CHAPTER 3

Housing Bureau
Hong Kong Housing Authority
Housing Department

Maintenance and modernisation of lifts and escalators in public rental housing estates

Audit Commission
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This audit review was carried out under a set of guidelines tabled in the Provisional Legislative Council by the Chairman of the Public Accounts Committee on 11 February 1998. The guidelines were agreed between the Public Accounts Committee and the Director of Audit and accepted by the Government of the Hong Kong Special Administrative Region.

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MAINTENANCE AND MODERNISATION OF LIFTS AND ESCALATORS IN PUBLIC RENTAL HOUSING ESTATES

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MAINTENANCE AND MODERNISATION OF LIFTS AND ESCALATORS IN PUBLIC RENTAL HOUSING ESTATES

Executive Summary

1. One of the Hong Kong Housing Authority (HA)'s missions is to provide an age-friendly and barrier-free estate environment to address the needs of residents of different ages and physical abilities. Lifts and escalators can enhance the mobility of tenants of public rental housing (PRH) estates. As at 30 June 2023, the Housing Department (HD) managed about 774,500 PRH flats located in 193 PRH estates and maintained 6,056 lifts and 277 escalators. Maintenance of lifts and escalators maintained by HD is carried out by the original manufacturers/installers for their specific lift or escalator (L/E) brands (i.e. proprietary maintenance) in the form of ongoing term maintenance contracts (TMCs). As at 30 June 2023, there were 11 and 9 TMCs for the maintenance of lifts and escalators in PRH estates respectively. The total maintenance expenditure in 2022-23 was $763.2 million.

2. Since 1988, HA has implemented an on-going Lift Modernisation (LM) Programme for lifts maintained by HD which calls for a complete replacement of the lift installation. From 2018-19 to 2022-23, a total of 27 contracts, involving 382 lifts, with a total contract sum of $652.2 million were awarded to 6 contractors. In addition, HA has conducted safety enhancement works for lifts and escalators to retrofit them with the latest safety devices as recommended by the Electrical and Mechanical Services Department (EMSD) since 2020 and 2018 respectively. The Audit Commission (Audit) has recently conducted a review to examine the L/E safety in PRH estates.

Maintenance of lifts and escalators

3. ***Need to continue enhancing the serviceability and the monitoring measures of lifts and escalators.*** According to TMC, in case of any breakdown of an L/E, the contractor is required to attend to and check the causes, and record all breakdowns in log-books. Of the 31,364 and 1,539 breakdowns of lifts and escalators from 1 January 2020 to 30 April 2023, services had been suspended for over 2 days

in 219 (0.7% of 31,364) and 25 (1.6% of 1,539) cases respectively. Audit analysed the 219 breakdowns of lifts and the 25 breakdowns of escalators and found that: (a) 3 lifts had service suspended for over 60 days, ranging from 72 to 89 days; and (b) 7 lifts had service suspended for over 2 days twice within 6 months, with a total suspension period ranging from 5 to 9 days for each lift (paras. 2.2 and 2.3).

4. ***Inadequate coverage of assessments conducted by the District Maintenance Offices (DMOs) and the Property Services Agents (PSAs).*** The maintenance services of L/Es provided by the contractors include routine maintenance, quarterly inspection, periodic examination, full-load safety test, brake load test, and emergency call services and repairs. According to HD's inspection guidelines, DMOs and PSAs are responsible for the routine monitoring of L/E contractors. Their duties include conducting routine assessment and half-yearly assessment each year for all lifts to assess their conditions. Audit found that of the 5,829 and 5,891 lifts subject to routine and half-yearly assessments as at 31 December 2021 and 2022, neither routine assessments nor half-yearly assessments had been performed on 21 and 26 lifts in 2021 and 2022 respectively. Of which, no assessment had been conducted for 3 lifts in both years (paras. 2.7, 2.14 and 2.15).

5. ***Room for improvement in inspections conducted by HD headquarters staff.*** According to HD, in order to monitor contractors' performance at the headquarters level, surprise checks and additional lift inspections are performed by the Central Services Team (CST) under the Estate Management Division. From January 2022 to April 2023, a total of 27 surprise checks and 8 additional lift inspections were conducted (paras. 2.16, 2.18 and 2.20). Audit's examination revealed the following inadequacies/areas for improvement:

(a) ***Surprise checks.*** CST had not set any timeframe for DMOs/PSAs to follow up the rectification of the defects identified in the surprise checks. Of the 27 surprise checks: (i) while the defects were rectified and DMO issued the Notification of Completion to CST on the same date of surprise check report in one case, DMOs/PSAs took 7 to 128 days (averaging 30 days) to issue the Notification of Completion to CST for the remaining 26 cases; and (ii) in 10 surprise checks involving 83 defects, 13 (16% of 83) defects were in fact not yet rectified/followed up at the time of issuing the Notification of Completion. As of September 2023, 11 of the 13 defects were rectified while 2 involving improvement works would be followed up during LM works (para. 2.18); and

(b) ***Additional lift inspections.*** CST would carry out additional lift inspections when the monthly scores of the assessment scoring system of a lift contractor are staying below the lowest acceptable scores for three consecutive months. Audit's examination of the 8 additional lift inspection reports and the respective Notification of Completion found that in 6 inspections involving 113 defects identified, 20 (18% of 113) defects were in fact not yet rectified at the time of issuing the Notification of Completion by DMOs/PSAs. As of September 2023, 19 of the 20 defects were rectified while the remaining one involving improvement works would be followed up during LM works (paras. 2.19 and 2.20).

6. ***Room for improvement in inspections conducted by the Lift Inspection Focus Team.*** The Lift Inspection Focus Team has been set up under the Head of Independent Checking Unit for carrying out independent checks. Upon the completion of each independent check, the Focus Team will issue a list of defects/outstanding items to DMO/Property Service Administration Unit (PSAU) for follow-up actions and request for a reply within 30 days. For outstanding replies, the Focus Team will issue reminders on a monthly basis. From January 2022 to April 2023, the Focus Team conducted independent checks for 853 L/Es maintained by HD. Audit examined 15 independent check reports involving 29 lifts and found that DMOs/PSAUs did not reply to the Focus Team within 30 days in 8 (53%) of the 15 independent checks, with delays ranging from 2 to 29 days. Of the 8 independent checks, the Focus Team failed to issue reminders to the respective DMOs/PSAUs timely in 3 cases, with delays ranging from 7 to 25 days, contrary to the guidelines stipulated in the procedural manual (paras. 2.21 and 2.22).

7. ***Need to remind the contractors to follow the requirements on the submission of quarterly inspection reports stipulated in TMCs.*** According to TMCs, the contractors shall submit a quarterly inspection report on the condition for each L/E under their maintenance to HD. Audit noted that, in the 53 submissions by the 11 L/E contractors from January 2022 to March 2023, there were delays in 22 (42%) submissions (involving 8 L/E contractors). The delays ranged from 1 to 203 days (averaging 48 days). Audit also examined 44 quarterly inspection reports submitted by L/E contractors for inspections conducted in the third and fourth quarters of 2022 and noted that in 32 (73%) reports, Registered L/E Engineers had not certified whether or not L/Es were in a safe, satisfactory and serviceable condition, contrary to the provisions in TMCs. Furthermore, 8 of the 32 reports were not duly signed by a Registered L/E Engineer (paras. 2.25 to 2.27).

8. ***Need to monitor the checking frequency of all main maintenance items.*** According to the Code of Practice for Lift Works and Escalator Works issued by EMSD in 2021, L/E contractors should explain to the Responsible Persons the maintenance schedule, which lists out all maintenance items that must be checked during periodic maintenance and the frequency of checking for Responsible Persons' reference. There are 8 main items that must be checked during periodic maintenance for a lift. Audit examined the maintenance schedules and the log-book records for 7 lift contractors (sample checked 1 lift for each contractor) from January to December 2022 and found that 6 lift contractors did not fully meet the checking frequency of all 8 main items in accordance with the maintenance schedules (paras. 2.31 and 2.32).

Lift Modernisation Programme

9. ***Need to enhance documentation of the justifications in determining the priority of lift replacement works.*** Under LM Programme, HA evaluates the performance of all lifts maintained by HD which have been in use for 25 years or more and sets priority for LM works. By the end of each calendar year, technical evaluation reports for lifts with service years of 25 or more are prepared by DMOs/PSAs for assessing whether there is imminent need to modernise the lifts and submitted to the Lift Modernisation Technical Vetting Committee (LMTVC) for recommending an LM Programme. The LM Programme will then be submitted to the Maintenance Planning and Review Committee for approval. Audit examined the records of LMTVC meeting held in February 2023 on the discussion of the provisional LM Programme of 2024-25 (including the technical assessment of 986 lifts) and found that: (a) LMTVC accepted DMOs/PSAs' suggestions of all the 55 lifts to be included in the provisional LM Programme of 2024-25; and (b) of the remaining 931 lifts not suggested by DMOs/PSAs, 36 lifts were also included in the provisional programme but the justifications had not been recorded in the LMTVC meeting minutes (paras. 3.2, 3.5, 3.6 and 3.8).

10. ***Some aged lifts not included in LM Programme in/before 2024-25.*** As at 30 June 2023, there were 104 lifts maintained by HD with service years of 35 or more. While all the 64 lifts in domestic premises were planned for LM works in/before 2024-25, 35 out of 40 lifts in non-domestic premises with service years of 35 or more were not planned for LM works in/before 2024-25. Of the 35 aged lifts, 33 had been tentatively scheduled for replacement under LM Programme from 2025-26 to 2031-32 and 2 had not been included in LM Programme. Audit noted that

these 2 lifts (Lifts A and B) were located in Shopping Centre A in a PRH estate and were installed in 1978 with service years of 46 as at 30 June 2023. In November 2020, the Buildings Department issued some comments on the fire safety improvement proposal of Shopping Centre A in relation to the Fire Safety (Commercial Premises) Ordinance (Cap. 502). In December 2021, HD's proposal of converting Lift A to a fireman's lift was accepted in principle by the Buildings Department. According to HD, major improvement works was planned to upgrade for the provision of a fireman's lift, together with the provision of safety enhancement devices in Lift A by partial LM works. The project team would further review the scope of the partial LM works in Shopping Centre A in conjunction with the fire safety improvement works, and work out the implementation programme (paras. 3.9 and 3.10).

11. ***Prolonged lift shut-down period for LM works.*** As lift contractors are responsible for lift replacement (and minor building supporting works) while district term contractors are responsible for building works, there are numerous site handovers between them. Since 2013, a streamlined process for LM works has been implemented by HD to reduce the number of site handovers with the aim to shorten the shut-down period of lifts undergoing LM works from 10.5 to 7.5 months. Audit analysed the shut-down period for the 238 lifts with LM works completed during the period from 2018-19 to 2022-23 and noted that: (a) 1 (0.4%) lift had been shut down for 7.5 months or less; (b) 188 (79.0%) lifts had been shut down for more than 7.5 to 10.5 months; and (c) 49 (20.6%) lifts had been shut down for more than 10.5 to 14.5 months. Furthermore, of the 238 lifts, 190 (80%) had not resumed service by the planned completion dates as stated in the contracts, resulting in delays in lift resumption of 2 to 169 days (averaging 32 days) (paras. 3.18 to 3.20).

12. ***Need to resume lift services as soon as possible after obtaining use permits.*** Upon completing new lift installation, a use permit should be obtained from EMSD so that the lift could be opened for public use. Audit compared the actual lift service resumption dates with the issue dates of the use permits for the 238 lifts with LM works completed during the period from 2018-19 to 2022-23 and found that: (a) 12 (5%) lifts resumed service on the dates the use permits were issued; (b) 47 (20%) lifts took 1 to 10 days to resume service after obtaining use permits; (c) 149 (63%) lifts took 11 to 30 days to resume service after obtaining use permits; and (d) 30 (12%) lifts took more than 30 days to resume service after obtaining use permits (para. 3.21).

Other safety enhancement measures for lifts and escalators

13. ***Room for improvement in lift safety enhancement works.*** In 2020, HA commenced the lift safety enhancement works to equip the lifts maintained by HD with the 3 latest safety devices (i.e. double brake system, unintended car movement protection device and ascending car overspeed protection device) as promulgated in EMSD's Guidelines. At the time prior to the commencement of the lift safety enhancement works in 2020, 3,685 lifts were not fully equipped with the 3 latest safety devices. HD shortlisted 1,871 lifts as prioritised items to be enhanced by 2031-32 (paras. 4.2 and 4.4). Audit noted that:

(a) up to 30 June 2023, of the 1,871 lifts, enhancement works were completed for 318 (17%) lifts (para. 4.4(a)); and

(b) according to the results of the trial projects in 2019 and 2020 for the lift safety enhancement works, the shut-down period of each lift for undergoing the lift enhancement works was normally around 4 to 6 weeks. Of the 318 lifts with safety enhancement works completed up to 30 June 2023, 52 (16%) took more than 6 weeks to complete the enhancement works (para. 4.5).

14. ***Need to conduct periodic overhaul of escalators in accordance with HD's Instruction.*** In 2003, HD imposed a requirement of periodic overhaul of all escalators which requires the complete dismantling of escalators for cleaning, checking, inspection and replacement of any moving parts with excessive wear and tear. Each escalator should be overhauled 3 years after the expiry of the maintenance period stated in the contracts. Subsequent overhauls for an escalator should be carried out once every 3 years normally. While the interval between two successive overhauls can be adjusted, it shall not in any case be more than 6 years (para. 4.9). Audit examined the periodic overhauls of the 277 escalators maintained by HD as at 30 June 2023 and noted that:

(a) of the 81 (29%) escalators with only one overhaul conducted after the maintenance period, 74 (91% of 81) escalators had their overhaul conducted more than 3 years after the expiry of the maintenance period (para. 4.10(b)); and

(b) of the 131 (47%) escalators with 2 or more overhauls conducted after the maintenance period, 76 (58% of 131) and 16 (12% of 131) escalators had their latest overhaul conducted more than 3 years but within 6 years and more than 6 years after the previous overhaul respectively (para. 4.10(c)).

Audit recommendations

15. **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:**

Maintenance of lifts and escalators

(a) **take measures to continue enhancing the serviceability and the monitoring measures of lifts and escalators as far as practicable (para. 2.5);**

(b) **take measures to ensure that the routine assessments and half-yearly assessments are conducted in accordance with the requirements stipulated in HD's inspection guidelines (para. 2.23(b));**

(c) **stipulate timeframe for issuing the Notification of Completion by DMOs/PSAs for surprise checks (para. 2.23(c));**

(d) **enhance monitoring of the implementation of improvement works identified in the surprise checks and the additional lift inspections during LM works (para. 2.23(d));**

(e) **take measures to ensure that reminders for outstanding replies from DMOs/PSAUs are issued by the Lift Inspection Focus Team in accordance with HD's procedural manual (para. 2.23(e));**

(f) **remind the contractors to follow the requirements on the submission of quarterly inspection reports stipulated in TMCs (para. 2.29);**

(g) **take measures to monitor the checking frequency of all main items so that it meets the frequency as stated in the maintenance schedules (para. 2.36(a));**

Lift Modernisation Programme

(h) **enhance the documentation of the justifications in determining the priority of lift replacement works under LM Programme in order to better support evidence-based decision made by LMTVC (para. 3.13(a));**

(i) **expedite the partial LM works in Shopping Centre A in conjunction with the fire safety improvement works (para. 3.13(b));**

(j) **keep in view the need of carrying out full/partial modernisation works for aged lifts included in the tentative long-term LM Programme, taking into consideration factors such as breakdown rates, technical feasibility, cost effectiveness and suspension time (para. 3.13(c));**

(k) **take measures to reduce the lift shut-down period in order to minimise the disruption to lift users as far as practicable and resume the lift services as soon as possible after obtaining the use permits (para. 3.23(b) and (c));**

Other safety enhancement measures for lifts and escalators

(l) **continue to closely monitor the progress of the lift safety enhancement works and complete the works for the prioritised items in accordance with the planned programme as far as practicable (para. 4.7(a));**

(m) **endeavour to shorten the shut-down period of lifts for lift safety enhancement works as far as practicable (para. 4.7(b)); and**

(n) **continue to monitor the periodic overhauls of escalators such that the overhauls are conducted in accordance with HD's Instruction (para. 4.12).**

Response from the Government

16. The Director of Housing agrees 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 Hong Kong Housing Authority (HA — Note 1) is a statutory body established in April 1973 under the Housing Ordinance (Cap. 283). It is responsible for developing and implementing a public housing programme to meet the housing needs of low-income families that cannot afford private accommodation. Six standing committees have been formed under HA to formulate, administer and oversee policies in specified areas (Note 2).

1.3 The Housing Department (HD), as the executive arm of HA, provides secretarial and executive support for HA. HD also supports the Housing Bureau in dealing with all housing-related policies and matters. The Secretary for Housing and the Director of Housing assume the offices of the Chairman and the Vice-chairman of HA respectively.

Lifts and escalators in public rental housing estates

1.4 One of HA's missions is to provide an age-friendly and barrier-free estate environment to address the needs of residents of different ages and physical abilities. Lifts and escalators can enhance the mobility of tenants of public rental housing (PRH)

Note 1: *As of June 2023, HA had 4 official members and 19 non-official members, who were appointed by the Chief Executive of the Hong Kong Special Administrative Region. The four official members comprise the Secretary for Housing, the Director of Housing, the Permanent Secretary for Financial Services and the Treasury (Treasury) and the Director of Lands.*

Note 2: *The six standing committees are Building Committee, Commercial Properties Committee, Finance Committee, Strategic Planning Committee, Subsidised Housing Committee and Tender Committee.*

estates. As at 30 June 2023, HD managed about 774,500 PRH flats located in 193 PRH estates (Note 3) and maintained 6,056 lifts and 277 escalators (see Table 1).

Table 1

Lifts and escalators maintained by HD
(30 June 2023)

Type	Number of lifts	Number of escalators
Domestic premises:		
- residential PRH blocks	5,498	31
- disciplined services quarters	40	0
Non-domestic premises:		
- shopping centres	168	193
- offices/factories	70	8
- ancillary facilities blocks	52	4
- carpark buildings	58	4
- others (Note)	170	37
Total	6,056	277

Source: *Audit Commission analysis of HD records*

Note: *Others include lifts and escalators located at lift towers, covered walkways and podium, etc.*

Note 3: *Apart from the 193 PRH estates, some PRH flats are located in estates under the Tenants Purchase Scheme (TPS) and other subsidised housing schemes. TPS was launched in 1998 to assist PRH tenants to buy the flats they currently rent at an affordable price. All estates under TPS have formed their Incorporated Owners under the Building Management Ordinance (Cap. 344) which undertake the management and maintenance of their estates. For other subsidised housing schemes with PRH flats, there are both PRH tenants and private owners. The daily management of these estates is administered by their Incorporated Owners or Owners' Committees.*

1.5 From 2006 to 2010, there were 173 cases of mechanical malfunctioning related to lifts in Hong Kong, causing injury to over 20 people. In particular, the plunging of a lift in Fu Shin Estate (an estate under TPS — see Note 3 to para. 1.4) in Tai Po in 2008 had heightened public concerns over lift safety. In view of this, the Government conducted a comprehensive review of the Lifts and Escalators (Safety) Ordinance (Cap. 327) in 2009 and 2010 and introduced the Lifts and Escalators Bill into the Legislative Council in May 2011 to replace the Lifts and Escalators (Safety) Ordinance. A Bills Committee was formed to scrutinise the Bill. The Lifts and Escalators Ordinance (Cap. 618) was enacted in April 2012 and came into full operation in December 2012. The Lifts and Escalators Ordinance (Note 4) introduces a series of enhanced regulatory control measures, and regulates the installation, maintenance and operation of lifts or escalators (L/Es) in both public and private sectors. It also clearly stipulates the responsibilities of the Responsible Person (who is the owner or a person responsible for the management of L/E or having the control of it), which include:

(a) ensuring that L/E and all its associated equipment or machinery are kept in a proper state of repair and in safe working order;

(b) ensuring that works concerning the installation, major alteration and demolition of L/E, and works that are likely to affect the safe operation of L/E are undertaken by a Registered Contractor;

(c) ensuring that L/E maintenance works are undertaken by a Registered Contractor, and that periodic maintenance works are carried out for L/E at intervals not exceeding 1 month;

(d) engaging a Registered Engineer to thoroughly examine the lift and escalator at intervals not exceeding 12 and 6 months respectively and the lift with load at intervals not exceeding 5 years;

(e) notifying the Electrical and Mechanical Services Department (EMSD — Note 5) in writing and the Registered Contractor currently undertaking

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Note 4: *Two Regulations are enacted under the Lifts and Escalators Ordinance, namely the Lifts and Escalators (General) Regulation (Cap. 618A) and the Lifts and Escalators (Fees) Regulation (Cap. 618B).*

Note 5: *EMSD is responsible for regulating the safety of L/E in Hong Kong by enforcing the Lifts and Escalators Ordinance.*

L/E works of any serious L/E incident, within 24 hours of coming into knowledge of the incident; and

(f) keeping the records of log-book (which records the details of L/E works undertaken, incidents/failures attended to and inspections conducted by the Registered Contractors, Engineers and Workers — Note 6) for at least the recent 3 years.

Maintenance of lifts and escalators

1.6 Lifts and escalators in PRH estates are usually heavily used and wear and tear of L/E parts is inevitable. To ensure reliability of the operation of lifts and escalators, since 1983, maintenance of lifts and escalators maintained by HD has been carried out by the original manufacturers/installers for their specific L/E brands (i.e. proprietary maintenance) in the form of ongoing term maintenance contracts (TMCs). TMC is a comprehensive maintenance contract under which L/E contractor is required to provide all types of servicing, maintenance, repair and replacement as the need arises (Note 7), in order to maintain L/Es in a safe working order in accordance with the statutory requirements and requirements stated in TMC. According to HD, the proprietary maintenance arrangement is adopted because of the following advantages based on prime technical considerations:

(a) absolute liability of the manufacturer/installer on safety;

(b) spare parts and technical backup are directly available from the manufacturer/installer to avoid extended downtimes; and

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Note 6: *In addition to the details of L/E works undertaken, incidents/failures attended to and inspections conducted by the Registered Contractors, Engineers and Workers, the log-book should also contain basic information about L/E and the contractor, including the location of L/E and date of installation, L/E serial number and its specifications, name of the installing contractor, name of the present maintenance contractor, the commencement date of maintenance and the routine maintenance timetable.*

Note 7: *For lift TMC, the cost of repair and replacement is determined on an "all-inclusive" basis (i.e. without any additional cost to HA other than the pre-determined contract cost) whereas for escalator TMC, the related cost is borne by HA on a per job basis.*

(c) maintenance services are readily available with technicians equipped with high level of technical expertise in the proprietary-design lift equipment.

1.7 As at 30 June 2023, there were 11 and 9 TMCs (Note 8) for the maintenance of lifts and escalators in PRH estates respectively. The total maintenance expenditure in 2022-23 was $763.2 million (Note 9). Payments for the maintenance services are made on a monthly basis at a pre-defined rate assigned to each type of L/Es, which is subject to annual adjustment taking into account changes in labour and material costs.

Lift Modernisation Programme

1.8 Since 1988, HA has implemented an on-going Lift Modernisation (LM) Programme for lifts maintained by HD which calls for a complete replacement of the lift installation including control equipment, hoisting motor and machinery, landing doors and the associated mechanism and lift car cage, etc. LM Programme aims to accomplish the following objectives:

(a) ensuring the reliability and safety of the lift installation for the entire life span of the building;

(b) bringing the safety standard of the installation in line with the current statutory requirements; and

(c) improving the lift service/performance of the building.

1.9 Under the current practice, each year, HA evaluates the performance of all lifts maintained by HD which have been in use for 25 years or more and sets priority for LM works, taking into account factors including the overall operating conditions

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Note 8: *There were 11 contractors in total, of which 9 contractors entered into TMCs with HA for the maintenance of lifts and escalators in 2 separate contracts and 2 contractors for the maintenance of lifts only.*

Note 9: *It did not include expenses for additional works orders for enhancement works for lifts and escalators, e.g. lift safety enhancement works (see paras. 1.10 and 1.11).*

of lifts and deployment of resources, etc. Invitation of tender will be sent to the contractors on the List of Lift Contractors (Note 10) maintained by HA. Since the start of LM Programme in 1988, HA has completed LM works of more than 1,500 aged lifts. From 2018-19 to 2022-23, a total of 27 contracts, involving 382 lifts, with a total contract sum of $652.2 million were awarded to 6 contractors (see Table 2).

Table 2

Number of contracts awarded under LM Programme (2018-19 to 2022-23)

Year	Number of contracts awarded	Number of lifts involved	Contract sum ($ million)
2018-19	6	93	155.1
2019-20	5	64	112.9
2020-21	5	83	145.0
2021-22	6	82	137.4
2022-23	5	60	101.8
Total	27	382	652.2

Source: Audit Commission analysis of HD records

Other safety enhancement measures for lifts and escalators

1.10 ***Lift safety enhancement works.*** In 2011, to enable a safer, more reliable and comfortable lift operation, EMSD promulgated the Guidelines for Modernising Existing Lifts (the Guidelines), recommending 7 enhancement solutions (see Figure 1) for existing lifts, as follows:

Note 10: *Companies are required to apply for registration in HA's List of Lift Contractors in order to be eligible to submit tenders for the provision of lift services. HA will assess the applications against the admission criteria and the companies will be admitted onto the List if all the criteria are satisfied. As at 30 June 2023, there were 11 contractors on HA's List of Lift Contractors.*

(a) installing a double brake system (DBS);

(b) installing an unintended car movement protection (UCMP) device on the brake system;

(c) installing an ascending car overspeed protection (ACOP) device;

(d) installing advanced car door mechanical lock and door safety edge;

(e) adding an intercom and closed-circuit television system;

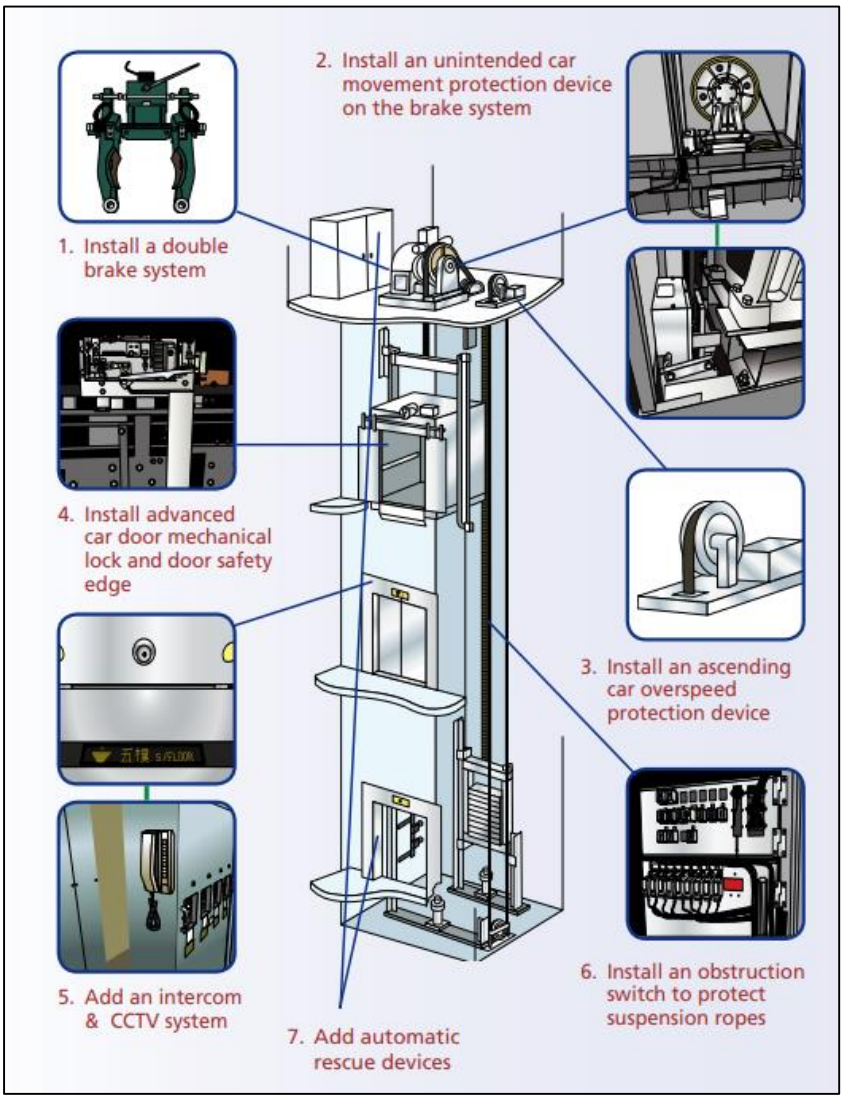
(f) installing an obstruction switch to protect suspension ropes; and

(g) adding automatic rescue devices.

The Responsible Persons for lifts had full discretion as to whether or not to adopt the recommended enhancement solutions in the Guidelines. According to the Guidelines, the first 4 solutions (see (a) to (d) above) should be considered with priority, whereas the remaining 3 solutions should be considered according to the actual situation or individual needs. In October 2016 and June 2017, in view of several lift incidents involving the occurrence of unintended lift car movement, EMSD issued reminders to lift contractors for the consideration of adopting these enhancement solutions and liaison with relevant Responsible Persons for the implementation of related works.

Figure 1

Seven enhancement solutions recommended in the Guidelines issued by EMSD (2011)



Source: EMSD records

1.11 In order to elevate the safety standard of the lifts in PRH estates to meet the public expectation, HA has conducted the lift safety enhancement works which included retrofitting lifts with DBSs, UCMP devices and ACOP devices (see para. 1.10(a) to (c) — collectively referred to as the latest safety devices) since 2020,

in tandem with LM Programme. According to HD, of the 4 priority enhancement solutions (Note 11):

(a) the advanced car door mechanical lock and door safety edge (see para. 1.10(d)) had been installed in all the lifts maintained by HD; and

(b) about 3,600 lifts were not equipped with any or all of the other 3 latest safety devices as of September 2020. As at 30 June 2023, the lift safety enhancement works of 318 lifts in 42 PRH estates were completed. The total expenditure from 2020-21 to 2022-23 was $109.1 million.

1.12 ***Escalator safety enhancement works.*** In 2016, EMSD promulgated the Guidelines for Modernisation of Existing Escalators, recommending the provision of 8 additional features (e.g. skirt panel deflector devices, obstruction guards, emergency stop switches, landing floor plate safety devices and auxiliary brake) which were not required at the time when the existing escalators were installed. In November 2018, HA required the existing escalators maintained by HD to incorporate all of the 8 items as far as practicable when the escalators are due for overhaul. As at 30 June 2023, of the 277 escalators maintained by HD, 263 (95%) escalators have been equipped with the modernised items while the enhancement works for the remaining 14 (5%) escalators are planned to be completed in 2024-25.

Performance pledge

1.13 To ensure that its services can better meet public expectation, HA has formulated a set of performance pledges for its estate management. Table 3 shows the targets and the actual achievements on the performance pledges in relation to lift breakdown from 2018 to 2022.

Note 11: *As the remaining 3 solutions were not the priority enhancement solutions suggested by EMSD, they will be included in LM works.*

Table 3

Targets and actual achievements of performance pledges in relation to lift breakdown (2018 to 2022)

Performance pledge	Target (%)	2018	2019	2020	2021	2022
		Actual (%)				
Maintenance personnel will arrive at the scene for report of lift breakdown:						
(a) within 45 minutes where no trapping of passenger(s) is involved	95	97.47	99.28	99.73	99.38	99.77
(b) within 25 minutes if trapping of passenger(s) is involved	95	97.45	99.24	99.73	99.41	99.44
Have trapped passenger(s) rescued within 30 minutes of maintenance personnel's arrival	95	99.16	99.18	98.98	99.26	98.63

Source: *HD records*

Remarks: *According to HD, from 2020 to 2022, of the 10,326 cases of lift breakdown with passengers trapped, in 40 cases, the passengers were trapped for more than 60 minutes (ranging from 62 to 206 minutes, on average 84 minutes).*

Responsible division

1.14 As at 30 June 2023, HD comprised four divisions, each managed by a Deputy Director. The Estate Management Division (EMD), with 4,741 staff, was responsible for the management and maintenance of PRH estates. The day-to-day management and maintenance work of about 40% PRH estates was under HD's direct management and that of the rest 60% was outsourced to private Property Services Agents (PSAs — Note 12). There were 3 Assistant Directors in EMD overseeing 7 Regional Management Offices (RMOs) and 5 Support Services Sections, each headed by a Chief Manager. Under each RMO, there were a number of District

Note 12: *Given the magnitude of PRH stock, HD has outsourced the property management of some of PRH estates to PSAs in a bid to enhance service quality and cost effectiveness.*

Maintenance Offices (DMOs) and a Property Service Administration Unit (PSAU) monitoring building services maintenance works for PRH estates in the assigned districts, including routine maintenance of lifts and escalators. An extract of the organisation chart of HD as at 30 June 2023 is at Appendix A.

Audit review

1.15 In May 2023, the Audit Commission (Audit) commenced a review to examine the lift safety and barrier-free access in PRH estates. The audit findings are contained in two Audit Reports, namely maintenance and modernisation of lifts and escalators in PRH estates (the subject matter of this review) and provision of barrier-free facilities in PRH estates (Chapter 4 of the Director of Audit's Report No. 81).

1.16 This Audit Report focuses on the following areas:

(a) maintenance of lifts and escalators (PART 2);

(b) LM Programme (PART 3); and

(c) other safety enhancement measures for lifts and escalators (PART 4).

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

General response from the Government

1.17 The Director of Housing agrees with the observations and recommendations in this Audit Report. She has said that the audit review has been of great value to HD.

Acknowledgement

1.18 Audit would like to acknowledge with gratitude the full cooperation of the staff of HD during the course of the audit review.

PART 2: MAINTENANCE OF LIFTS AND ESCALATORS

2.1 This PART examines HD's monitoring of the maintenance work of lifts and escalators, focusing on:

(a) service performance of lifts and escalators (paras. 2.2 to 2.6);

(b) monitoring of contractors' performance (paras. 2.7 to 2.24);

(c) checking of contractors' submission (paras. 2.25 to 2.30); and

(d) log-books for lifts and escalators (paras. 2.31 to 2.37).

Service performance of lifts and escalators

Need to continue enhancing the serviceability and the monitoring measures of lifts and escalators

2.2 According to TMC, in case of any breakdown of an L/E (Note 13), the contractor is required to attend to, check the causes of, and record all breakdowns in log-books (see para. 1.5(f)) which are placed at HD's estate/building management offices. On a monthly basis, DMO/PSA staff will input the breakdown details (e.g. the date and time calling the contractor and its arrival time, the date and time of L/E's suspension and resumption) into HD's Enterprise Resources Planning System (Note 14). A Monthly Report for Maintenance of Lifts and Escalators showing the number of breakdowns of lifts and escalators is generated and reviewed by EMD management every month. Audit examined the Monthly Report for Maintenance of Lifts and Escalators for the period from 1 January 2020 to 30 April 2023 and noted that:

Note 13: *When the L/E service fails or is deemed to be not suitable for use during its normal service period, irrespective of the duration, it will be classified as a breakdown. Examples include: (a) L/E does not move; (b) car door/landing door of lift malfunctions; (c) serious water damage to L/E; and (d) L/E serious incident.*

Note 14: *HD adopts the Enterprise Resources Planning System for the administration of finance, procurement and estate maintenance.*

(a) there were 31,364 and 1,539 breakdowns of lifts and escalators respectively. The main reasons of breakdown included equipment failure and vandalism (Note 15); and

(b) the monthly breakdown rates (Note 16) of lifts and escalators ranged from 0.10 to 0.17 and from 0.11 to 0.26 respectively and were showing a decreasing trend during the period.

2.3 According to HD, the bulk of L/E breakdowns could be rectified within 2 days. Audit analysed the service suspension period due to L/E breakdowns from 1 January 2020 to 30 April 2023 and noted that services had been suspended for over 2 days in 219 (0.7% of 31,364) and 25 (1.6% of 1,539) breakdowns of lifts and escalators respectively. Audit further analysed the 219 breakdowns of lifts and the 25 breakdowns of escalators (see Table 4) and found that:

(a) 3 lifts had service suspended for over 60 days, ranging from 72 to 89 days, mainly attributable to the failure of equipment in machine room and burnt out of the motor-generator set. A total amount of about $40,000 had been deducted from the monthly maintenance payment in accordance with the provisions as stipulated in TMC (Note 17); and

(b) 7 lifts had service suspended for over 2 days twice within 6 months, with a total suspension period ranging from 5 to 9 days for each lift.

Note 15: *According to HD, breakdown due to vandalism was mainly attributable to improper passenger behaviours, e.g. hitting the lift car door and forcing the car door to open.*

Note 16: *The monthly breakdown rate is calculated by the total number of breakdowns of L/Es in a month divided by the total number of L/Es maintained by HD as at month-end.*

Note 17: *According to TMC, in the event that any L/E cannot be returned to normal services by the contractor for a consecutive period of over 60 days, a 40% deduction shall be applied to the monthly rate for the routine inspection of and servicing such L/E.*

Table 4

Number of breakdowns of lifts and escalators resulting in service suspension for over 2 days (1 January 2020 to 30 April 2023)

Number of days of service suspended	Number of breakdowns	
	Lifts	Escalators
>2 to 5	160 (73%)	15 (60%)
>5 to 10	33 (15%)	6 (24%)
>10 to 15	10 (4%)	3 (12%)
>15 to 20	8 (4%)	1 (4%)
>20 to 25	2 (1%)	0 (0%)
>25 to 30	1 (1%)	0 (0%)
>30 to 60	2 (1%)	0 (0%)
>60 to 90	3 (1%) (Note)	0 (0%)
Total	219 (100%)	25 (100%)

Source: *Audit analysis of HD records*

Note: *The service suspension period was 89 days in the longest breakdown case.*

2.4 Lifts and escalators are essential means of transport in PRH estates, any frequent or prolonged suspension may cause inconvenience to residents. In addition, according to EMSD, malfunctioning of lifts is often signs of lift failures or incidents. According to HD, the 219 lift breakdowns and 25 escalator breakdowns resulting in service suspension for over 2 days represented only 1% and 2% to the total number of lift and escalator breakdowns during the period respectively. While HD has resumed services in 99% of lift breakdowns within 2 days, Audit considers that HD needs to take measures to continue enhancing the serviceability and the monitoring measures of lifts and escalators as far as practicable.

Audit recommendation

2.5 **Audit has *recommended* that the Director of Housing should take measures to continue enhancing the serviceability and the monitoring measures of lifts and escalators as far as practicable.**

Response from the Government

2.6 The Director of Housing agrees with the audit recommendation. She has said that:

(a) the period of L/E services analysis from 1 January 2020 to 30 April 2023 amounted to over 7,000,000 lift service days and over 300,000 escalator service days of continuous operation. There were on average less than 1 breakdown per lift and less than 1 breakdown per escalator in every 6 months;

(b) HD has a comprehensive system in monitoring contractors' performance so as to maintain high service standard of lifts and escalators. HD holds regular meetings with lift and escalator contractors to review their maintenance performance in PRH estates and conducts regular checks and surprise checks to inspect contractors' maintenance quality. Meanwhile, HD has adopted the Building Services Maintenance Assessment Scoring System (BSMASS) to measure lift contractors' performance in various aspects including serviceability of lifts. Furthermore, HD consistently exceeds the performance pledges in relation to lift breakdowns from 2018 to 2022 as shown in Table 3 to paragraph 1.13; and

(c) the lift breakdown rate was showing a downward trend during the period from 1 January 2020 to 30 April 2023. About 20% of lift breakdowns and 40% of escalator breakdowns were due to vandalism. While HD has resumed lift and escalator services within 2 days in about 98% to 99% of breakdowns, HD will further analyse and monitor the downtime of lift and escalator services and regularly review with the contractors. HD will continue to work closely with the lift industry and professional organisations to further enhance the serviceability of lifts and escalators from system design, selection of materials, regular maintenance works and the monitoring measures.

Monitoring of contractors' performance

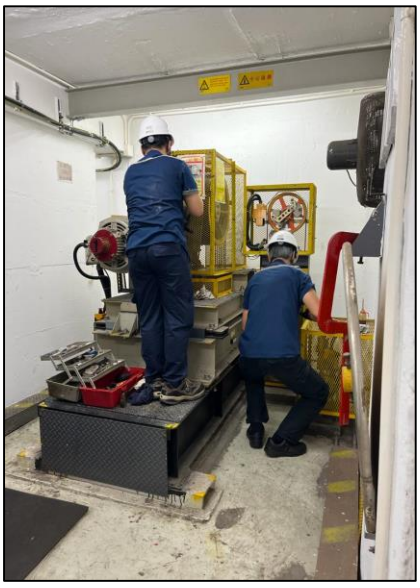
2.7 As mentioned in paragraph 1.6, maintenance of lifts and escalators maintained by HD has been carried out by the original manufacturers/installers for their specific L/E brands (i.e. proprietary maintenance) in the form of ongoing TMCs. According to TMCs, the maintenance services of L/Es provided by the contractors include:

(a) ***Routine maintenance.*** The contractor is required to conduct inspection and servicing necessary on a weekly basis to maintain L/Es in good, smooth, quiet and safe working condition at all times. Routine maintenance includes inspecting, cleaning, adjusting and oiling L/Es (see Photographs 1(a) and (b)). EMSD has issued the Code of Practice for Lift Works and Escalator Works, setting out the items to be examined and handled during routine maintenance;

Photographs 1(a) and (b)

Routine maintenance conducted by a lift contractor

(a) In lift machine room



(b) On lift car top

Source: Photographs taken by Audit staff on 2 August 2023

(b) ***Quarterly inspection.*** The contractor is required to submit a quarterly inspection report for each L/E to describe its condition after inspection (e.g. the safety gear locks, machinery, control equipment, and car and landing doors) and certify that whether or not it is in a safe, satisfactory and serviceable condition;

(c) ***Periodic examination.*** The contractor is required to arrange Registered L/E Engineers to thoroughly examine L/Es and all the associated equipment or machinery during the periodic examination. Periodic examination aims at certifying that L/Es are in safe working order to satisfy EMSD for the renewal of use permits for L/Es;

(d) ***Full-load safety test.*** The contractor is required to conduct an examination of the lifts with full-rated load every 5 years;

(e) ***Brake load test.*** Brake load test means test of the brakes of escalators with dummy load, for compliance with the prescribed stopping distances. The brake load test should be conducted every 5 years; and

(f) ***Emergency call services and repairs.*** Upon receipt of an emergency call, the contractor shall:

(i) arrive at the scene with adequate resources within 45 minutes for breakdown without trapped passenger(s) or within 25 minutes for breakdown with trapped passenger(s); and

(ii) make his best effort to release the trapped passenger(s) safely within 30 minutes after arrival at scene.

2.8 The maintenance, inspection and test/examination schedule for L/Es under contractual and statutory requirements are shown in Table 5. HA has been adopting more stringent requirements in routine maintenance and quarterly inspection works as required in TMCs than the statutory requirements (see items (a) and (b) in Table 5).

Table 5

Contractual and statutory requirements on maintenance, inspection and test/examination schedule for lifts and escalators maintained by HD

Type	Lift		Escalator	
	Contractual requirement	**Statutory requirement**	**Contractual requirement**	**Statutory requirement**
(a) Routine maintenance	Weekly	Monthly	Weekly	Monthly
(b) Quarterly inspection	Quarterly	Not required	Quarterly	Not required
(c) Periodic examination	Yearly	Yearly	Half-yearly	Half-yearly
(d) Full-load safety test	5-yearly	5-yearly	N/A	N/A
(e) Brake load test	N/A	N/A	5-yearly	5-yearly

Source: Audit analysis of HD records

2.9 According to HD, it monitors the L/E contractors' maintenance works by means of an assessment scoring system and/or on-site inspections, as follows:

(a) BSMASS (see paras. 2.10 to 2.13);

(b) monitoring of contractors by DMOs and PSAs (see paras. 2.14 and 2.15);

(c) inspections conducted by HD headquarters staff (see paras. 2.16 to 2.20); and

(d) inspections conducted by the Lift Inspection Focus Team (see paras. 2.21 and 2.22).

Building Services Maintenance Assessment Scoring System

2.10 BSMASS was launched in 1991 with an aim of measuring the overall performance of individual building services contractors for different types of building

services TMCs, including lifts (Note 18). It is a computerised scoring system (with scores from 0 to 100) recording, on a monthly basis, various aspects of lift contractors' performance such as breakdown rates, downtime and incident rates of lifts, the timeliness in attending to emergency calls, and the results of routine inspections.

2.11 According to HD and BSMASS manual:

(a) if a contractor's monthly BSMASS score is below the passing score (i.e. 50), a warning letter will be issued to the contractor to state that HA is dissatisfied with its performance and forewarn the contractor;

(b) if a contractor's monthly BSMASS score is lower than the passing score twice in a rolling period of 12 months, HD will interview the contractor and consider whether to give an adverse report to the contractor; and

(c) a contractor will be suspended for tendering for at least three months if he gets three consecutive monthly BSMASS scores lower than the passing score.

2.12 Audit's examination of the monthly BSMASS scores of the 11 lift contractors (Contractors A to K) from January 2019 to June 2023 revealed that the monthly BSMASS scores of 3 contractors (Contractors A, B and C) had been below the passing score of 50 marks a number of times (see Table 6).

Note 18: *According to HD, due to the small number of escalators maintained by HD, BSMASS is not used for assessing the performance of escalator contractors.*

Table 6

3 contractors with monthly BSMASS scores below the passing score of 50 marks (January 2019 to June 2023)

Contractor	Number of times with monthly BSMASS scores below the passing score of 50 marks					
	2019	**2020**	**2021**	**2022**	**2023 (up to June)**	**Total**
A	2 (May and July)	0	0	0	0	2
B	1 (June — Note 1)	0	0	0	0	1
C	2 (August and September)	0	4 (February, May, June and October — Note 2)	0	0	6

Source: *Audit analysis of HD records*

Note 1: *According to HD, the monthly BSMASS score of Contractor B was less than the passing score of 50 marks in September 2018. Taking this into account, Contractor B's monthly BSMASS score was below the passing score of 50 marks twice in a rolling period of 12 months.*

Note 2: *As Contractor C did not get three consecutive monthly BSMASS scores lower than the passing score, HD did not suspend Contractor C from tendering.*

2.13 ***Need to sustain the efforts in monitoring the regulating actions on contractors with unsatisfactory performance.*** Audit examined the follow-up actions taken by HD and noted that:

(a) in 2019, the monthly BSMASS scores of the 3 contractors (Contractors A, B and C) were less than the passing score of 50 marks twice in a rolling period of 12 months (with scores ranging from 32.48 to 48.25). While HD

had issued warning letters and conducted interviews with the 3 contractors, it did not issue adverse reports to them; and

(b) as the monthly BSMASS scores of Contractor C were below the passing score of 50 marks in 3 months in the first half of 2021 (with scores ranging from 39.62 to 48.77 in February, May and June), HD had two performance meetings with Contractor C in March and July 2021 to review its performance and discuss the remedial improvement plan. An adverse report was issued by HD in August 2021. However, the performance of Contractor C had remained unsatisfactory:

(i) in October 2021, the monthly BSMASS score was below the passing score again. In December 2021, HD interviewed Contractor C for remedial actions and issued another adverse report in February 2022; and

(ii) of the 16-month period from March 2022 to June 2023, the monthly BSMASS scores of Contractor C were below average in 14 (88%) months and were the lowest among all contractors in 5 (31%) months.

Audit considers that HD needs to sustain the efforts in monitoring the regulating actions on contractors with unsatisfactory performance.

Monitoring of contractors by DMOs and PSAs

2.14 According to HD's inspection guidelines, DMOs and PSAs are responsible for routine monitoring of L/E contractors. Their duties include:

(a) conducting at least two assessments (namely routine assessment and half-yearly assessment (Note 19)) each year for all lifts to assess their conditions. Staff from DMOs and PSAs prepare programme chart for planning of assessment and input. After each assessment, assessment report

Note 19: *According to the HD's inspection guidelines, checking items covered in the routine assessment include lift machine room, lift car, landing fixtures and general safety. For the half-yearly assessment, more checking items will be covered, e.g. lift shaft top and car top, midway lift shaft and lift pit.*

and defect list are prepared and submitted to the Building Services Inspector (BSI) of DMO and EMD management to review whether there is any problem that requires special attention; and

(b) witnessing the annual examination and 5-yearly examination for lifts and the half-yearly examination for escalators carried out by L/E contractors.

2.15 ***Inadequate coverage of assessments.*** Audit examined the records of routine assessments and half-yearly assessments conducted by DMOs and PSAs in 2021 and 2022 and found that of the 5,829 and 5,891 lifts subject to routine and half-yearly assessments (Note 20) as at 31 December 2021 and 2022, neither routine assessments nor half-yearly assessments had been performed on 21 and 26 lifts in 2021 and 2022 respectively. Of which, no assessment had been conducted for 3 lifts in both years. Audit considers that HD needs to take measures to ensure that the routine assessments and half-yearly assessments are conducted in accordance with the requirements stipulated in its inspection guidelines.

Inspections conducted by HD headquarters staff

2.16 According to HD, in order to monitor contractors' performance at the headquarters level, two types of inspections are performed by the Central Services Team (CST) under EMD:

(a) surprise checks (see paras. 2.17 and 2.18); and

(b) additional lift inspections (see paras. 2.19 and 2.20).

2.17 ***Room for improvement in conducting surprise checks.*** According to HD:

(a) the surprise check on the maintenance of lifts and escalators is one of the senior management directives and mainly intended to acquire independent

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Note 20: *According to HD, the following lifts were not subject to routine and half-yearly assessments:*
(a) dumbwaiters, platform lifts and stair lifts; and
(b) newly-installed lifts under the defect liability period which were monitored by the project teams for installation contracts.

views on overall operation of lifts and escalators as to ascertain whether the current documented system and control on monitoring of contractors by DMOs/PSAs is operating effectively. The result of surprise check did not form part of performance assessment (i.e. BSMASS score) for the lift contractors;

(b) the need for and frequency of surprise check is decided by CST having regard to the overall performance of the maintenance works of L/Es. Nevertheless, CST has endeavoured to conduct at least 18 surprise checks per year, with at least one surprise check for each L/E contractor in each year; and

(c) after each surprise check:

(i) CST will prepare a surprise check report addressing to the respective DMO/PSA which rates the performance of L/E contractor (i.e. satisfactory, fair or poor), and lists out the corrective actions to be taken by the contractors which should be followed up by DMO/PSA; and

(ii) DMO/PSA will instruct L/E contractor to rectify the defects. After completion of all the corrective actions, DMO/PSA will issue a Notification of Completion to CST.

2.18 From January 2022 to April 2023, a total of 27 surprise checks were conducted by CST. Audit's examination of the 27 surprise check reports and the respective Notification of Completion revealed the following inadequacies/areas for improvement:

(a) unlike additional lift inspections (see para. 2.19), CST had not set any timeframe for DMOs/PSAs to follow up the rectification of the defects identified in the surprise checks. Audit found that:

(i) in one case, the defects were rectified and DMO issued the Notification of Completion to CST on the same date of surprise check report; and

(ii) for the remaining 26 cases, DMOs/PSAs took 7 to 128 days (averaging 30 days) to issue the Notification of Completion to CST; and

(b) in 10 of the 27 surprise checks involving 83 defects, 13 (16% of 83) defects were in fact not yet rectified/followed up at the time of issuing the Notification of Completion. However, there was no documentary evidence showing that CST had taken further follow-up actions on the outstanding defects. In September 2023, HD informed Audit that of the 13 defects, 11 had been rectified while 2 involving improvements works would be followed up during LM works.

Audit considers that HD needs to stipulate timeframe for issuing the Notification of Completion by DMOs/PSAs for surprise checks and enhance monitoring of the implementation of the improvement works during LM works.

2.19 ***Room for improvement in conducting additional lift inspections***. In addition to surprise checks, CST also performs additional lift inspections. According to the BSMASS manual:

(a) CST would carry out additional lift inspections when the monthly BSMASS scores of a lift contractor are staying below the lowest acceptable scores (Note 21) for three consecutive months; and

(b) the exact numbers and locations of the additional lift inspections shall be determined by CST.

After each additional lift inspection, CST will prepare a defect list addressing to respective DMO/PSA summarising the defects identified in the inspection. DMO/PSA will instruct the lift contractor to rectify the defects within 2 weeks from the date of receipt of the defect list. After completion of all the rectification actions, DMO/PSA will issue a Notification of Completion to CST.

Note 21: *According to HD, to gauge the maintenance standards of the lift contractors with BSMASS scores staying marginally above the pass standard for a long period, the lowest acceptable score is introduced as a threshold. The lowest acceptable score is set at 10% lower than the average BSMASS score of all lift contractors in the month.*

2.20 From January 2022 to April 2023, a total of 8 additional lift inspections were conducted by CST. Audit examined the 8 additional lift inspection reports and the respective Notification of Completion and noted that:

(a) the 8 additional lift inspections were conducted 34 to 100 days (averaging 58 days) after the end of the third consecutive month in which the monthly BSMASS scores were below the lowest acceptable scores. In September 2023, HD informed Audit that:

  (i) the monthly BSMASS scores of lift contractors were available at the end of the succeeding month (i.e. about 30 days after the end of the assessment month); and

  (ii) 2 of the 8 additional lift inspections were conducted more than 60 days (85 and 100 days respectively) after the end of the third consecutive month as a result of the implementation of special work arrangement due to the epidemic of coronavirus disease (COVID-19); and

(b) in 6 inspections involving 113 defects identified, 20 (18% of 113) defects were in fact not yet rectified at the time of issuing the Notification of Completion. However, there was no documentary evidence showing that CST had taken further follow-up actions on the outstanding defects. In September 2023, HD informed Audit that of the 20 defects, 19 had been rectified while the remaining one involving improvements works would be followed up during LM works. Audit considers that HD needs to enhance monitoring of the implementation of the improvement works during LM works.

Inspections conducted by the Lift Inspection Focus Team

2.21 As part of risk management on the operation and use of large numbers of lifts and escalators maintained by HD, the Lift Inspection Focus Team has been set up

under the Head of Independent Checking Unit (Note 22) for carrying out independent inspections (hereinafter referred to as independent checks). The procedures for conducting independent checks are set out in a procedural manual. According to the manual:

(a) independent check is intended to verify if the lifts and escalators are properly examined and maintained by contractors in accordance with statutory and contractual requirements, and in safe working order;

(b) the Focus Team performs independent checks with an annual target of 10% on all lifts and escalators maintained by HD based on the samples automatically generated from a balloting programme; and

(c) upon the completion of each independent check, the Focus Team will issue a list of defects/outstanding items to DMO/PSAU for follow-up actions and request for a reply within 30 days. For outstanding replies, the Focus Team will issue reminders on a monthly basis. Relevant rectification follow-up work is carried out by DMO/PSAU and the Focus Team will not conduct any re-inspection.

2.22 From January 2022 to April 2023, the Focus Team conducted independent checks for 853 L/Es maintained by HD. Audit examined 15 independent check reports involving 29 lifts and found the following areas for improvement:

(a) ***Delays in issuing reminders.*** DMOs/PSAUs did not reply within 30 days in 8 (53%) of the 15 independent checks, with delays ranging from 2 to 29 days. Of the 8 independent checks, the Focus Team failed to issue reminders to the respective DMOs/PSAUs timely in 3 cases, with delays ranging from 7 to 25 days, contrary to the guidelines stipulated in the procedural manual (see para. 2.21(c)); and

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Note 22: *The Independent Checking Unit under the Office of the Permanent Secretary for Housing was established in November 2000 as one of the Quality Housing Initiatives of HA. Under the delegated authority from the Building Authority (i.e. the Director of Buildings), the Unit exercises statutory building control to properties developed by HA that have been sold or divested, in accordance with the Buildings Ordinance (Cap. 123) and the policies and guidelines of the Building Authority.*

(b) ***Need to enhance monitoring of unrectified defects/outstanding items***. Audit's examination of the 15 reply memos from DMOs/PSAUs to the Focus Team found that, in 12 (80% of 15) independent checks with 166 defects/outstanding items identified, 76 (46% of 166) defects/outstanding items had not yet been rectified. Upon enquiry, HD informed Audit in July 2023 that of the 76 defects/outstanding items:

(i) 46 (60% of 76) defects/outstanding items (involving 14 lifts) had been rectified;

(ii) 5 (7% of 76) defects/outstanding items (involving 5 lifts) would be rectified in 2023-24; and

(iii) a longer time was required to complete the remaining 25 (33% of 76) defects/outstanding items (involving 8 lifts) because they could only be handled during LM works. However, Audit found that while LM works were in progress for 4 lifts (involving 8 defects) and 3 lifts (involving 14 defects) were included in the long-term LM Programme of 2025-26 tentatively (see Note 33 to para. 3.6), 1 lift (involving 3 defects) had rendering service life of less than 10 years and hence no LM works had been planned.

According to the procedural manual, the Focus Team will not conduct any re-inspection. In September 2023, HD informed Audit that defects/outstanding items with safety concerns would be highlighted for the attention of the respective RMOs and these items would be handled by DMOs/PSAUs immediately. Taking into account that some of the defects/outstanding items with lower priority will only be rectified after a long period of time, Audit considers that there is merit for the Focus Team to draw the attention of RMOs to all the defects/outstanding items identified in the independent checks with a view to enhancing the monitoring of follow-up work of these items.

Audit recommendations

2.23 **Audit has *recommended* that the Director of Housing should:**

(a) **sustain the efforts in monitoring the regulating actions on contractors with unsatisfactory performance;**

(b) **take measures to ensure that the routine assessments and half-yearly assessments are conducted in accordance with the requirements stipulated in HD's inspection guidelines;**

(c) **stipulate timeframe for issuing the Notification of Completion by DMOs/PSAs for surprise checks;**

(d) **enhance monitoring of the implementation of improvement works identified in the surprise checks and the additional lift inspections during LM works;**

(e) **take measures to ensure that reminders for outstanding replies from DMOs/PSAUs are issued by the Lift Inspection Focus Team in accordance with HD's procedural manual; and**

(f) **draw the attention of RMOs to all the defects/outstanding items identified in the independent checks with a view to enhancing the monitoring of follow-up work of these items.**

Response from the Government

2.24 The Director of Housing agrees with the audit recommendations. She has said that:

(a) HD has been conducting interviews with and issuing warning letters to contractors with unsatisfactory performance in accordance with the established guidelines. HD also has an internal committee to review contractors' performance assessments and determine adverse rating. Nevertheless, HD will sustain the efforts to monitor the regulating actions on contractors with unsatisfactory performance;

(b) HD has been making use of an information technology system to ensure that over 12,000 of assessments for all lifts can be scheduled evenly over the year among all the 11 contractors and 193 PRH estates. The system requires inputting of new lift information for additional schedules for new lifts where the time lapse in inputting new lift information will cause delay in scheduling the assessment. HD will review the current procedure and strengthen the guideline for inputting relevant information of new lifts into the system so that assessments will be scheduled for all lifts, including the new ones;

(c) DMOs/PSAs will issue the Notification of Completion to CST immediately after the rectification of all minor defects identified in the surprise check. For the improvement items which are outside the scope of TMCs for upkeeping the lifts in good running condition or complying with the lift regulation for annual examination certification, they are planned in LM Programme subsequently and hence the issuance of the Notification of Completion will take a longer time;

(d) DMOs/PSAs have rectified all minor defects immediately after the surprise checks and additional lift inspections to upkeep the lift in good running condition. The improvement items identified during the checks/inspections are planned in the LM Programme subsequently;

(e) HD will take measures to regularly remind DMOs/PSAUs staff through various channels including internal meetings and sharing sessions. HD will ensure that reminders will be issued more frequently by the Lift Inspection Focus Team. The procedural manual will be updated accordingly; and

(f) the Lift Inspection Focus Team issues the list of defects/outstanding items to DMOs/PSAUs for their follow-up work. In future, HD will directly address the list to senior management of RMOs for attention with a view to enhancing the monitoring of follow-up work of the defects/outstanding items.

Checking of contractors' submission

2.25 According to TMCs, the contractors shall submit a quarterly inspection report on the condition for each L/E under their maintenance to HD (see para. 2.7(b)). HD would make use of the reports for evaluating the need for repair or improvement works of each L/E. A specimen of the report is provided in TMC listing the information

that a contractor has to submit. As stipulated in TMC, the quarterly inspection report shall:

(a) be submitted within one month from the last date of the reporting quarter;

(b) state the condition of the systems and components of L/E and record any unsatisfactory items;

(c) be certified by a Registered L/E Engineer whether or not L/E is in a safe, satisfactory and serviceable condition; and

(d) be duly signed by a Registered L/E Engineer.

2.26 ***Delays in submission of quarterly inspection reports.*** Audit noted that, in the 53 submissions by the 11 L/E contractors (Note 23) from January 2022 to March 2023 (covering 5 quarters), there were delays in 22 (42%) submissions (involving 8 L/E contractors), contrary to the provisions in TMCs. The delays ranged from 1 to 203 days (averaging 48 days).

2.27 ***Inadequacies in vetting quarterly inspection reports.*** Audit examined 44 quarterly inspection reports submitted by L/E contractors for inspections conducted in the third and fourth quarters of 2022 (i.e. 2 samples each for the 11 L/E contractors in each quarter) and noted that:

(a) ***Incomplete information.*** According to the specimen of the quarterly inspection report, contractors have to state the last periodic examination date as required by the Lifts and Escalators Ordinance. Of the 44 quarterly inspection reports examined, the last periodic examination dates were not stated in 8 (18%) reports submitted by 2 contractors; and

(b) ***Reports not certified and/or signed by Registered L/E Engineers.*** In 32 (73% of 44) reports, Registered L/E Engineers had not certified whether or not L/Es were in a safe, satisfactory and serviceable condition.

Note 23: *According to HD, TMC for one of the lift contractors commenced in May 2022. The contractor started to submit the quarterly inspection reports in the third quarter of 2022.*

Furthermore, 8 of the 32 reports were not duly signed by a Registered L/E Engineer.

2.28 Submission of quarterly inspection reports is a contractual requirement aiming at reporting the general conditions of various major systems/components of L/Es at the time of inspection for HD's reference. Audit considers that HD needs to remind the contractors to follow the requirements on the submission of quarterly inspection reports stipulated in TMCs.

Audit recommendation

2.29 **Audit has *recommended* that the Director of Housing should remind the contractors to follow the requirements on the submission of quarterly inspection reports stipulated in TMCs.**

Response from the Government

2.30 The Director of Housing agrees with the audit recommendation. She has said that:

(a) apart from the more stringent requirement of routine maintenance on a weekly basis for lifts and escalators over the statutory requirement, HD has also requested L/E contractors to submit quarterly inspection reports under TMCs, for reviewing the general conditions of various equipment and/or components of L/Es; and

(b) HD will closely monitor the submission of quarterly inspection reports with all information completed and review with L/E contractors in regular meetings. Follow-up actions such as issuing reminder letters and warning letters will be carried out as appropriate.

Log-books for lifts and escalators

Need to monitor the checking frequency of all main maintenance items

2.31 Under the Lifts and Escalators Ordinance, Responsible Persons of L/Es are required to keep log-books (see para. 1.5(f)) to record the works details in relation to their L/Es. According to the Code of Practice for Lift Works and Escalator Works issued by EMSD in 2021, L/E contractors should explain to the Responsible Persons the maintenance schedule, which lists out all maintenance items that must be checked during periodic maintenance and the frequency of checking, and attach the schedule to the log-book for Responsible Persons' reference.

2.32 According to the Code of Practice for Lift Works and Escalator Works, there are 8 main items (including control and safety switch, landing door and car door, traction machine and brake, suspension ropes, overspeed governor, devices inside the lift car and lift pit, ACOP device and UCMP device) that must be checked during periodic maintenance for a lift. Audit examined the maintenance schedules and the log-book records for 7 lift contractors (sample checked 1 lift for each contractor) from January to December 2022 and found that 6 lift contractors did not fully meet the checking frequency of all 8 main items in accordance with the maintenance schedules (see Appendix B). In order to ensure the lift safety and good operating conditions, Audit considers that HD needs to take measures to monitor the checking frequency of all main items so that it meets the frequency as stated in the maintenance schedules.

Need to keep in view the adoption of digital log-books

2.33 Since 1987, the log-book for L/E has been kept in paper format. On 30 November 2022, EMSD launched a new cloud-based digital log-books (DLBs) platform for L/Es to replace the log-books in paper format. According to EMSD, with the adoption of DLBs:

(a) L/E workers could upload the works details for L/Es to the cloud system with ease. EMSD, Responsible Persons and Registered L/E contractors could download and view the previous and latest works records of L/Es anytime and anywhere through the mobile app or web portal of the system;

(b) blockchain technology would be applied for storage of the log-book records, rendering the records tamper-resistant and ensuring the authenticity of the log-book content; and

(c) the system could also carry out data analysis on collected information to help various stakeholders better understand the performance and condition of the L/Es. It would facilitate joint monitoring, smart regulation and effective collaborations, thereby enhancing the efficiency of management of L/Es and the reliability of L/E services.

To expedite the transition from existing paper log-books to DLBs, new L/Es commencing installation on or after 1 August 2023 are required to adopt DLBs.

2.34 In August 2023, HD informed Audit that:

(a) it was not a requirement for the adoption of DLBs for L/Es commencing installation before 1 August 2023. Thus, DLBs had not been adopted by HD; and

(b) in order to prepare for the adoption of DLBs, HD had been liaising with L/E contractors to arrange for activation of DLBs and progressively creating accounts for access of DLBs by HD staff. As at 30 June 2023, more than 790 DLB accounts had been activated. HD aimed to activate DLB accounts for all existing L/Es by March 2024. If the result of trial adoption of DLBs was satisfactory, DLBs would be fully adopted. Before the full adoption, existing paper log-books would be used.

2.35 In view of the benefits that can be brought about by adopting DLBs (e.g. facilitating data analysis of a large number of lifts and escalators) and the fact that it is mandatory to adopt DLBs for new L/Es commencing installation on or after 1 August 2023, Audit considers that HD needs to keep in view the adoption of DLBs for L/Es maintained by HD.

Audit recommendations

2.36 **Audit has *recommended* that the Director of Housing should:**

(a) **take measures to monitor the checking frequency of all main items so that it meets the frequency as stated in the maintenance schedules; and**

(b) **keep in view the adoption of DLBs for L/Es maintained by HD.**

Response from the Government

2.37 The Director of Housing agrees with the audit recommendations. She has said that:

(a) lift contractors have carried out weekly maintenance in accordance with the contract requirements and conducted checking on all main items regularly. They have to submit quarterly inspection reports summarising the general conditions of various equipment and/or components of lifts for review. HD will review existing guidelines(s) to provide guidance on checking the frequency of maintenance works for the main items in lift log-books to meet the frequency as stated in the maintenance schedules; and

(b) although it is not a mandatory requirement to adopt DLBs for existing lifts and escalators, HD has been on the track to activate DLB accounts for some existing lifts and escalators. HD will continue to closely collaborate with L/E contractors and EMSD on the activation of DLB accounts by March 2024. In tandem with this effort, paper log-books will be faded out.

PART 3: LIFT MODERNISATION PROGRAMME

3.1 This PART examines HD's management of LM Programme, focusing on:

(a) planning of LM Programme (paras. 3.5 to 3.14); and

(b) monitoring of LM works (paras. 3.15 to 3.24).

3.2 Since 1988, HA has implemented an on-going LM Programme which calls for a complete replacement of the lift installation. HA evaluates the performance of all lifts maintained by HD which have been in use for 25 years or more (Note 24) and sets priority for LM works (see paras. 1.8 and 1.9). As at 30 June 2023, of the 6,056 lifts maintained by HD, 1,380 (23% of 6,056) lifts had been in use for 25 years or more (see Table 7).

Note 24: *The "age" criterion for evaluation was "20 years" upon the implementation of LM Programme in the 1990's. Since 2001, the "age" criterion has been changed to "25 years" in view of the better manufacturing standard and the improved maintenance services.*

Table 7

Distribution of lifts maintained by HD by years in service (as at 30 June 2023)

Number of years in service	Number of lifts		
	In domestic premises (a)	**In non-domestic premises (b)**	**Overall (c) = (a) + (b)**
< 15	2,372 (43%)	286 (55%)	2,658 (44%)
≥ 15 to < 20	642 (12%)	51 (10%)	693 (11%)
≥ 20 to < 25	1,235 (22%)	90 (17%)	1,325 (22%)
≥ 25 to < 30	756 (14%)	21 (4%)	777 (13%)
≥ 30 to < 35	469 (8%)	30 (6%)	499 (8%)
≥ 35 to < 40	52 (1%)	4 (1%)	56 (1%)
≥ 40 to < 45	12 (0%)	33 (6%)	45 (1%)
≥ 45 to < 50	0 (0%)	3 (1%)	3 (0%) (Note)
Total	5,538 (100%)	518 (100%)	6,056 (100%)

1,380 (23%)

Source: *Audit analysis of HD records*

Note: *The longest service years of the lift maintained by HD as at 30 June 2023 was 46.*

3.3 According to HD:

(a) more than 2,100 lifts built in the peak flat production period from 1996 to 2005 had been/would gradually be subject to annual assessment for modernisation under LM Programme starting from 2021. Under the current available resources, only around 80 to 90 lifts could be modernised per year;

(b) the pace of modernisation could not cope with the upsurge of aged lifts and would result in an increase in the age of lifts under operation;

(c) due consideration shall be given to LM after the "half-life" of the building, i.e. 30 years unless there is evidence substantiating that the lift performance is not excessively below the current standard; and

(d) if full modernisation is for technical reasons not considered cost-effective, partial or value-oriented LM to optimise the lift performance shall be considered.

3.4 HA engaged a consultant to conduct a study with an aim to improve the existing strategies and policy of LM Programme by establishing a more systematic, holistic, accountable and customer-focused approach. The study was completed in March 2020 and it recommended that:

(a) the lift age required for the annual technical assessment for modernisation purpose was to be extended from 25 to 30 years in view that there was no significant difference in the breakdown probability and the major causes of breakdowns for lifts across all age groups (Note 25);

(b) lift enhancement works (or partial replacement works) which focused on lift safety, reliability and energy saving could be arranged if total lift replacement could not be arranged for the aged lifts due to resources and/or technical constraints so as to extend the service life of the lifts (Note 26); and

(c) a proposed lift performance assessment method would be implemented to assess lifts according to the condition of equipment, level of service and

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Note 25: *HD noted the age threshold could be raised to 30 years as recommended by the consultant. However, since the current practice of submitting technical evaluation reports for lifts with service years of 25 or more was more stringent and had been adopted effectively, HD considered that it was more prudent to continue the current practice from operational considerations.*

Note 26: *Since 2020, HA has implemented the lift safety enhancement works in tandem with LM Programme to elevate the safety standard of the lifts to meet the public expectation.*

risks (Note 27) so that a weighted score could be generated for each lift based on the three assessment areas.

According to HD, since late 2020, lift performance assessment form has been used for evaluating the conditions of existing lifts and submitted together with the technical evaluation reports (see para. 3.5) by DMOs/PSAs (Note 28). Scoresheet summaries on lift conditions for domestic and non-domestic premises are prepared respectively based on the assessment forms submitted by DMOs/PSAs. A normalised score is generally worked out for individual estate/non-domestic premises (Note 29) and recorded in the respective scoresheet summary. Upon enquiry, HD informed Audit in July 2023 that the score was only one of the considerations in formulating the LM Programme.

Planning of Lift Modernisation Programme

3.5 By the end of each calendar year, technical evaluation reports for lifts with service years of 25 or more are prepared by DMOs/PSAs for assessing whether there is imminent need to modernise the lifts. The assessment factors include the following:

(a) breakdown rates and the condition of existing equipment;

(b) safety level (e.g. whether the latest safety devices have been installed) in comparison with the current statutory standard;

(c) availability of spare parts; and

(d) number of complaints received.

Note 27: *Factors in assessment of level of service included vibration in cab, jerks in cab, noise, lighting, ventilation and waiting time, etc. Factors in assessment of risks included unavailability of spare parts, high frequency of lift breakdowns, old age of lifts and inadequacy of safety devices, etc.*

Note 28: *For PRH estates with their property management outsourced to PSAs, the technical evaluation reports are prepared by PSAs and submitted to PSAU for consolidation.*

Note 29: *Provided that the service years of the lifts in an estate/non-domestic premises and their lift conditions are similar, DMOs/PSAs will select a lift for assessment and the score of the lift is the normalised score indicating the servicing condition of the lifts in the estate/premises. For some PRH estates with blocks built in different phases, lifts are selected for assessment for different phases.*

The reports are submitted to the Lift Modernisation Technical Vetting Committee (LMTVC — Note 30) for recommending an LM Programme.

3.6 In the first quarter of each year, an LMTVC meeting will be held to discuss the LM Programme for the coming 2 years (i.e. Years 1 and 2) which includes:

(a) a list of lifts to be modernised for tendering in the ensuing financial year (Year 1). In general, the list is carried forward from the last year's provisional programme except for some special cases, e.g. more time required for the planning and design work; and

(b) a provisional programme for the next financial year (Year 2) in order to enable project officers of DMOs to start the planning and design work earlier (Note 31) and plan for the budget. The provisional programme is recommended based on the technical evaluation reports submitted by DMOs/PSAs and the discussion during the LMTVC meeting.

The LM Programme will then be submitted to the Maintenance Planning and Review Committee (MPRC — Note 32) for approval (Note 33). Upon MPRC's approval,

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Note 30: *LMTVC is chaired by the Chief Manager in a Support Services Section of EMD and the members comprise Senior Building Services Engineers from the 7 RMOs and the Support Services Section.*

Note 31: *According to HD, preparation work (e.g. building services design and required submission for the Independent Checking Unit for approval of building works) requires a lead time of about 9 to 12 months.*

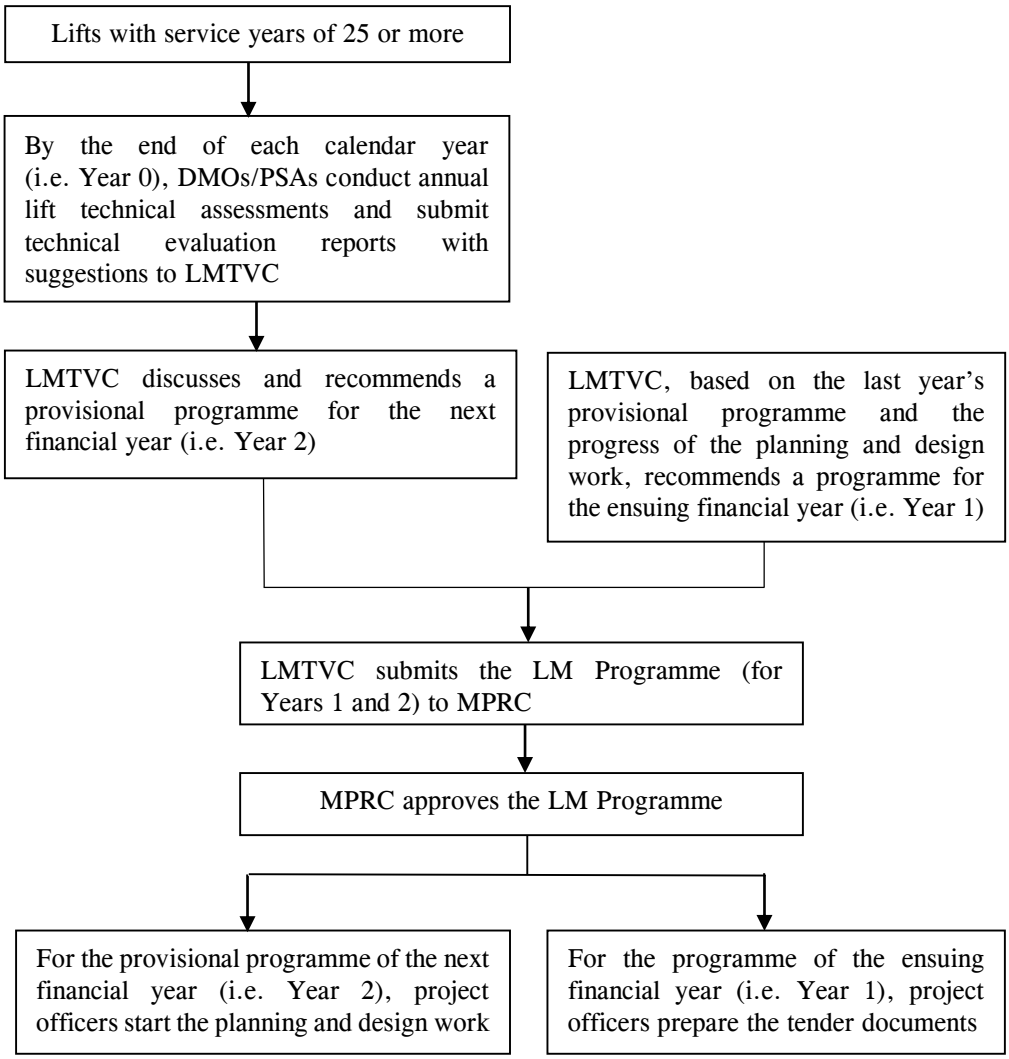
Note 32: *MPRC is co-chaired by the three Assistant Directors in EMD and the members comprise the Chief Managers/Engineers and Senior Maintenance Surveyors from various disciplines. Its terms of reference include:*
(a) setting standards for the planned maintenance and improvement programmes;
(b) reviewing individual maintenance and improvement proposals;
(c) reviewing the progress of maintenance and improvement programmes; and
(d) reviewing the effectiveness of maintenance and improvement programmes.

Note 33: *LMTVC also formulates a tentative long-term LM Programme for 7 years for long-term resources planning. The programme is submitted to MPRC for reference and will be updated in light of the annual review of lift technical assessment, workload and staff resources, availability of budget and other commitments.*

the project officers prepare the tender documents and issue tenders. Figure 2 shows the workflow of the LM Programme.

Figure 2

Workflow of the LM Programme



Source: Audit analysis of HD records

3.7 According to HD's EMD Instruction, in formulating the LM Programme, LMTVC considers the following assessment criteria:

(a) lift performance parameters (e.g. breakdown rates and reliability, addition of landings, levelling accuracy and ride comfort, uplifting of appearance and outlook, traffic performance, energy efficiency and safety provisions);

(b) work plan, manpower and resources;

(c) availability of budget; and

(d) other considerations and commitments.

Need to enhance documentation of the justifications in determining the priority of lift replacement works

3.8 As mentioned in paragraph 3.4(c), the consultant recommended in March 2020 that after assessing the lift performance, a weighted score could be generated for each lift based on the three assessment areas (i.e. the condition of equipment, level of service and risks). According to HD, in determining the priority of lift replacement, LMTVC took into account the scores of domestic/non-domestic premises which were the normalised scores for individual estates/non-domestic premises. Audit examined the records of LMTVC meeting held in February 2023 on the discussion of the provisional LM Programme of 2024-25, including the scoresheet summaries on lift condition for domestic and non-domestic premises (scores ranged from 22.66 to 55.75 and 27.01 to 58.95 for domestic and non-domestic premises respectively — Note 34) and the technical assessment of 986 lifts (in 95 technical evaluation reports) submitted by DMOs/PSAs in late 2022 or early 2023, and found that:

(a) DMOs/PSAs suggested 55 lifts (involving 3 PRH estates and 2 carpark buildings in 5 reports) for inclusion in the provisional LM Programme of 2024-25. LMTVC accepted the suggestions of all the 55 lifts to be included in the provisional programme. The scores of the 3 PRH estates ranged from 32.57 to 41.56 (ranking 3rd, 4th, and 31st in domestic premises) and the scores of the 2 carpark buildings were 44.75 and 51.85 (ranking 2nd and 7th in non-domestic premises); and

Note 34: *In general, higher scores represent higher imminent need for lift replacement.*

(b) among the remaining 931 lifts not suggested by DMOs/PSAs for inclusion in the provisional LM Programme of 2024-25, 36 lifts in 4 PRH estates were included in the provisional LM Programme of 2024-25 but without any justifications documented in the meeting minutes. The scores of the 4 PRH estates ranged from 27.55 to 38.01 (ranking 10th, 18th, 29th, 54th and 62th in domestic premises — Note 35). Audit noted that justifications for including these 36 lifts in the provisional programme had not been recorded in the LMTVC meeting minutes, including other factors (such as manpower and resources — see para. 3.7) which might have been taken into consideration by LMTVC.

Audit noted that in determining the priority of lift replacement, in addition to lift safety and performance (see para. 3.5), LMTVC also took into account the availability of budget, manpower and resources (see para. 3.7). In order to better support evidence-based decision made by LMTVC, HD needs to enhance the documentation of the justifications in determining the priority of lift replacement works under LM Programme.

Some aged lifts not included in LM Programme in/before 2024-25

3.9 According to HD, 899 lifts in domestic premises and 87 lifts in non-domestic premises were assessed in the technical evaluation reports submitted to LMTVC in late 2022 or early 2023 for the provisional LM Programme of 2024-25. As at 30 June 2023, there were 104 lifts maintained by HD with service years of 35 or more. Audit noted that while all the 64 lifts in domestic premises with service years of 35 or more were planned for LM works in/before 2024-25, 35 out of 40 lifts in non-domestic premises with service years of 35 or more were not planned for LM works in/before 2024-25 (see Table 8).

Note 35: *Two lifts in different blocks were assessed for a PRH estate.*

Table 8

Plan for LM works for lifts with service years of 35 or more
(as at 30 June 2023)

Number of years in service	Number of lifts			
	Total (a)	Included in LM Programme in/before 2024-25 (b)	Included in tentative long-term LM Programme from 2025-26 to 2031-32 (c)	Not included in LM Programme (d) = (a)–(b)-(c)
Lifts in domestic premises				
≥35 to <40	52	52	0	0
≥40 to <45	12	12	0	0
Sub-total (i)	64	64	0	0
Lifts in non-domestic premises				
≥35 to <40	4	1	3	0
≥40 to <45	33	4	29	0
≥45 to <50	3	0	1	2
Sub-total (ii)	40	5	33	2
			35	
Total (iii)=(i)+(ii)	104	69	33	2

Source: *Audit analysis of HD records*

Remarks: *As mentioned in Note 33 to paragraph 3.6, the tentative long-term LM Programme will be updated in light of the annual review of lift technical assessments, workload and staff resources, availability of budget and other commitments.*

3.10 As shown in Table 8 in paragraph 3.9, 33 aged lifts in non-domestic premises had been tentatively scheduled for replacement under LM Programme from 2025-26 to 2031-32 and 2 aged lifts had not been included in LM Programme. Of the 35 aged lifts, Audit reviewed the annual technical evaluation reports submitted for 4 lifts located in the shopping centres or carpark building in PRH estates (1 lift aged between 40 and 45 years and 3 lifts aged more than 45 years) from December 2018 to January 2023 and noted that:

(a) ***Shopping Centre A.*** Two lifts (i.e. Lifts A and B) were installed in 1978 (i.e. with service years of 46 as at 30 June 2023) in Shopping Centre A in a PRH estate. Shopping Centre A was built on a sloping site with shops, a social service centre, a kindergarten and a carpark on the ground floor to the 4th floor and shopping centres and an elderly centre on the 5th to 8th floors. It is surrounded by public streets serving as the Emergency Vehicular Access or connecting to podium/subway directly. Only two lift landings are provided on the ground floor and the 6th floor. According to the technical evaluation reports:

(i) the breakdown rates of Lift A generally were maintained at the higher level, ranging from 0.45 to 0.75, compared with the average breakdown rates of lifts maintained by HD; and

(ii) full implementation of LM works might not be feasible due to site constraints, i.e. the headroom of lift machine room did not fulfill the requirement of the Code of Practice for Building Works for Lifts and Escalators issued by the Buildings Department.

In November 2020, the Buildings Department issued some comments on the fire safety improvement proposal of Shopping Centre A in relation to the Fire Safety (Commercial Premises) Ordinance (Cap. 502). In response to HD's revised fire safety improvement proposal submitted in August 2021 and the Fire Services Department's comments on the revised proposal received in November 2021, HD's proposal of converting Lift A to a fireman's lift (including new additional lift landing openings on the 2nd and 4th floors) was accepted in principle by the Buildings Department in December 2021. According to HD, major improvement works was planned to be carried out in order to upgrade for the provision of a fireman's lift in complying with the Fire Safety (Commercial Premises) Ordinance, together with the provision of safety enhancement devices in Lift A by means of partial LM works. The project team would further review the scope of the partial LM works in Shopping Centre A in conjunction with the fire safety improvement works, and work out the implementation programme. In the meantime, the project team had carried out improvement and enhancement works such as installing fire resistance rating separating panels between Lifts A and B inside the lift well to facilitate future works;

(b) ***Shopping Centre B.*** A general freight lift (Note 36) was installed in 1979 (i.e. with service years of 44 as at 30 June 2023) in Shopping Centre B in a PRH estate. There are 2 floors in Shopping Centre B with a market on the ground floor, and restaurants, shops, non-governmental organisations for elderly or disabled persons on the podium. According to the technical evaluation reports:

(i) the breakdown rates of the lift were significantly higher than the average breakdown rates of lifts maintained by HD, ranging from 0.42 to 1.08;

(ii) there were some limitations in carrying out LM works, e.g. the non-compliance of the height of machine room and the maximum available car area;

(iii) in order to minimise the lift breakdown, several improvement and replacement works had been completed in recent years, e.g. re-condition of aged car door and deteriorated landing door sill in 2017 and re-condition of the aged mild steel landing door in 2018; and

(iv) as there was only one lift in Shopping Centre B, prolonged suspension for LM works would not be desirable. Partial LM works would be considered and the project team would start to plan for the works.

According to the meeting minutes of LMTVC in February 2023, LM works of the lift in Shopping Centre B was scheduled in 2026-27 tentatively and to be reviewed annually. During Audit's visit (with the accompany of HD staff) on 11 August 2023, Audit noted that there were no barrier-free facilities (e.g. ramp) connecting the ground floor and the podium and no intercom system installed inside the lift car; and

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Note 36: *A notice "This is a general freight lift and shall not be used as a passenger lift" was displayed next to the lift button panel on the ground floor and the podium. During Audit's visit on 11 August 2023, Audit noted that although the lift was intended to be used as a general freight lift, some people made use of it as a passenger lift.*

(c) ***Carpark Building A.*** A lift was installed in 1977 (i.e. with service years of 46 as at 30 June 2023) in a 9-storey carpark building (Carpark Building A) in a PRH estate. According to the technical evaluation reports:

(i) the breakdown rates of the lift were higher than the average breakdown rates of lifts maintained by HD, ranging from 0.17 to 0.75. Despite this, there was no major breakdown and equipment fault recorded in the past years; and

(ii) since only one lift was provided in Carpark Building A and the condition of the lift was maintained in an acceptable level, there was no imminent need for LM works.

According to the meeting minutes of LMTVC in February 2023, LM works of the lift in Carpark Building A was scheduled in 2025-26 tentatively and to be reviewed annually. During Audit's visit (with the accompany of HD staff) on 11 August 2023, the lift car door was not closing smoothly.

3.11 In Audit's view, HD needs to:

(a) expedite the partial LM works in Shopping Centre A in conjunction with the fire safety improvement works; and

(b) keep in view the need of carrying out full/partial modernisation works for aged lifts (e.g. lifts in Shopping Centre B and Carpark Building A) included in the tentative long-term LM Programme, taking into consideration factors such as breakdown rates, technical feasibility, cost effectiveness and suspension time.

Need to remind DMOs/PSAs to check the data accuracy in evaluating the lifts for LM works

3.12 According to HD, a total of 95 technical evaluation reports (69 involving 899 lifts in 50 PRH estates and 26 involving 87 lifts in 26 non-domestic premises) were submitted to LMTVC in late 2022 or early 2023 for the provisional LM Programme of 2024-25. Audit examined the 69 technical evaluation reports for 50 PRH estates and noted that 2 lifts with service years of 26 in a PRH estate were

not assessed in the respective technical evaluation report. In July 2023, HD informed Audit that:

(a) the respective DMO unintentionally omitted the assessment of the 2 lifts as they were in a block which had a similar name with another block undergoing LM works; and

(b) upon Audit's enquiry, the technical evaluation report for the 2 lifts was submitted in July 2023 and they were evaluated with no imminent need for LM works.

With the increasing number of aged lifts maintained by HD (see para. 3.3(a)), Audit considers that HD needs to remind DMOs/PSAs to check the data accuracy such that all lifts with service years of 25 or more are evaluated annually in accordance with HA's strategy towards LM.

Audit recommendations

3.13 **Audit has *recommended* that the Director of Housing should:**

(a) **enhance the documentation of the justifications in determining the priority of lift replacement works under LM Programme in order to better support evidence-based decision made by LMTVC;**

(b) **expedite the partial LM works in Shopping Centre A in conjunction with the fire safety improvement works;**

(c) **keep in view the need of carrying out full/partial modernisation works for aged lifts included in the tentative long-term LM Programme, taking into consideration factors such as breakdown rates, technical feasibility, cost effectiveness and suspension time; and**

(d) **remind DMOs/PSAs to check the data accuracy such that all lifts with service years of 25 or more are evaluated annually in accordance with HA's strategy towards LM.**

Response from the Government

3.14 The Director of Housing agrees with the audit recommendations. She has said that:

(a) having modernised over 1,500 lifts for more than 60 PRH estates since the start of LM Programme, HD will enhance the recording about the decisions on the priority of lift replacement works under LM Programme, with justifications backed by factual details and evidences put forth by the respective project teams, into the meeting minutes of LMTVC;

(b) HD has carried out improvement and enhancement works such as installing fire resistance rating separating panels between Lifts A and B inside the lift well to facilitate future works. HD will expedite and keep track the works approval of the relevant authority for reviewing the scope of the partial LM works in Shopping Centre A in conjunction with the fire safety improvement works, and working out the implementation programme;

(c) HD has conducted partial LM works previously. HD will continuously keep in view the need of carrying out full/partial modernisation works for aged lifts accordingly; and

(d) HD will continue to enhance awareness of DMOs/PSAs on data accuracy to ensure that all lifts with service years of 25 or more are evaluated annually in accordance with HA's strategy towards LM (i.e. implementing a reminder system and carrying out diligent checks by LM coordination team).

Monitoring of Lift Modernisation works

3.15 HD has issued guidelines and manual which govern the administration of LM contracts, as follows:

(a) BSI, Assistant BSI or Works Supervisor of the project teams is required to conduct site inspections at least twice a week and record the inspection details and/or work progress in the Site Diary every day until works completion. "No site work" should be marked on the page of the Site Diary

for the day without site activity and be signed properly. The page for the day should not be left blank;

(b) Senior BSI or BSI should check and endorse all the entries in the Site Diary twice a month;

(c) a warning letter for serious incidents for delay or poor performance signed by the Contract Manager shall be delivered to the contractor to remind contractor of his contractual obligation; and

(d) regular contract meetings shall be arranged with the contractor at a pre-determined interval. Work progress, contractor's performance and problems should be discussed during the meeting.

In addition, in order to monitor the LM works at headquarters level, the Coordination Meeting on Lift Condition Appraisal/Refurbishment Projects is held half-yearly to discuss the progress of LM works. It is chaired by the Chief Manager in a Support Services Section of EMD and the members include Senior Building Services Engineers from the 7 RMOs.

Room for improvement in monitoring of LM works

3.16 ***Need to remind HD staff to work in accordance with HD's guidelines and manual in monitoring LM works.*** Audit examined the Site Diaries for LM works of 2 PRH estates from January to December 2022 and noted the following irregularities:

(a) for a PRH estate, a BSI only checked and endorsed all the entries once a month in 2 (17%) of 12 months instead of twice a month (see para. 3.15(b)); and

(b) one page of a Site Diary was left blank (see para. 3.15(a)).

Audit considers that HD needs to remind its staff to work in accordance with HD's guidelines and manual in monitoring LM works.

Prolonged lift shut-down period for LM works

3.17 According to HD, an LM project involves:

(a) ***Replacement of aged lift installation***. The works include replacement of lift motor drives and control drives, lift car cage, guiderails, lift architrave and lift doors, lift buffers, all trunking, wiring and the associated accessories;

(b) ***Minor building supporting works.*** The works include erection of lift architraves, landing doors and the associated grouting works, tiles installation at lift landing doors and forming of counter slope in front of each landing sill; and

(c) ***Building works.*** The works include erecting the fire rated hoarding during construction stage, repairing the lift shaft such as spalling concrete, forming wall and slab openings, and repairing lift pit.

3.18 As lift contractors are responsible for lift replacement (and minor building supporting works) while district term contractors (Note 37) are responsible for building works, there are numerous site handovers between the lift contractors and district term contractors. Since 2013, a streamlined process for LM works has been implemented with the aim to reduce the long construction time arising from LM works with extensive building supporting works. With the streamlined process, the numerous site handovers (usually 8 to 10 times) could be reduced to 5 times.

3.19 According to HD, the aim of the streamlined process was to shorten the shut-down period of lifts undergoing LM works from 10.5 to 7.5 months. Audit analysed the shut-down period for the 238 lifts with LM works completed during the period from 2018-19 to 2022-23 (see Table 9 — Note 38) and noted that:

Note 37: *A district term contractor's responsibilities include the maintenance, repairs and refurbishment of, and alternations and additions to any properties, sites and slopes upon the issue of works orders.*

Note 38: *Under an LM contract, the LM works are conducted in phases and each phase generally includes a number of lifts. In this connection, only lifts in completed phases are included for analysis purposes.*

(a) 1 (0.4%) lift had been shut down for 7.5 months or less;

(b) 188 (79.0%) lifts had been shut down for more than 7.5 to 10.5 months; and

(c) 49 (20.6%) lifts had been shut down for more than 10.5 to 14.5 months.

Table 9

Analysis of shut-down period for lifts with LM works completed (2018-19 to 2022-23)

Lift shut-down period (Month)	Number of lifts	
≤7.5	1 (0.4%)	
>7.5 to ≤8.5	45 (18.9%)	188 (79.0%)
>8.5 to ≤9.5	75 (31.5%)	
>9.5 to ≤10.5	68 (28.6%)	
>10.5 to ≤11.5	31 (13.0%)	49 (20.6%)
>11.5 to ≤12.5	9 (3.8%)	
>12.5 to ≤13.5	6 (2.5%)	
>13.5 to ≤14.5	3 (1.3%) (Note)	
Total	238 (100.0%)	

Source: *Audit analysis of HD records*

Note: *The longest lift shut-down period was 13.9 months.*

3.20 According to HD, the required time for LM works for each lift may vary according to various factors such as longer time for repairing the lift shaft and enlarging ventilation opening. However, Audit noted that of the 238 lifts with LM works completed during the period from 2018-19 to 2022-23, 190 (80%) had not resumed service by the planned completion dates as stated in the contracts, resulting in delays in lift resumption of 2 to 169 days (averaging 32 days). Audit considers

that HD needs to take measures to reduce the lift shut-down period in order to minimise the disruption to lift users as far as practicable.

Need to resume lift services as soon as possible after obtaining use permits

3.21 Upon completing new lift installation, a use permit should be obtained from EMSD so that the lift could be opened for public use. Audit compared the actual lift service resumption dates with the issue dates of the use permits for the 238 lifts with LM works completed during the period from 2018-19 to 2022-23 (see Table 10) and found that:

(a) 12 (5%) lifts resumed service on the dates the use permits were issued;

(b) 47 (20%) lifts took 1 to 10 days to resume service after obtaining use permits;

(c) 149 (63%) lifts took 11 to 30 days to resume service after obtaining use permits; and

(d) 30 (12%) lifts took more than 30 days to resume service after obtaining use permits.

Table 10

Number of days for resuming lift services after obtaining use permits from EMSD (2018-19 to 2022-23)

Number of days for resuming lift services after obtaining use permits (Day)	Number of lifts	
0	12 (5%)	
1 to 10	47 (20%)	
11 to 20	93 (39%)	149 (63%)
21 to 30	56 (24%)	
31 to 40	17 (7%)	
41 to 50	10 (4%)	30 (12%)
51 to 60	1 (0%)	
61 to 70	2 (1%) (Note)	
Total	238 (100%)	

Source: *Audit analysis of HD records*

Note: *The longest time required for resuming lift services after obtaining use permits from EMSD was 62 days.*

3.22 Upon enquiry, HD informed Audit in October 2023 that the delay in resuming the lift services was mainly due to the necessary final touch-ups and making good works to furnishing of lift cars and lift lobbies. Audit considers that HD needs to take measures to resume the lift services as soon as possible after obtaining the use permits.

Audit recommendations

3.23 **Audit has *recommended* that the Director of Housing should:**

(a) **remind HD staff to work in accordance with HD's guidelines and manual in monitoring LM works;**

(b) **take measures to reduce the lift shut-down period in order to minimise the disruption to lift users as far as practicable; and**

(c) **take measures to resume the lift services as soon as possible after obtaining the use permits.**

Response from the Government

3.24 The Director of Housing agrees with the audit recommendations. She has said that:

(a) with adequate and well-established LM guidelines in hand, DMOs/PSAs have followed the guidelines to conduct site inspections. HD will take measures (i.e. training) to remind its staff to record the results of site inspection activities in accordance with HD's guidelines in monitoring LM works;

(b) unlike many LM works in private sectors, HD adopts a comprehensive and full LM under which the entire machinery for the lift installation is totally renewed and building fabric of the lift machine room, lift shaft and lift pit will be thoroughly inspected, rectified, modified or re-conditioned as necessary to ensure its structural integrity and safety to meeting the new statutory requirements as far as possible. In some cases, extra lift landing openings would also be provided to enhance lift services and access for tenants, should site and technical constraints permit. HD will try to strike a balance between the scope of work and the shut-down time for LM works, with the view to providing better and safer lift services to tenants. HD will also further review the project management of site works and take measures to ensure that the project teams seek every opportunity to make endeavours to shorten the shut-down periods as far as practicable; and

(c) HD will take measures to resume the lift services as soon as possible by enhancing the guidelines and procedures in administrating LM projects.

PART 4: OTHER SAFETY ENHANCEMENT MEASURES FOR LIFTS AND ESCALATORS

4.1 This PART examines HD's work in implementing other safety enhancement measures for lifts and escalators, focusing on:

(a) lift safety enhancement works (paras. 4.2 to 4.8); and

(b) periodic overhaul of escalators (paras. 4.9 to 4.13).

Lift safety enhancement works

4.2 In 2020, HA commenced the lift safety enhancement works to equip the lifts maintained by HD with the 3 latest safety devices (see para. 1.11) as promulgated in EMSD's Guidelines. The lift safety enhancement works are performed by the lift contractors via works orders under TMCs. As the requirements of the 3 latest safety devices had been implemented by EMSD in 2002, 2003 and 2007 respectively, lifts under projects tendered out afterwards have been equipped with the relevant safety devices. At the time prior to the commencement of the lift safety enhancement works in 2020, 3,685 lifts were not fully equipped with the 3 latest safety devices (i.e. not equipped with any latest safety devices or only equipped with one or two latest safety devices).

Need to closely monitor the progress of lift safety enhancement works

4.3 In view of the large number of lifts not fully equipped with the 3 latest safety devices, HA has established criteria for setting priority for lift safety enhancement works. The criteria are summarised below:

(a) ***Service life after the enhancement works***. Considering the prudent use of public resources, the residual service life of lifts after retrofitting should not be less than 10 years before it is due for tendering for modernisation under LM Programme;

(b) ***Number of the latest safety devices not equipped.*** Those lifts without any of the 3 latest safety devices would be given higher priority for the enhancement works;

(c) ***Nuisance to the sitting tenants.*** To reduce the impact from shutting down the lifts for enhancement works, higher priority will be given to blocks having at least two lifts serving each landing such that minimum lift service can be maintained during the shut-down period. On the other hand, some lift models that require total replacement of lift motors for the provision of latest safety devices which involves a longer suspension of lift services as long as three months or more will be given the lowest priority; and

(d) ***Capability of lift contractors.*** Comments from lift contractors were sought for enhancement works to ensure that they have sufficient resources to cope with the works.

4.4 Of the 3,685 lifts not fully equipped with the latest safety devices, HD shortlisted 1,871 lifts as prioritised items to be enhanced by 2031-32 according to the above criteria. Audit's examination revealed that:

(a) up to 30 June 2023, of the 1,871 lifts shortlisted as prioritised items, enhancement works were completed for 318 (17%) lifts (see Table 11); and

Table 11

Progress of lift safety enhancement works on prioritised items (up to 30 June 2023)

Number of the latest safety devices to be installed	Number of lifts			Percentage of completion (d) = (a) ÷ (c) × 100%
	Works completed (a)	Works in progress/ not yet commenced (b)	Total (c) = (a) + (b)	
3	170	213	383	44%
2	142	595	737	19%
1	6	745	751	1%
Overall	318	1,553	1,871	17%

Source: *Audit analysis of HD records*

(b) according to HD's internal meeting held in January 2022, schedule of the lift safety enhancement works was updated with works in domestic premises to be completed by 2029-30 and works in non-domestic premises to be completed by 2031-32.

Audit considers that HD needs to continue to closely monitor the progress of the lift safety enhancement works and complete the works for the prioritised items in accordance with the planned programme as far as practicable.

Need to shorten the shut-down period of lifts for implementing enhancement works

4.5 Prior to the full implementation of the lift safety enhancement works in September 2020, HA implemented two batches of trial projects to retrofit 21 lifts of different brands/models and servicing ages with the 3 latest safety devices. According to the results of the trial projects in 2019 and 2020, the shut-down period of each lift for undergoing the lift enhancement works was normally around 4 to 6 weeks. Up to 30 June 2023, safety enhancement works were completed for 318 lifts. Audit analysed the shut-down period of the 318 lifts and found that 52 (16%) took more than 6 weeks to complete the enhancement works (see Table 12).

Table 12

Analysis of shut-down period of lifts for the safety enhancement works (April 2020 to June 2023)

Shut-down period (Week)	Works completed during				Overall	
	2020-21	2021-22	2022-23	2023-24 (up to 30 June 2023)		
	(Number of lifts)					
≤6	44	107	104	11	266 (84%)	
>6 to ≤8	8	11	19	6	44 (14%)	52 (16%)
>8 to ≤10	3	1	4 (Note)	0	8 (2%)	
Total	55	119	127	17	318 (100%)	

Source: *Audit analysis of HD records*

Note: *The longest shut-down period was 9.3 weeks.*

4.6 Upon enquiry, HD informed Audit in August 2023 that prolonged shut-down period of more than 8 weeks for the lift safety enhancement works was mainly due to:

(a) clash with the peak seasons near year end and the Chinese New Year;

(b) problem in manpower arrangement due to the epidemic of COVID-19; and

(c) technical difficulties encountered during testing and commissioning of works.

With a view to minimising the inconvenience caused to lift users, Audit considers that HD needs to endeavour to shorten the shut-down period of lifts for lift safety enhancement works as far as practicable.

Audit recommendations

4.7 **Audit has *recommended* that the Director of Housing should:**

(a) **continue to closely monitor the progress of the lift safety enhancement works and complete the works for the prioritised items in accordance with the planned programme as far as practicable; and**

(b) **endeavour to shorten the shut-down period of lifts for lift safety enhancement works as far as practicable.**

Response from the Government

4.8 The Director of Housing agrees with the audit recommendations. She has said that HD:

(a) has commenced the lift safety enhancement works since 2020 and gradually ramped up the numbers of lifts to be enhanced annually after the familiarisation period. HD has confidence to complete the lift safety enhancement works for all prioritised lifts by 2031-32 as planned. HD will continue to closely monitor the progress to ensure that the lift safety enhancement works for the prioritised items are completed in accordance with the planned programme; and

(b) has endeavoured to keep the lift shut-down period as short as possible. HD will further review the project management of lift safety enhancement works and take measures to ensure that the project team seek every opportunity to make endeavours to shorten the shut-down periods as far as practicable.

Periodic overhaul of escalators

4.9 With a view to further enhancing the safety of escalators, in addition to regular maintenance, in 2003, HD imposed a requirement of periodic overhaul of all escalators which requires the complete dismantling of escalators for cleaning, checking and inspection, particularly for all the moving parts subject to continuous

wear and tear. Any moving parts with excessive wear and tear should be replaced. According to HD's EMD Instruction:

(a) the preparation and monitoring of the periodic overhaul programme, recording and maintenance of the actual dates of the overhauls for the existing escalators in the properties shall be carried out by the respective DMOs/PSAs;

(b) each escalator should be overhauled 3 years after the expiry of the maintenance period stated in the contracts (normally 1 to 2 years after the installation of the escalators);

(c) subsequent overhauls for an escalator should be carried out once every 3 years normally. However, the interval between two successive overhauls for an escalator can be adjusted after assessing the condition observed in the preceding overhaul and the operating conditions of the escalator (e.g. age, usage, environment etc.), but shall not in any case be more than 6 years (Note 39); and

(d) for any escalator which does not follow the 3-year overhaul cycle, reasons should be properly recorded with new schedule proposed.

As mentioned in paragraph 1.12, additional safety features would be installed in escalators during the periodic overhaul.

Need to conduct periodic overhaul of escalators in accordance with HD's Instruction

4.10 Audit examined the periodic overhauls of the 277 escalators maintained by HD as at 30 June 2023 and noted that:

(a) 65 (24%) escalators were within 3 years after the maintenance period. No overhauls were required for these escalators;

Note 39: *Prior to November 2018, the EMD Instruction allowed adjustments to be made to the interval between two successive overhauls without specifying a maximum period. With effect from November 2018, the interval shall not be in any case more than 6 years.*

(b) for 81 (29%) escalators, only one overhaul was conducted after the maintenance period. 74 (91% of 81) escalators had their overhaul conducted more than 3 years after the expiry of the maintenance period (see Table 13); and

Table 13

Escalators with only one overhaul performed up to 30 June 2023

Interval between the overhaul and the expiry of maintenance period (Year)	Number of escalators		Percentage	
≤3	7		9%	
>3 to ≤4	16		20%	
>4 to ≤5	19		23%	
>5 to ≤10	22		27%	
>10 to ≤15	2	74	3%	91%
>15 to ≤20	6		7%	
>20 to ≤25	5		6%	
>25 to ≤30	4 (Note)		5%	
Total	81		100%	

Source: *Audit analysis of HD records*

Note: *The longest interval between the overhaul and the expiry of maintenance period was 29.9 years.*

(c) of the remaining 131 (47%) escalators with 2 or more overhauls conducted after the maintenance period (see Table 14):

(i) 39 (30% of 131) escalators had their latest overhaul conducted within 3 years after the previous overhaul;

(ii) 76 (58% of 131) escalators had their latest overhaul conducted more than 3 years but within 6 years after the previous overhaul; and

(iii) 16 (12% of 131) escalators had their latest overhaul conducted more than 6 years after the previous overhaul, at variance with the requirements stipulated in HD's Instruction (see para. 4.9(c)).

Table 14

Escalators with 2 or more overhauls performed up to 30 June 2023

Interval between the latest 2 overhauls (Year)	Number of escalators		Percentage	
≤3	39		30%	
>3 to ≤4	54		41%	
>4 to ≤5	15	76	12%	58%
>5 to ≤6	7		5%	
>6 to ≤7	5		4%	
>7 to ≤8	0		0%	
>8 to ≤9	5	16	4%	12%
>9 to ≤10	1		0%	
>10 to ≤16	5 (Note)		4%	
Total	131		100%	

Source: *Audit analysis of HD records*

Note: *The longest interval between two overhauls was 15.4 years.*

4.11 In August and September 2023, HD informed Audit that:

(a) escalator overhaul was a condition-based maintenance works but not a statutory requirement; and

(b) escalator contractors carried out weekly routine maintenance of escalators and necessary replacement of parts to maintain good operating condition of the escalators in accordance with the statutory requirement (see para. 2.7(a)).

With a view to further enhancing the safety of escalators in addition to regular maintenance, Audit considers that HD needs to continue to monitor the periodic overhauls of escalators such that the overhauls are conducted in accordance with HD's Instruction.

Audit recommendation

4.12 **Audit has *recommended* that the Director of Housing should continue to monitor the periodic overhauls of escalators such that the overhauls are conducted in accordance with HD's Instruction.**

Response from the Government

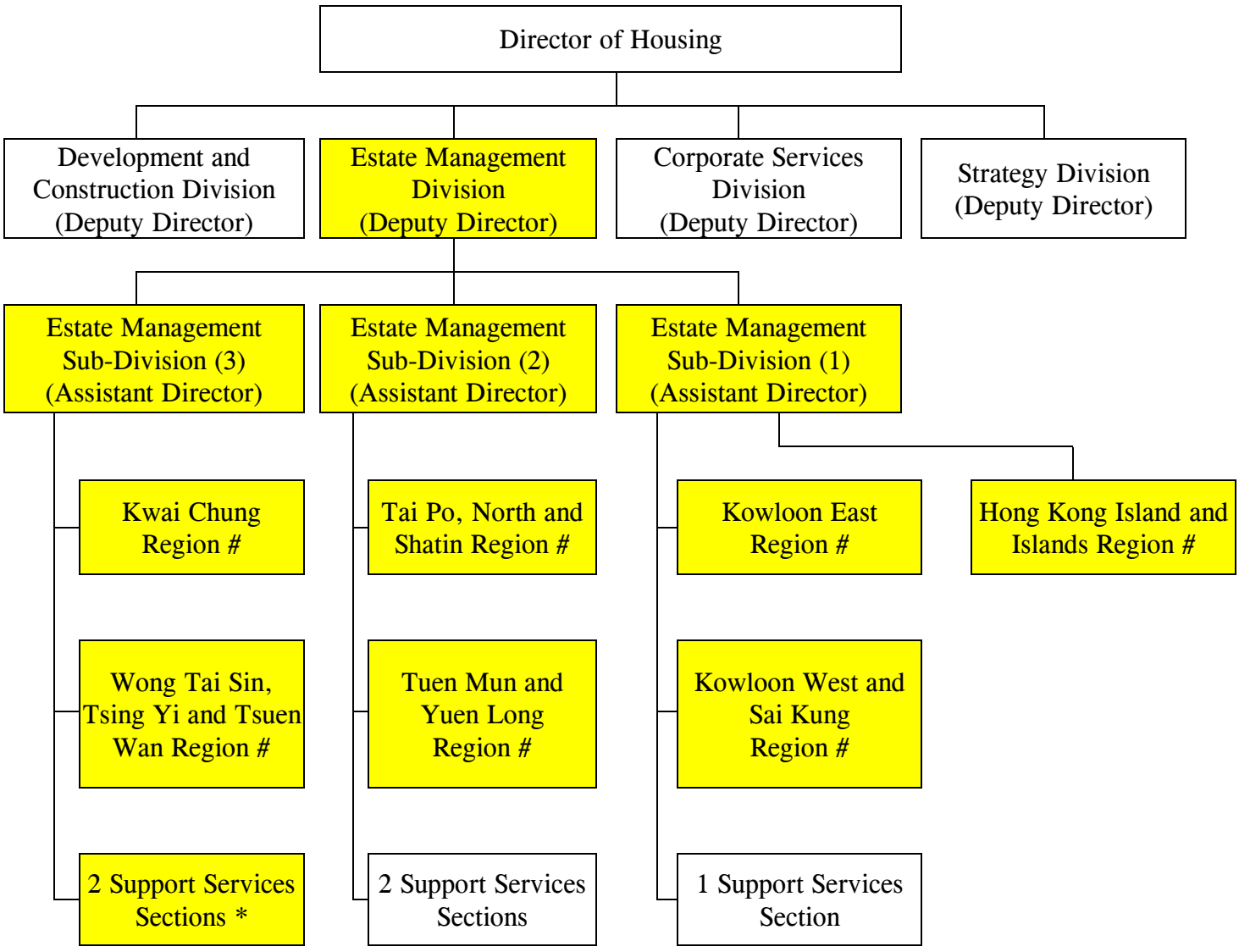
4.13 The Director of Housing agrees with the audit recommendation. She has said that:

(a) all escalators (except the newly handed over ones) maintained by HD have been overhauled at least once; and

(b) HD will continue to monitor the periodic overhauls of escalators such that they are conducted in accordance with HD's Instruction.

Appendix A
(para. 1.14 refers)

Housing Department:
Organisation chart (extract)
(30 June 2023)



Legend: Divisions/offices covered in this Audit Report
\# There are a number of DMOs and a PSAU under each Region
* Only one Support Services Section covered in this Audit Report

Source: *HD records*

Appendix B
(para. 2.32 refers)

Compliance with checking frequency of the 8 main maintenance items for selected lifts maintained by Contractors B to H (January to December 2022)

Eight main items	Estate P		Estate Q	Estate R	Estate S		
	Contractor						
	B	E	C	D	F	G	H
1. Traction machine, brake	✓	✓	✓	✓	✓	✓	✓
2. Suspension ropes, drums, sheaves and pulleys	✓	✓	✓	✓	✓	✓	✓
3. Control, safety switch	×	✓	✓	✓	✓	✓	✓
4. Overspeed governor, safety gear	✓	✓	×	✓	✓	✓	✓
5. Landing door, car door	×	✓	✓	✓	✓	✓	×
6. Devices inside the lift car	✓	✓	✓	✓	✓	✓	×
7. Devices inside the lift pit (shaft)	✓	✓	✓	✓	✓	×	✓
8. ACOP device and UCMP device	✓	×	×	×	✓	✓	N/A (Note)

Legend: ✓ Actual checking frequency meeting the requirements as stated in maintenance schedules
× Actual checking frequency not meeting the requirements as stated in maintenance schedules

Source: *Audit analysis of HD records*

Note: *The checking frequency for ACOP device and UCMP device by Contractor H was not stated in the maintenance schedule.*

Remarks: *For each contractor, Audit selected one lift for examination.*

Appendix C

Acronyms and abbreviations

ACOP	Ascending car overspeed protection
Audit	Audit Commission
BSI	Building Services Inspector
BSMASS	Building Services Maintenance Assessment Scoring System
CST	Central Services Team
DBS	Double brake system
DLB	Digital log-book
DMO	District Maintenance Office
EMD	Estate Management Division
EMSD	Electrical and Mechanical Services Department
HA	Hong Kong Housing Authority
HD	Housing Department
L/E	Lift or escalator
LM	Lift Modernisation
LMTVC	Lift Modernisation Technical Vetting Committee
MPRC	Maintenance Planning and Review Committee
PRH	Public rental housing
PSA	Property Services Agent
PSAU	Property Service Administration Unit
RMO	Regional Management Office
TMC	Term maintenance contract
TPS	Tenants Purchase Scheme
UCMP	Unintended car movement protection