# MAINTENANCE AND SAFETY-RELATED IMPROVEMENTS OF PUBLIC RENTAL HOUSING FLATS

## **Executive Summary**

1. As at 31 March 2016, the Housing Authority (HA) had provided 756,272 public rental housing (PRH) flats in 215 estates to meet the housing needs of low-income families that cannot afford private accommodation. To ensure a safe and pleasant living environment for the tenants, as well as sustain the lifespan and economic value of the PRH estates, the Housing Department (HD), as the executive arm of the HA, has introduced various maintenance and improvement programmes, the recurrent expenditure of which totalled about \$3,090 million in 2015-16. As at 1 June 2016, the HD had 4,830 staff in its Estate Management Division which is responsible for the estate management and maintenance of the PRH. The Audit Commission (Audit) has recently conducted a review to examine the HD's maintenance and safety-related improvements of PRH flats.

#### In-flat maintenance of public rental housing flats

2. *Implementation of the Total Maintenance Scheme (TMS).* In 2006, the HA launched the TMS to improve the standard of maintenance within all PRH flats by proactively inspecting the in-flat conditions and providing comprehensive repair services. The first TMS cycle covering 177 estates was completed in 2011 at a total cost of \$912 million. As at March 2016, the first five years of the second TMS cycle had been rolled out to 134 estates, with inspections and repair works completed in 120 estates at a total cost of \$732 million (para. 1.5). Audit has found the following areas for improvement:

(a) Need to closely monitor the follow-up actions on inaccessible flats. Of the 80,965 flats inaccessible for inspection in the second TMS cycle, 24,455 (30%) were also inaccessible in the first TMS cycle. According to the HD's instructions, estate offices should take follow-up actions on inaccessible flats. However, Audit sample check revealed that for 300 selected PRH flats not inspected from 2011 to 2014, the estate offices concerned had not taken the opportunity to conduct comprehensive in-flat inspections even when the tenants subsequently made requests for repair works in their flats under the Responsive In-flat Maintenance Services (RIMS – see para. 3 below) (paras. 2.16 to 2.18);

- (b) Need to improve the in-flat inspection performance of TMS teams. In the HD's audits of the TMS teams' performance during 2012-13 to 2015-16, low scores were given to the in-flat inspection and maintenance service process. For example, in 20 (67%) of 30 estates covered by the performance audits, the average number of flats inspected by the TMS teams could not meet the inspection standards (para. 2.19); and
- (c) Need to enhance maintenance education. The HD's surveys showed that 38% of tenants were unclear about the tenant-to-pay items (i.e. repair works for damage arising from improper use). As they might not procure the necessary repair services, such items could deteriorate into major maintenance issues (para. 2.21).

3. *Implementation of the RIMS.* To further enhance the maintenance services, the HA implemented the RIMS in 2008 to provide a customer-oriented in-flat maintenance service to tenants' daily works requests. The expenditure under the RIMS was \$500.1 million in 2015-16 (para. 1.6). Audit has found the following areas for improvement:

(a) *Need to ascertain the reasons for the increase in repair works under the RIMS.* In a review of the TMS in 2008, the HD anticipated that once the repair works for a PRH flat were completed under the TMS, the same flat would not need to undergo major repairs in the following years. From 2011-12 to 2015-16, the number of works orders issued under the RIMS increased from 270,815 by 55% to 420,155. According to the HD, the reasons for increase included the higher awareness of tenants in reporting defects and the ageing of the PRH stock. However, Audit noted cases of repeated works orders involving the same works types and locations within a short period of time. The HD's checking also found unsatisfactory contractors' repair works as shown in paragraph 4(b) below (paras. 2.27 and 2.28); and (b) Need to improve the RIMS service standards of estate offices. The performance verifications by the HD of 304 selected estates from 2011 to 2015 revealed that only 25 (8%) estate offices could meet all nine service standards in respect of inspections and repairs works (para. 2.30).

4. *Monitoring of contractors' repair works.* The HD conducts checks on contractors' repair works under the TMS and RIMS periodically (para. 2.34). Audit has found the following areas for improvement:

- (a) *Need to comply with the verification requirements.* The HD's requirement to verify quarterly the effectiveness of water seepage repairs under the RIMS had not been complied with in three of six selected estates for two to six quarters from 2014 and 2015. Moreover, the same verification requirement had not been applied to water seepage repairs under the TMS (para. 2.35); and
- (b) Need to strengthen the final inspections of repair works. Of 133 flats selected for checking by the HD from February 2014 to March 2016, 118 (89%) flats had 385 items of unsatisfactory TMS repair works requiring replacement/rectification works. The quality of RIMS repair works was also generally unsatisfactory and on a deteriorating trend. For example, in respect of workmanship, 349 (65%) of 535 estate works orders checked by the HD from 2011 to 2015 required partial or complete replacement/rectification works. The percentage of estate works orders requiring partial or complete replacement/rectification works increased from 50% in 2011 to 88% in 2015 (paras. 2.37 and 2.40).

# Follow-up actions on public rental housing's water sampling tests for lead

5. Exposure to lead may adversely affect human health. Since the start of "excess lead in drinking water" incident in July 2015, the HA and the Government had conducted water sampling tests for all PRH estates and found that water samples from 11 PRH developments had lead content above the World Health Organization's provisional guideline value. Three investigations conducted by the Government and the HA had addressed the cause of excess lead in drinking water of PRH developments and recommended control/monitoring measures to prevent recurrence of similar problems. This audit review has focused on follow-up actions on PRH's water sampling tests for lead (paras. 1.7 to 1.9).

6. Discrepancies between the announced sampling test results and source data of the sampling tests. The HD had provided the HA and the Legislative Council (LegCo) with regular updates on the "excess lead in drinking water" In March and July 2016, the HA and the LegCo House Committee incident. respectively were informed of the confirmed sample numbers for water sampling tests conducted from July to November 2015. In July 2016, Audit examination of the source data of the water sampling test results revealed some discrepancies with the information reported to the HA and the LegCo House Committee. In response to Audit's enquiries in August 2016, the HD said that there was an omission in reporting two non-compliant samples taken from Kai Ching Estate after it had been declared as an affected estate. As a result, the total number of non-compliant samples taken from the 11 affected PRH developments reported to the HA and LegCo should have been 93 instead of 91. Moreover, the announced numbers of water samples taken from three developments were also inaccurate. Notwithstanding the discrepancies identified, the total number of affected PRH developments remained unchanged (paras. 3.3 to 3.6).

7. **Records of decisions on non-compliant and discarded samples not fully** *maintained.* From 20 July to 18 November 2015, 29 inter-departmental meetings which were chaired by the Permanent Secretary for Transport and Housing (Housing) and comprised representatives from the HD, the Water Supplies Department (WSD), the Government Laboratory and the Department of Health, had been held to discuss and coordinate matters relating to the sampling of drinking water in PRH developments. However, the HD only prepared decision notes for 22 inter-departmental meetings held from 12 August to 18 November 2015. Decision notes had not been prepared for 7 (24% of the total 29) inter-departmental meetings held from 20 July to 7 August 2015 where important decisions had been made on 55 non-compliant samples (taking follow-up action on 49 of them and discarding the remaining six)(paras. 3.8, 3.10 and 3.12).

8. **Developing appropriate sampling protocol.** In July 2016, the LegCo House Committee was informed that: (a) the WSD had commenced follow-up work on the recommendations of the Commission of Inquiry, including engaging expert consultants to conduct a study on developing an appropriate sampling protocol; and (b) the pertinent work was targeted to be completed in six to nine months. An international expert panel was also set up in June 2016 to provide advice on the

proposed sampling protocol. As the retesting of drinking water of all PRH estates using an appropriate protocol could point to the need for further measures to be taken to safeguard tenants' drinking water safety, the WSD needs to closely monitor the progress of developing an appropriate sampling protocol to ensure that the target completion date will be met (para. 3.15).

9. Water sampling/screening tests not conducted for PRH flats in Tenants Purchase Scheme (TPS) estates. On 7 August 2015, the Secretary for Transport and Housing cum Chairman of the HA responded to the media that the nature of TPS and Home Ownership Scheme estates was more akin to private residential buildings and the decision to conduct water sampling tests rested with the Owners' Corporations (OCs) concerned. According to HD records, as at 31 March 2016, there were 54,493 PRH flats in 39 TPS estates under the ownership and While the mixed ownership in TPS estates might management of the HA. complicate the conducting of water sampling tests for pipe connections in common areas, there was no evidence to show that the HD had made efforts to liaise with the OCs concerned to sort out the issue. The HD also has full discretion to conduct tests in the same way it provides other maintenance services to the PRH flats in these estates. In response to Audit's enquiry, the HD said that there were practical and technical difficulties in conducting water sampling tests for PRH flats in TPS estates due to the mixed ownership of these estates. The HD also informed Audit that, given the wide and sustained publicity by the Government and the HA, the OCs of TPS estates had been alerted to the issue and had presumably been making decisions as they deemed fit (paras. 3.17, 3.19 and 3.20).

10. *Relief measures and rectification works for the 11 affected PRH developments.* Since the incident of excess lead in water came to light in July 2015, the HD and WSD had taken the following measures to provide safe drinking water to tenants of the 11 affected PRH developments:

(a) *Relief measures.* Relief measures included the provision of water wagons/tanks and standpipes, supply of bottled water, installation of temporary water points on each floor of the affected PRH developments and installation of water filters for the affected domestic households free of charge. The HD had also informed tenants of the risk of taking water for consumption directly from taps in the affected estates through a number of channels. According to HD records, as at July 2016, 2,138 (7.4%) of 29,077 domestic premises in the 11 affected PRH

developments had not been installed with water filters because some households had refused to install filters or returned filters after use or could not be contacted for arranging the installation works. Given the health risk of excess lead in drinking water, the HD needs to continue its effort in contacting households whose flats had not been installed with water filters to consider installing water filters or take other precautionary measures (paras. 3.24, 3.29 and 3.30); and

(b) *Permanent rectification works.* The HA had requested the four contractors concerned to replace at their own expense the non-compliant pipes in the 11 affected PRH developments. As at July 2016, the progress of rectification works in the common areas of the 11 affected PRH developments ranged from 18.5% to 45.6%. The HD's plan was to replace the non-compliant water pipes inside domestic units after completion of the rectification works in the common areas (paras. 3.26 to 3.28).

## Management of asbestos-containing materials in public rental housing estates

11. Asbestos is a proven carcinogen when inhaled. Before the health hazard of asbestos was recognised, it had been widely used for fire-proofing and insulation purposes. Legislative control over asbestos-containing materials (ACMs) in Hong Kong is provided for under the Air Pollution Control Ordinance (APCO — Cap. 311) and the Factories and Industrial Undertakings (Asbestos) Regulation (Cap. 59AD). The HD had banned the use of ACMs in constructing public housing since 1984 and put in place procedures in handling ACMs in 1988. It also conducted a comprehensive survey on ACMs in PRH estates in 1989. According to the HD, the most common building components with ACMs were the balcony/lobby grilles and roof tiles of the HA's older properties (paras. 4.2, 4.5 and 4.6).

12. *Monitoring of ACMs in PRH estates.* The HD has laid down guidelines for staff in conducting half-yearly condition surveys of ACMs in balcony/lobby/staircase grilles and chimneys of PRH estates (para. 4.9). Audit has found the following issues:

- (a) Previously unannounced PRH estates/block with ACMs. According to the condition survey records from 2010 to 2015, each survey had covered all PRH estates with ACMs as promulgated on the HA website. However, the June 2016 condition survey included five PRH estates/block which according to the HD had not been promulgated previously as their ACMs were at locations inaccessible to tenants and the public. Without proper management and monitoring through condition surveys before 2016, the condition of such ACMs could have deteriorated over the years, thus increasing the risk of asbestos exposure of construction workers and the HD's maintenance staff. Audit also noted that one of the five previously unannounced PRH estates/block with ACMs was built in 1985, suggesting that ACMs might have been used in housing structures after the HD's ban in 1984 (paras. 4.10 to 4.12);
- (b) **Damaged balcony/lobby grille panels with ACMs.** In the joint inspections with the HD of two estates with ACMs in balcony grille panels, Audit found six cases of damaged panels warranting more detailed inspections but had not been reported by the condition surveys conducted from 2010 to 2015 under the HD's existing assessment criteria. Audit also found unreported cases of damaged lobby grille panels with un-encapsulated ACMs on two floors of one of the two estates. In the other estate, the record of asbestos-containing balcony grilles which had all along been used for conducting condition surveys and advising tenants of the ACM locations was found to be inaccurate (paras. 4.13 to 4.16); and
- (c) Need to strengthen in-flat inspections of ACMs in balcony grilles. According to the HD, besides the half-yearly condition surveys at external elevation, asbestos-containing balcony grilles located inside flats are inspected during vacant flat refurbishment, upon request for in-flat repair and during TMS in-flat inspections. However, the condition survey reports of an estate from 2010 to 2013 showed that in-flat inspections only covered 13% of the 2,009 flats with ACMs in balcony grilles. In one case, the un-encapsulated condition of an asbestos-containing balcony grille was not reported in a timely manner (paras. 4.18 to 4.20).

13. *Control over works affecting ACMs in PRH estates.* According to the APCO, all asbestos abatement works or works involving the use or handling of ACMs must be carried out and supervised by registered personnel in compliance with prescribed standards (para. 4.26). Audit has found the following issues:

- (a) *HD contractors' works affecting ACMs of balcony grilles.* The HD's guidelines provide that encapsulation of asbestos-containing balcony grille panels in good condition may be handled as normal maintenance works using specified methods. In a case of concrete spalling repair and encapsulation works of the asbestos-containing balcony grille panel in 2015, the photograph taken before works suggested that the condition of the panel might not have been in good condition. However, the repair and encapsulation works involving ACMs were carried out by the HD's RIMS contractor which might not have complied with the APCO requirements/HD's laid-down procedures (para. 4.27);
- (b) *Tenants' works affecting ACMs of balcony grilles.* While the HD had posted a notice on the HA website on PRH estates with ACMs, the notice did not contain sufficient details about the exact locations of ACMs for estates where not all flats have ACMs. Warning labels of ACMs were rarely used. Uninformed tenants may inadvertently carry out works that would disturb the ACMs. This was evidenced in 17 cases of air-conditioners and one case of towel rack found installed on the asbestos-containing balcony grille panels of an estate. There was a risk that such works could have disturbed the ACMs and exposed the installation workers/tenants to asbestos (paras. 4.28 to 4.32); and
- (c) Suspected case of removal of a chimney with ACMs not in compliance with the APCO requirements. In January 2011, the HD advised the owner of a damaged chimney with ACMs in an estate to engage a qualified contractor to rectify the problem. According to the HD, the subject chimney was removed in late July 2011. However, according to the Environmental Protection Department, it had no record of any asbestos investigation report nor an asbestos abatement plan submitted for the removal of the subject chimney, suggesting that the APCO requirements might not have been complied with. While it was the primary responsibility of the chimney owner to meet the statutory requirements under the APCO in removing the chimney, the HD also had a monitoring role to ensure that works carried out by third parties in its managed estates would not compromise tenants' safety (para. 4.34).

14. Follow-up actions on un-encapsulated ACMs in balcony grille panels. The HD's Asbestos Management Manual of 2003 stated that "Most asbestos balcony grille panels of properties managed by Housing Department or HA's management agents have been encapsulated. It is intended that the remaining panels also be encapsulated if access and other constraints can be overcome". According to the HD's 1990 ACM records, the interior walls of the asbestos-containing balcony grille panels in 15 flats of Hing Wah (II) Estate had not been encapsulated due to problems in gaining access to these flats. In late July 2016, the HD engaged an asbestos consultant and found that the ACM balcony grille panels of these 15 flats had been fully encapsulated. However, there was no record of the encapsulation works to show whether they had been carried out in compliance with the APCO requirements/HD's laid down procedures. Furthermore, Audit noted that the two un-encapsulated cases as reported in paragraphs 12(c) and 13(a) were not among the 15 flats, indicating that there could be omissions in the HD's 1990 ACM records (paras. 4.37 to 4.39).

## **Replacement of laundry pole-holders**

15. Some 550,000 PRH flats in estates completed before 2005 were installed with laundry pole-holders for drying laundry. In the past years, there were safety concerns over the use of laundry pole-holders by tenants. To enhance the quality and safety of PRH flats, the HA in 2004-05 launched a one-off subsidy scheme under which each household was only required to pay \$200 (about half the cost) for replacing the pole-holders with laundry racks. In February 2014, the HA approved the replacement of laundry pole-holders with laundry racks at a total estimated cost of \$520 million (paras. 1.11 and 5.2).

16. *Implementation of the 2004-05 subsidy scheme*. In 2004 and 2005, the HD implemented the subsidy scheme in two phases. Audit found that the HD only maintained records of laundry rack installation for the first phase. The HA's Subsidised Housing Committee was not informed of the achievement of the subsidy scheme until 2014 when its endorsement for the 2014 replacement programme was sought. The Committee was then informed that based on a large-scale sampling survey, about 10% of the flats with laundry pole-holders had been installed with laundry racks. This was far less than the estimated 30% stated in the 2004 Subsidised Housing Committee's paper when its endorsement of the subsidy scheme was sought (paras. 5.3, 5.4, 5.6 and 5.8).

17. *Implementation of the 2014 replacement programme*. In February 2014, the HD informed the Subsidised Housing Committee that: (a) free replacement would be provided for those tenants opting for the installation of laundry racks. For tenants who did not opt for a new rack, the laundry pole-holders of their flats would be sealed up to avoid further use in order to settle prolonged criticism related to the laundry pole-holders once and for all; and (b) the 2014 replacement programme would last for about three years. As at 31 July 2016, there were 493,697 PRH flats included in the 2014 programme. Among them, 249,326 flats were covered by the first batch contracts awarded in 2015 or before. For the remaining 244,371 flats, they would be covered by the second batch contracts awarded in 2016 and thereafter (paras. 5.9 and 5.11).

18. *Need to closely monitor the progress of the 2014 programme*. As at 31 July 2016, of the 42 estates reported having completed works or with planned works schedules which had expired, the laundry rack installation works for 2,702 opted-in flats in six estates and the pole-holder sealing-up works for 4,801 opted-out flats in 10 estates were still outstanding. Of the 15 estates with works due for completion from August to September 2016, six estates had 75% of their opted-in flats (ranging from 51% to 94%) pending laundry rack installation works and 10 estates had 76% of their opted-out flats (ranging from 51% to 99%) pending pole-holder sealing-up works (paras. 5.12 and 5.13).

19. *Partially sealing up of laundry pole-holders*. In a sample check of some flats on two estates reported by the HD to have completed or almost completed the sealing-up works for their opted-out flats as at 31 July 2016, Audit found 96 cases of unsealed laundry pole-holders in one estate reported to have completed sealing-up works. In another estate, there were 71 cases of partially sealed up or unsealed laundry pole-holders instead of the reported seven outstanding cases (para. 5.17).

20. **Recent developments.** In September 2016, the HD obtained the endorsement of the Subsidised Housing Committee to provide laundry rods at the living room façade in specified block types of the PRH estates at an estimated expenditure of \$386 million. The HD needs to take on board the observations and recommendations in this Audit Report in pursuing the new initiative of providing laundry rods in specified housing blocks (para. 5.20).

#### Enhancing fire safety of old public rental housing estates

21. Fire Safety (Buildings) Ordinance (FS(B)O – Cap. 572) Requirements. Under the FS(B)O which came into effect in 2007, owners of domestic and composite buildings with three storeys or above built on or before 1 March 1987 should comply with the specified fire safety requirements. As at July 2016, there were 64 PRH estates requiring upgrading of their fire safety construction/fire service installations to meet the FS(B)O requirements (paras. 1.12 and 6.10(a)).

22. *Implementation of the FS(B)O in PRH estates.* In 2008, the HD agreed with the Buildings Department (BD) and the Fire Services Department (FSD) (i.e. the enforcement authorities of the FS(B)O) on a prototype approach in implementing the FS(B)O in PRH estates. In 2010 and 2014, the HD commissioned three consultancy studies to work out the fire safety improvement proposals for specific PRH block designs for the BD/FSD's vetting. According to the HD's 2014 estimate, the cost of improvement works covering fire safety construction in 51 estates of the slab block design and all fire service installation works, and related consultancy fee would be \$851.7 million (paras. 6.6, 6.7, 6.9, 6.10(d) and 6.12).

23. Need to closely monitor the implementation progress. Up to August 2016 (nine years after the FS(B)O came into effect), fire safety improvement works for the 64 PRH estates had not been fully completed for compliance with the relevant requirements of the FS(B)O. In particular, the progress in respect of fire safety construction was slow. According to the HD's 2014 tentative programme, Phase I fire safety construction works in the 51 estates of the slab block design were only targeted for completion by 2020-21. For Phase II works covering the remaining blocks, budget and programme would be reviewed upon confirmation of the scope by 2016. As for the three consultancy studies for formulating fire safety improvement proposals for specific PRH block designs which were targeted for completion in mid-2016, as at August 2016, only two studies had been completed. The HD needs to closely monitor the progress of implementing the FS(B)O to avoid further slippage (paras. 6.14 and 6.15).

24. Need for greater inter-departmental collaboration to implement the FS(B)O in PRH estates. While the BD/FSD agreed to offer comments on the HD's fire safety improvement proposals for specific PRH block designs, they also remarked that the comments were to facilitate the HD's self-compliance programme of the FS(B)O in PRH estates. In other words, there was still no agreement on the formal acceptance of the fire safety improvement works for the PRH estates. As the HD's fire safety improvement proposals are intended to provide cost-effective solution to meeting the requirements of the FS(B)O in PRH estates, there is a need for greater collaboration among the HD, the BD and the FSD to ensure that the proposed works are efficiently vetted and formally accepted (para. 6.16).

#### Audit recommendations

25. 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 Director of Housing should:

#### In-flat maintenance of public rental housing flats

- (a) closely monitor the adequacy of follow-up actions taken by the estate offices on inaccessible flats, in particular those flats which were inaccessible in both the first TMS cycle and the first five years of the second TMS cycle (para. 2.24(b));
- (b) conduct a review to ascertain whether there are other causes for the increase in RIMS works orders that warrant the HD's management attention (para. 2.32(a));
- (c) strengthen the final inspections of contractors' repair works under the TMS and the RIMS to ensure that their quality is up to standard before acceptance (para. 2.42(b));

#### Management of ACMs in PRH estates

- (d) for the five PRH estates/block with ACMs not previously announced, expedite action to ascertain their condition and take necessary follow-up action (para. 4.24(a));
- (e) consider providing more guidelines on assessing the nature of damage found in condition surveys of ACMs in PRH estates (para. 4.24(c));
- (f) closely monitor the extent of in-flat inspections to ensure an adequate coverage of all the asbestos-containing balcony grilles within a reasonable time frame (para. 4.24(g));
- (g) strengthen the monitoring and control of the maintenance, repair and demolition works involving ACMs in PRH estates, including those undertaken by third parties (para. 4.35(b));
- (h) take measures to prevent accidental disturbance to ACMs, including labelling all ACMs and posting the ACM notice on the notice boards of relevant estates at all times (para. 4.35(d));

#### Replacement of laundry pole-holders

- (i) closely monitor the works progress of the 2014 programme for replacing laundry pole-holders to ensure that the target completion date of 2017 would be met (para. 5.21(c)); and
- (j) carry out a comprehensive review of the reported cases of completed sealing-up works with a view to identifying any irregularities similar to those found by Audit for taking necessary follow-up actions accordingly (para. 5.21(d)).

# Follow-up actions on public rental housing's water sampling tests for lead

26. Audit has *recommended* that the Permanent Secretary for Transport and Housing (Housing) should, when carrying out retesting of the drinking water of PRH estates in accordance with the Commission of Inquiry's recommendation:

- (a) in collaboration with the Director of Water Supplies, strengthen data validation to ensure that information provided to the HA/LegCo is accurate (para. 3.31(a)(i)); and
- (b) take measures to ensure that proper records on all discussions in respect of sampling matters are maintained to support evidence-based decision making (para. 3.31(a)(ii)).

#### Enhancing fire safety of old public rental housing estates

27. Audit has *recommended* that the Director of Buildings and the Director of Fire Services should work in collaboration with the Director of Housing to ensure that the fire safety improvement works for meeting the FS(B)O requirements in PRH estates are efficiently vetted and formally accepted (para. 6.18).

### **Response from the Government**

28. The Government generally agrees with the audit recommendations.