor works projects under the HA's relevant approved 3-year rolling plan	1,003	1,373	1,488
(b) No. of planned projects not selected for implementation	731	1,123	1,241
(c) No. of planned projects selected for implementation [(c) = (a) – (b)]	272 (64%)	250 (77%)	247 (72%)
(d) No. of unplanned projects initiated during the year	152 (36%)	73 (23%)	98 (28%)
(e) Total no. of new projects initiated during the year [(e) = (c) + (d)]	424 (100%)	323 (100%)	345 (100%)

Source: Audit analysis of HA records

4.6 As shown in Table 7, 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. According to the HA, some projects had to be deferred or deleted due to technical constraints and unavailability of sites, or some projects were injected to cater for changes in operational needs. In Audit's view, the HA needs to strengthen the planning of minor works projects to meet the HA's 90% target.

Need to report survey results of building condition of public hospitals

4.7 In October 2013, when seeking the support from the LegCo Panel on Health Services for the one-off grant of $13 billion for the HA to carry out minor works projects, the HA said that:

(a) the conditions of the HA's ageing buildings would require particular attention, as they would have significant impact on the health and safety of their occupants and on the daily operation of public hospitals in the delivery of quality medical services to the community. Public hospitals were particularly prone to accelerated deterioration due to their constantly heavy utilisation. As a result, many of the HA's ageing facilities were in unsatisfactory conditions; and

(b) it would conduct a yearly review on the conditions of the structures and facilities of public hospitals. Based on the review outcome, each HA cluster would determine the order of priority and the amount of funding for implementation of various minor maintenance and improvements works in the coming three years.

4.8 Audit noted 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 Strategy and Planning Division and the HA's Chief Executive for vetting and approval of the 3-year rolling plan for minor works projects (see para. 4.4(a) and (b)). In Audit's view, the HA needs to monitor the ageing conditions of public hospital buildings (see para. 1.3 and Appendix B) 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.

Audit recommendations

4.9 **Audit has *recommended* that the Chief Executive, HA should:**

(a) **strengthen the planning of minor works projects to meet the HA's 90% planning target; and**

(b) **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.**

Response from the Hospital Authority

4.10 The Chief Executive, HA has said that the HA agrees with the audit recommendations. He has also said that:

(a) unplanned projects will be kept to a minimum, but those due to certain unforeseen circumstances (e.g. sudden surge in service demand rendering it impossible for works area to be handed over to works contractors) are unavoidable; and

(b) the HA will review its internal guidelines for future planning of minor works projects, including the requirement to report the survey results of the building condition to the HA's senior management in future.

Project implementation

4.11 According to the FHB's paper submitted to the FC in 2013, the HA had estimated the works to be implemented under minor works projects funded by the one-off grant over a 10-year period from 2014-15 to 2023-24. The HA's progress in implementing the minor works as of August 2017 is shown in Table 8.

Table 8

Implementation progress of minor works (August 2017)

Category	Minor works estimated to be implemented over 10 years (as FC was informed in 2013) (a)	Works completed (as of August 2017) (b)	Percentage $(c) = \frac{(b)}{(a)} \times 100\%$
(1) Facility rejuvenation	Renovating 500 wards	62 wards renovated	12%
(2) Capacity enhancement	Providing 800 additional beds	253 additional beds provided	32%
(3) Safe engineering	(i) Upgrading electrical installations in 16 hospitals (involving 52 electrical installations — Note) (ii) Upgrading lifts in 33 hospitals (involving 364 lifts — Note)	(i) Electrical installations upgraded in 3 hospitals (involving 9 installations) (ii) Lifts upgraded in 4 hospitals (involving 13 lifts)	19% (17% in terms of electrical installations) 12% (4% in terms of lifts)
(4) Universal accessibility (for enhancing facilities for pedestrians and disabled persons)	No specific target	66 projects completed (in 32 hospitals and 5 clinics)	Not applicable
(5) Regular maintenance works and preparatory works for major hospital projects	No specific target	522 projects completed	Not applicable

Source: Audit analysis of HA records

Note: The number of electrical installations and lifts to be upgraded was not included in the FHB's paper submitted to the FC in 2013.

Need to closely monitor works progress

4.12 In December 2013, the FHB informed the FC that the HA could annually initiate around 500 new minor works projects (see para. 4.2(b)). However, Audit noted that only 1,092 projects (see Table 6 in para. 4.3) 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, after passage of about 3.4 years (34%) of the 10-year period:

(a) while the HA had estimated to renovate 500 wards over the 10 years, only 62 wards (12%) had been completed (see item (1) in Table 8 of para. 4.11);

(b) while the HA had estimated to upgrade 52 electrical installations in 16 hospitals over the 10 years, only 9 (17% of 52) electrical installations in 3 (19% of 16) hospitals had been upgraded (see item (3)(i) in Table 8 of para. 4.11); and

(c) while the HA had estimated to upgrade 364 lifts in 33 hospitals over the 10 years, only 13 (4% of 364) lifts in 4 (12% of 33) hospitals had been upgraded (see item (3)(ii) in Table 8 of para. 4.11).

4.13 In June 2017, the HA informed Audit that the initiation of 500 new minor works projects annually was an estimated average. The actual number of projects initiated depended on factors including clinical requirements, operational needs and cash flow projection of future financial years.

4.14 In Audit's view, the HA needs to closely monitor the progress of minor works projects and take measures to initiate more projects to improve the conditions of the HA's ageing facilities.

Delay in completing works orders

4.15 For carrying out minor works projects, the HA generally adopts the following arrangements:

(a) ***Projects with a value of $30 million or below.*** The HA has appointed 4 term contractors (TCs — generally under a 3-year term contract), 4 term maintenance surveyors (TMSs) and 4 term quantity surveyors (TQSs) (both TMS and TQS under a 5-year term consultancy) for carrying out these projects (Note 38). In general, the projects are carried out by the TC responsible for the related cluster area. The works of each TC are monitored by a TMS and a TQS. A TMS also undertakes design work and issues works orders to the TC, and a TQS is also responsible for cost control, contract payment and preparation of final accounts of the projects;

(b) ***Projects with a value of more than $30 million and not exceeding $75 million.*** The HA conducts an exercise to engage a consultant and contractor for carrying out each of these projects (hereinafter referred to as "other minor-works contractors"); and

(c) ***E&M works.*** Apart from the above arrangements, the HA has signed a 5-year service contract with the EMSTF (Note 39) for engaging the EMSTF to carry out certain E&M works in a minor works project where appropriate.

Note 38: *Of the 4 TCs, 3 are each responsible for carrying out minor works projects (with a value of $30 million or below) in 2 HA clusters (namely, the Hong Kong East and Hong Kong West Clusters, the Kowloon Central and Kowloon East Clusters, or the New Territories East and New Territories West Clusters), and the remaining TC is responsible for the minor works projects in the Kowloon West Cluster. The same division of responsibilities applies for the 4 TMSs and 4 TQSs.*

Note 39: *The EMSTF was set up in August 1996 under the Trading Funds Ordinance (Cap. 430) to manage and account for the operation of certain services of the Electrical and Mechanical Services Department. The services provided by the EMSTF include operation and maintenance of electrical, mechanical, electronic and building services systems and equipment.*

4.16 Depending on the nature of a minor works project, the HA or TMS may issue works order(s) to a TC and other minor-works contractors for carrying out the required works, and the HA may request the EMSTF to carry out E&M works under the same project. Each works order specifies the "Date due for completion" (hereinafter referred to as "expected works completion date"). Up to August 2017, for the 323 minor works projects initiated in 2015-16 and the 345 projects initiated in 2016-17, Audit noted that 624 and 480 works orders (i.e. a total of 1,104 works orders — Note 40) had been issued respectively. Table 9 shows the implementation progress of these works orders.

Table 9

Implementation progress of works orders
(August 2017)

<table>
<tr><th rowspan="2">Works delay
(Time lapse between expected and actual works completion dates)</th><th colspan="2">No. of works orders issued</th><th rowspan="2" colspan="2">Total

(c) = (a) + (b)</th></tr>
<tr><th>Works completed

(a)</th><th>Works in progress (Note 1)

(b)</th></tr>
<tr><td>No delay</td><td>324</td><td>27</td><td colspan="2">351 (32%)</td></tr>
<tr><td>> 0 to ≤ 3 months</td><td>117</td><td>26</td><td>143</td><td rowspan="4">303 (27%)</td></tr>
<tr><td>> 3 to ≤ 6 months</td><td>69</td><td>34</td><td>103</td></tr>
<tr><td>> 6 to ≤ 12 months</td><td>28</td><td>27</td><td>55</td></tr>
<tr><td>> 12 to ≤ 17 months</td><td>2</td><td>0</td><td>2</td></tr>
<tr><td>Sub-total</td><td>540</td><td>114</td><td colspan="2">654 (Note 2)</td></tr>
<tr><td colspan="3">The HA was unable to provide the information (Note 3)</td><td colspan="2">450 (41%)</td></tr>
<tr><td colspan="3">Total</td><td colspan="2">1,104 (100%)</td></tr>
</table>

Source: Audit analysis of HA records

Note 40: *In April 2017, Audit requested the HA to provide details of the works orders for the minor works projects initiated in 2014-15, 2015-16 and 2016-17. According to the HA, due to the lack of an information system for processing of works orders (see also paras. 4.31 to 4.33), it was only able to manually retrieve the 1,104 works orders initiated in 2015-16 and 2016-17 for Audit analysis.*

Table 9 (Cont'd)

Note 1: As of August 2017, works under 114 works orders were in progress. The works delays are counted up to 31 August 2017. For those works orders with expected works completion dates after that date, the works are regarded as having "No delay".

Note 2: The 654 works orders related to 400 minor works projects.

Note 3: In April 2017, Audit requested the HA to provide details of the 1,104 works orders issued for minor works projects initiated in 2015-16 and 2016-17, including the estimated works values and expected and actual works completion dates. According to the HA, due to the lack of an information system for processing of works orders (see also paras. 4.31 to 4.33), it was only able to manually retrieve the relevant details of 654 (but not the 450) works orders for Audit analysis.

4.17 ***Delay in completing works orders.*** Audit noted that there were delays in completing 303 (27%) of the 1,104 works orders (or 46% of the 654 orders with information provided by the HA). In this connection, Audit noted that 219 (72% of the 303) works orders having delay were carried out by TCs, and the progress of works orders carried out by 2 TCs was less than satisfactory (Note 41). In Audit's view, the HA needs to strengthen measures to monitor the progress of minor works orders to ensure their timely completion.

4.18 ***Need to enhance management of minor works.*** Case 1 shows that there is room for improvement in the HA's management of minor works orders as revealed by Audit examination of a works order with delay of 17 months (being the longest delay among the works orders in Table 9 in para. 4.16).

Note 41: *An adverse performance report had been issued to a TC in the fourth quarter of 2016 and another TC in the first quarter of 2017 due to their "Very Poor" performance on works progress. While the contractors' overall performance rating was rated as "Satisfactory" in subsequent periods up to June 2017, the corresponding performance reports still indicated that the progress of some minor works projects had lagged behind the works programme due to factors such as poor site monitoring, shortage of labour and late delivery of materials.*

Case 1

A minor works order with long delay in completion

1. The works order was issued to a TC in November 2015 with the expected works completion date of February 2016. The works involved renovating the physiotherapy department and upgrading the dilapidated building conditions at the Grantham Hospital. In the event, the required works were completed in July 2017, 17 months later than the original target date.

2. Audit noted that the delay was due to variation orders issued (accounting for 8 months), disturbance to works progress due to design changes of an electrical system by the HA after commencement of works (accounting for another 8 months), and late handover of works site by the HA (accounting for another 1 month).

Audit comments

3. In Audit's view, the HA needs to 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.

Source: HA records

Need to set a target time for finalising accounts of minor works projects

4.19 Under the HA's minor works contracts:

(a) the account of a minor works project shall be finalised within the time limit stipulated for steps under the account-finalisation process (Note 42), and final payment for the project shall be made upon account finalisation; and

(b) the maintenance period is 12 months counting from the date of substantial works completion, and all the outstanding works and construction defects shall be carried out by a contractor at his own expense within the maintenance period.

4.20 According to the HA, if the finalised value of a minor works project is less than the APE, the difference would be regarded as savings which would be deployed for use in other minor works projects, and early finalisation of accounts could facilitate planning of future projects. Under the HA's practice, after the expiry of the 12-month maintenance period of a minor works project, it would submit a standard form to the FHB containing details such as the actual dates of works completion and account finalisation as well as the finalised expenditure.

4.21 According to the HA, as of March 2017, of the 1,092 minor works projects initiated during 2014-15 to 2016-17, 693 projects had been completed. As the HA did not maintain readily available information on the progress of finalising the accounts of individual completed projects, Audit examined the FHB's records on the

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Note 42: *The HA's minor works contracts have stipulated time limits for the concerned parties to prepare, assess and agree the final accounts of minor works projects:*

(a) 30 days (counting from the issue date of certificate of works completion) for a contractor to submit the final bill to a TMS;
(b) 45 days for the TMS to provide the contractor with assessment on the final bill based on the advice of the TQS;
(c) 14 days for the contractor to provide substantiation on disagreed items and to submit the revised final bill;
(d) 14 days for the TMS to provide the contractor with final assessment on the revised final bill based on the advice of the TQS; and
(e) 14 days for the contractor to agree with the TMS's final assessment.

standard forms relating to 132 completed projects submitted by the HA to ascertain the progress up to June 2017. Audit found that the time taken to finalise the accounts of the 132 minor works projects varied considerably, ranging between less than 1 month and up to 18 months (see Table 10).

Table 10

Progress of finalising accounts of 132 minor works projects (June 2017)

Time lapse between actual works completion date and account finalisation date	No. of projects (a)	Total APE (b) ($ million)	Total finalised value (c) ($ million)	Saving (d) = (b) − (c) ($ million)
≤ 6 months	63 (48%)	149.3	133.2	16.1 (37%)
> 6 to ≤ 12 months	29 (22%)	73.4	53.5	19.9 (45%)
> 12 to ≤ 18 months	40 (30%)	123.8	115.9	7.9 (18%)
Total	132 (100%)	346.5	302.6	43.9 (100%)

Source: Audit analysis of FHB records

4.22 As shown in Table 10, the accounts of 69 (52% of the 132) minor works projects were finalised more than 6 months (with 40 of them more than 12 months) after the actual date of works completion. If their project accounts could be finalised earlier, the related saving, being unused funding, would not be locked-up and could be deployed for use in other projects in a timely manner (see para. 4.20).

4.23 In August 2017, the HA informed Audit that:

(a) the actual duration for finalising the accounts of minor works projects would depend on various factors including the time taken for submission of final bills by TCs, verification of final bills and agreement on further substantiation provided by TCs; and

(b) for simple cases, it was possible that the accounts of minor works projects could be finalised within 2 to 3 months after works completion. However, for complicated cases, it was not uncommon that it might take longer to finalise the related accounts.

4.24 As early finalisation of accounts would enable timely deployment of savings for use in other minor works projects (see para. 4.20), Audit considers that the HA needs to set a target time for finalising the accounts of minor works projects and endeavour to meet the target time.

4.25 Moreover, Audit noted that the service contract between the HA and the EMSTF (see para. 4.15(c)) only specified that the accounts of E&M works should be finalised as soon as possible without stipulating a definite time limit for the purpose. In this connection, Audit noted that, of the 69 minor works projects having accounts finalised more than 6 months after the actual date of works completion (see Table 10 in para. 4.21), 24 (35%) projects related to E&M works carried out by the EMSTF.

4.26 In Audit's view, for more effective monitoring of the progress of the account-finalisation work, there are merits for the HA to explore with the EMSTF the possibility of stipulating under the service contract a definite time limit for finalising accounts of E&M works in minor works projects after works completion.

Audit recommendations

4.27 **Audit has *recommended* that the Chief Executive, HA should:**

(a) **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;**

(b) **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;**

(c) **set a target time for finalising the accounts of minor works projects and endeavour to meet the target time; and**

(d) **in collaboration with the Director of Electrical and Mechanical Services, explore the possibility of stipulating under the EMSTF service contract a definite time limit for finalising accounts of E&M works in minor works projects after works completion.**

Response from the Hospital Authority and the Government

4.28 The Chief Executive, HA has said that the HA agrees with the audit recommendations. He has also said that:

(a) following the FC's approval of the one-off grant of $13 billion for minor works projects in December 2013, the HA put in place a work plan for the delivery of committed targets over the 10-year period from 2014-15 to 2023-24, against which the progress has been regularly monitored in the HA's Quarterly Review Meeting (see para. 1.12(a)); and

(b) as the information system for processing of works orders will be launched in early 2018, the HA will be in a better position to exercise closer monitoring of minor works projects, but certain flexibility is required to be allowed having regard to the nature of minor works projects in hospital settings.

4.29 The Director of Electrical and Mechanical Services agrees with the audit recommendation in paragraph 4.27(d).

Information management and performance reporting

4.30 According to the HA, it has maintained an information system (known as "Computing System of Project Planning and Execution") primarily for the preparation of standard forms to be submitted to the FHB for the initiation, cost variation and finalisation of minor works projects. The information system also maintains the related financial data such as expenditure allocated and incurred by each HA's cluster under the one-off grant.

Better use of technology to effectively monitor project implementation

4.31 Audit noted that the HA's information system could not provide comprehensive management information for effectively monitoring the implementation of minor works projects, including information on:

(a) the progress in implementing works orders (e.g. management reports of all the works orders having works delay);

(b) the assessment progress of EOT claims and imposition of liquidated damages (e.g. management reports of all EOT claims not yet assessed after a long time period); and

(c) the progress of finalising the accounts of completed projects (e.g. management reports of all completed projects with accounts not yet finalised long time after works completion).

4.32 According to the HA, due to the limitations of the information system, the HA staff primarily process works orders manually and retrieve the related information by accessing individual case files containing the works orders.

4.33 Audit noted that the HA 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. In Audit's view, the HA needs to take measures to ensure that the 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.

Progress of works implementation and account finalisation not reported to HA Board/Committees

4.34 In December 2013, when seeking funding approval, the FHB informed the FC that the HA would submit the following information to LegCo on an annual basis to ensure transparency and accountability on the use of the one-off grant for minor works projects:

(a) a full list of planned minor works projects to be funded by the one-off grant in the following financial year;

(b) reports on the key minor works projects implemented and the actual expenditure in the past financial year, as well as key minor works projects planned to be implemented and the forecast expenditure under the one-off grant in the coming year; and

(c) audited financial statements on the use of the one-off grant.

In February 2016 and February 2017, the HA submitted the above information to LegCo relating to the use of the one-off grant in 2014-15 and 2015-16 respectively.

4.35 The HA management had submitted regular reports to the HA Board and its relevant Committees on the progress of implementing minor works projects mainly relating to the financial aspects (e.g. overall expenditure patterns and cash balance of the one-off grant for minor works projects). For example:

(a) for the HA Board, the audited financial statements on the use of the one-off grant were submitted for its approval on an annual basis; and

(b) for the HA's Capital Works Subcommittee (see Note 23 to para. 2.40), financial reports relating to the overall expenditure incurred on the 5 works categories (see Note 36 to para. 4.2(b)) and the cash balance of the one-off grant were submitted for information on a quarterly basis.

4.36 Audit noted that management information on the progress of and the delays encountered in the implementation of minor works projects (see para. 4.16) and the finalisation of accounts of the projects (see para. 4.21) had not been reported to the HA Board or its Committees. For transparency, accountability and monitoring purpose, the HA management needs to consider reporting regularly such information to the HA Board and its relevant Committees.

Audit recommendations

4.37 **Audit has *recommended* that the Chief Executive, HA should:**

(a) **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; and**

(b) **consider reporting regularly the information relating to the implementation progress (including delays encountered) of minor works projects and the finalisation of accounts of the projects to the HA Board and its relevant Committees to facilitate their monitoring of the progress of minor works projects.**

Response from the Hospital Authority

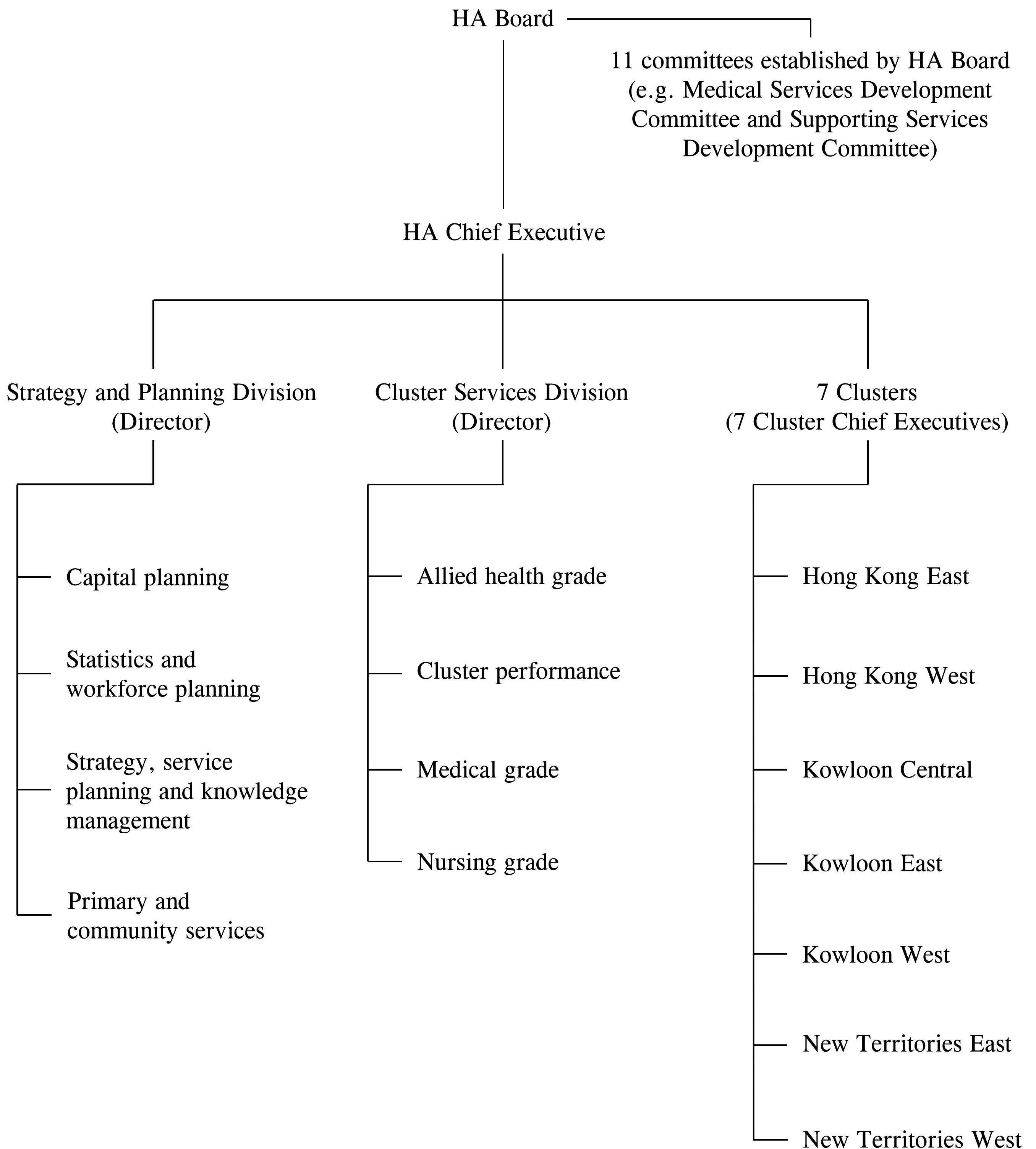
4.38 The Chief Executive, HA has said that the HA agrees with the audit recommendations. He has also said that:

(a) following a consultancy study conducted in May 2015 to review the processing of works orders for minor works projects, the HA has initiated the development of a new information system for end-to-end processing of works orders, and the new system is planned to be put into operation in early 2018; and

(b) the implementation progress of minor works projects, including the status of account finalisation, will be regularly reported to the HA's Supporting Services Development Committee in future.

Appendix A
(paras. 1.3 and 1.10 refer)

Hospital Authority: Organisation chart (extract) (September 2017)



Source: HA records

Appendix B
(paras. 1.3 and 4.8 refer)

Ageing analysis of floor areas of HA's hospital buildings (September 2017)

Length of time since building completion (Year)	Floor area (m^2)	
≤ 10	186,460 (7%)	
> 10 to ≤ 20	221,410 (8%)	
> 20 to ≤ 30	702,360 (26%)	
> 30 to ≤ 40	528,700 (19%)	1,604,270 m^2 (59%)
> 40 to ≤ 50	356,000 (13%)	
> 50 to ≤ 60	295,970 (11%)	
> 60	423,600 (16%)	
Total	2,714,500 (100%)	

Source: Audit analysis of HA records

Appendix C
(para. 1.7 refers)

HA's major hospital projects under planning or in progress (August 2017)

Project	Estimated additional bed (No.)	Estimated additional operating theatre (No.)	Tentative completion date	Status	
				Under planning	Works in progress
(A) Major hospital projects included in 10-year Hospital Development Plan					
1. Expansion of Haven of Hope Hospital	160	—	2021		✓
2. Extension of Operating Theatre Block for Tuen Mun Hospital	—	9	2021	✓	
3. Expansion of United Christian Hospital	560	5	2023		✓
4. New Acute Hospital at Kai Tak Development Area	2,400	37	2024	✓	
5. Expansion of North District Hospital	600	—	2024	✓	
6. Expansion of Lai King Building in Princess Margaret Hospital	400	—	2024	✓	
7. Redevelopment of Kwai Chung Hospital	80	—	2024	✓	
8. Redevelopment of Our Lady of Maryknoll Hospital	16	—	2024	✓	
9. Redevelopment of Queen Mary Hospital (Phase 1)	—	14	2024		✓
10. Redevelopment of Grantham Hospital (Phase 1)	—	3	2024	✓	
11. Redevelopment of Kwong Wah Hospital	350	10	2025		✓
12. Redevelopment of Prince of Wales Hospital (Phase 2, Stage 1)	450	16	2027	✓	
Total	5,016	94	—	—	—
(B) Major hospital projects not included in 10-year Hospital Development Plan					
1. Hong Kong Children's Hospital	468	12	2017		✓
2. Refurbishment of Hong Kong Buddhist Hospital	130	—	2019		✓
3. Expansion of the Hong Kong Red Cross Blood Transfusion Service Headquarters	For improving blood-transfusion facilities		2020		✓
Total	598	12	—	—	—

Source: FHB and HA records

Appendix D
(para. 3.12 refers)

Planned and actual manpower provision at North Lantau Hospital (Phase 1)

Medical services	No. of staff					
	Planned for full operation (a)		Actual (as of March 2017) (b)		Difference (c) = (b) – (a)	
	Prof. staff	Support staff	Prof. staff	Support staff	Prof. staff	Support staff
(A) Accident and emergency	70	15	61	16	(9)	1
(B) General out-patient clinic	11	12	9	12	(2)	0
(C) Community care services	9	2	5	1	(4)	(1)
(D) Day rehabilitation centre	28	23	23	17	(5)	(6)
(E) Specialist out-patient clinics	23	19	11	14	(12)	(5)
(F) Day surgery centre	21	19	11	16	(10)	(3)
(G) Wards for in-patients	83	51	26	16	(57)	(35)
(H) Miscellaneous						
(i) Hospital administration (e.g. medical records and facility management)	7	157	4	75	(3)	(82)
(ii) Radiology	26	17	21	16	(5)	(1)
(iii) Pharmacy	28	14	18	7	(10)	(7)
(iv) Pathology	13	2	13	5	0	3
Sub-total	319	331	202	195	(117)	(136)
Total	650		397 (Note)		(253)	

Source: *Audit analysis of HA records*

Note: *Of these 397 staff, 245 staff had been deployed through internal transfer within the HA and 152 staff recruited from external sources.*

Remarks: *"Prof. staff" referred to clinical professional staff including doctors, nurses and allied health professionals. "Support staff" referred to supporting staff (e.g. hospital administrators, patient care assistants and executive assistants) for effective operation of the hospitals.*

Appendix E
(para. 3.13(a) refers)

Key factors affecting commissioning of medical services at North Lantau Hospital (Phase 1)

The HA informed Audit during May to September 2017 that the following two key factors would affect the commissioning of medical services at NLTH Phase 1.

(A) Manpower shortage (especially for clinical professional staff)

1. There were multiple contributing factors leading to the persisting manpower shortage of healthcare professionals in Hong Kong which could be traced back to the economic downturn since the late 1990s.

2. Due to the adverse economic condition in the aftermath of Severe Acute Respiratory Syndrome epidemic, student intake of the two medical schools in Hong Kong was reduced from 301 to 280 in 2003 and to 250 in 2005, and then increased to 320 in 2009 and to 420 since 2012. In terms of the number of local medical graduating interns available for recruitment by the HA, the annual number was reduced from 301 to 280 in 2009 to 250 in 2011 and then increased to 320 in 2015. The HA expected that 420 medical graduates would be available for recruitment by the HA in 2018.

3. There had been a reduction in the number of nursing graduates since 1999. With the government policy of upgrading basic nursing education to degree level for enhancing the quality of healthcare services, majority of HA nursing schools (except the nursing school at Queen Elizabeth Hospital) had ceased student intake to the HA nursing programmes since July 1999. In 2009, the number of places for nursing programmes was increased from 550 to 590 at degree level and from 110 to 160 at associate degree level. In 2003, the student intake for physiotherapists, occupational therapists and radiographers was reduced, and the number had been increased gradually since 2012.

4. The HA had been adopting a multi-faceted approach to attract and retain staff, and managed to achieve steady growth of manpower including doctors, nurses and allied health professionals in the past years. However, with the accumulative effect over the years, the severe manpower shortage had become one of the major constraining factors confining the pace and extent of the healthcare service expansion to cope with the escalating demand in public healthcare services.

Appendix E
(Cont'd)
(para. 3.13(a) refers)

(B) Competing needs across the HA

1. As a publicly-funded organisation, the HA was accountable to the Government through the Secretary for Food and Health, who formulated the overall health policy for Hong Kong. The HA's strategic plans served as the over-arching frameworks for HA staff to align their priorities and efforts with the corporate directions and strategies in a consistent way. These strategic plans had also prospectively guided the HA's annual planning process and submissions to the Government under the annual Resource Allocation Exercise. Following the HA's corporate strategic directions, there were a large number of service initiatives competing through the annual planning process for the limited available resources (including manpower) on a year-on-year basis.

2. The HA's prioritisation of service proposals was carried out with reference to its strategic priorities and service directions, operational readiness of various service programmes, and the Government's healthcare priorities. The new initiatives and service programmes would have to undergo a process of resource bidding, prioritisation and allocation. It was an integrated and rolling process, and had linked up the Resource Allocation Exercise with other resource bidding exercises for non-recurrent funding. Hence, the HA had a structured annual planning exercise to achieve the following objectives:

   (a) deploying resources effectively and in a focused manner that was targeted at service priorities set out in the HA's strategic plans;

   (b) deciding on and prioritising service provisions for the coming year;

   (c) ensuring a fair and transparent internal resource allocation system; and

   (d) ensuring that an effective mechanism was in place to monitor the implementation and progress of the approved programmes.

3. New services and initiatives to be implemented in the ensuing financial year had been set out in the HA's annual plans. During the HA's annual planning exercise, inputs from clinical specialties, hospital clusters and the HA's Head Office were gathered under a structured framework for systematic review and prioritisation, taking into account various factors such as the baseline services in different clusters, the healthcare needs of the population in different localities, the Government's policy initiatives, the availability of manpower and the prevailing situation of the infrastructure under the phased completion of new hospital facilities. With limited resources (including manpower), there were practical needs to prioritise various service initiatives critically and realistically.

Appendix E
(Cont'd)
(para. 3.13(a) refers)

4. In the planning process for service commissioning of NLTH Phase 1, the key considerations within the Kowloon West Cluster were service needs, community expectation, readiness of medical services and availability of resources (including manpower). Furthermore, to ensure patient safety and smooth operation, services of new hospitals would be commissioned in phases. The priority service areas for service opening at NLTH Phase 1 in 2013-14 included accident and emergency service, medicine and psychiatrics specialist out-patient services, relocation of the Tung Chung General Out-patient Clinic, community outreach services and allied health services.

5. Similar to the HA's other service programmes, the plan for commissioning new services at NLTH Phase 1 needed to go through the annual planning process, which was part of the Resource Allocation Exercise. As the overall public hospital service demand exceeded the resource (including manpower) availability in terms of both quantity and quality, the service commissioning proposal of NLTH Phase 1 would have to compete with other service enhancement initiatives, and only a portion of the annual planning initiatives would be allocated with the necessary resources (including manpower) to implement the programmes. With the changing circumstances and the uncertainties involved, the HA would examine the service commissioning initiatives of NLTH Phase 1 on a year-by-year basis.

Source: HA records

Acronyms and abbreviations

APE	Approved Project Estimate
ArchSD	Architectural Services Department
Audit	Audit Commission
CMC	Caritas Medical Centre
CWRF	Capital Works Reserve Fund
DEVB	Development Bureau
EMSTF	Electrical and Mechanical Services Trading Fund
EOT	Extension of Time
E&M	Electrical and mechanical
FC	Finance Committee
FHB	Food and Health Bureau
HA	Hospital Authority
LD	Labour Department
LegCo	Legislative Council
MSDC	Medical Services Development Committee
m^2	Square metres
NLTH	North Lantau Hospital
PMH	Princess Margaret Hospital
SSEMC	Site Safety and Environmental Management Committee
TC	Term contractor
TMS	Term maintenance surveyor
TQS	Term quantity surveyor