香港房屋委員會
Hong Kong Housing Authority

Your Ref. : CB4/PAC/R81
Our Ref. : HD 3-8/SD/BW-5/8/15 (C)

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13 December 2023

Clerk to Public Accounts Committee
Legislative Council Complex
1 Legislative Council Road
Central, Hong Kong
(Attention: Ms. Shirley CHAN)

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Dear Ms. CHAN,

Public Accounts Committee
Consideration of Chapter 3 of the Director of Audit's Report No. 81
Maintenance and modernisation of lifts and escalators in public rental housing estates

Thank you for your letter dated 1 December 2023 to the Secretary for Housing concerning the captioned Chapter 3 of the Director of Audit's Report. Please find our response in the Annex to this letter to facilitate consideration of the matter by the members of the Public Accounts Committee.

Yours faithfully,

(HONG Wing-kit)
for Secretary for Housing

Encl.

c.c. Secretary for Housing
Permanent Secretary for Housing / Director of Housing
Secretary for Financial Services and the Treasury
Director of Audit
} w/encl.

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Annex

Response to questions raised by Public Accounts Committee on 1 December 2023 for Consideration of Chapter 3 of the Director of Audit's Report No. 81 (the Audit Report) Maintenance and modernisation of lifts and escalators in public rental housing estates

Part 2: Maintenance of lifts and escalators

(a) The Housing Department (HD) attaches great importance to lift safety. HD has been adopting proprietary maintenance to ensure absolute liability of the manufacturers on lift safety and readily available maintenance services from the lift manufacturers could be obtained, including the direct availabilities of spare parts and technical backup.

3 Lifts with Service Suspended for Over 60 Days

The 3 cases with lift service suspended for over 60 days mentioned in the Audit Report happened in the same estate in the period of 2022 to early 2023. These 3 cases were mainly attributable to parts failure or damage of motor-generator sets (commonly known as "motors") used in the lifts. Details of the cases are shown below:

Estate	Block	Lift no.	Suspension Date	Resumption Date	No. of Suspension Days	Reason of Suspension
Oi Tung Estate	Oi Chak House	L5	29/11/2022	8/2/2023	72	Repair of Lift Motor
	Oi Ping House	L5	13/2/2023	4/5/2023	81	
	Oi Ping House	L6	24/1/2022	22/4/2022	89	

Although HD had promptly arranged lift contractor for repairs, as the motors were phased-out products, the lift contractor could not replace the lift motors by the new ones immediately. Also, the manufacturer ran out of spare parts and it was unable to find replacement parts locally. Therefore, the contractor took time to order and obtain the replacement parts for repair.

Repairing of these aged motors normally takes four to six weeks. However, the cases took place during the pandemic of COVID-19 and at the beginning of resumption of normalcy. There was significant impact on both manpower and work progress of the repair workshop. The lead time for material ordering and transportation were also adversely affected during the period. As such, longer time for the motor repairs was required.

Drawing on the experience of the relevant cases, we have instructed the contractors to stock up with more spare parts accordingly, and have made special arrangements to retain the old motors in good condition that are dismantled during Lift Modernisation Programme as replacement parts when there is no other alternative, with a view to shortening the resumption time in repairing similar aged motors in the future.

7 Lifts with Service Suspended for Over 2 Days Twice within 6 Months

The designs of lifts involve a wide range of mechanical and electronic components with many protective devices. In the control system circuits and safety control circuits, different components also have multi-faceted and multiple interlocking relationships to monitor and ensure safe operation of lifts. Therefore, HD has always demanded lift contractors to be vigilant and prudent in carrying out detailed inspections to identify the root causes, with a view to reducing repeated service suspension.

Annex

Details of the 7 lifts with service suspended for over 2 days twice within 6 months are shown below:

Estate	Block	Lift no.	Suspension Date	Resumption Date	No. of Suspension Days	Reason of Suspension (See Note)								
						1	2	3	4	5	6	7	8	9
Kwai Chung Estate	Yuk Kwai House	L4	9/2/2020	11/2/2020	3	✓								
			16/2/2020	18/2/2020	3		✓							
Kwai Fong Estate	Kwai On House	L7	10/9/2020	15/9/2020	6									✓
			1/3/2021	5/3/2021	5								✓	
Kwai Shing East Estate	Shing Hing House	L3	26/3/2022	31/3/2022	6								✓	
			8/7/2022	11/7/2022	4			✓						
Kwong Tin Estate	Kwong Ngan House	L1	28/3/2022	1/4/2022	5									✓
			14/9/2022	17/9/2022	4								✓	
Tung Wui Estate	Wui Yan House	L4	25/10/2020	27/10/2020	3							✓		
			21/4/2021	23/4/2021	3									✓
Un Chau Estate	Un Chi House	L1	27/3/2022	29/3/2022	3			✓						
			29/3/2022	1/4/2022	4						✓			
Yee Ming Estate	Yee Ching House	L4	14/6/2022	17/6/2022	4				✓					
			25/6/2022	27/6/2022	3					✓				

Note:
1) Repair control circuit board for car door
2) Repair control circuit board for landing door
3) Repair control circuit board for driving unit
4) Repair car door panel
5) Repair car door driving unit
6) Repair other control circuitry
7) Adjust machine brake components
8) Repair lift motor
9) Adjust suspension rope (planned maintenance works, not equipment breakdown)

From the details tabulated above, it can be seen that all cases with service suspended twice within 6 months were due to different causes and not due to repeated failures of the same component. In other words, the two suspensions of each of these 7 lifts were not directly related. In addition, some cases involving adjustment of suspension ropes were planned maintenance works and not equipment breakdown. The disassembly, re-assembly and adjustment involved in replacing motor parts and adjusting suspension ropes were relatively time-consuming and therefore took longer to resume service.

(b) In addition to the routine monitoring of lift/escalator contractors by the District Maintenance Offices (DMOs) and Property Services Agents (PSAs) of HD, the Central Services Team (CST) will perform additional surprise checks for lift and escalator maintenance. This arrangement aims to carry out independent checking on overall operation of lifts and escalators by senior technical staffs at headquarters level to ascertain whether the monitoring of contractors by DMOs/PSAs is effective.

The surprise checks performed by CST are headed by the Chief Technical Officer of HD. They conduct at least 18 surprise checks per year but also carry out additional check if necessary or in response to special incidents occurred. Each surprise check therefore may focus on different areas. With the rich experience of the Chief Technical Officer, CST conduct in-depth checking and carry out detailed study and analysis to make pertinent improvement suggestions. From operational considerations, CST did not formulate a checklist for surprise checks, but a surprise check report will be prepared by CST after each surprise check listing out the follow-up actions to be taken by the contractors. A specimen of the report is attached at Appendix 2(b). (English version only)

(c) Please refer to Appendix 2(c) for the specimen of quarterly inspection report provided in the term maintenance contract for completion by the lift or escalator ("L/E") contractor. (English version only)

(d) Lifts and escalators have been kept in safe operating condition through periodic maintenance, periodic examinations, examinations with loads, etc. All lifts and escalators under the management of HD have been thoroughly examined in accordance with the legislation by registered lift engineers and registered escalator engineers, and certified to be in safe operating condition to obtain use permits from the Electrical and Mechanical Services Department (EMSD). Submission of quarterly inspection reports is an additional requirement imposed by HD on lift and escalator contractors in addition to the legislation. According to contract requirements, contractors must submit quarterly inspection reports for each lift and escalator to confirm that they have regularly inspected the condition of various major components of the lift and escalator. The Audit Report mentioned that some contractors were found submitting quarterly inspection reports late in some occasions. Although contractors eventually submitted all the quarterly inspection reports, HD agrees that there is room for improvement in the submission of quarterly inspection reports by contractors.

Note by Clerk, PAC:* *Appendices 2(b) and 2(c) not attached.

Apart from the above, the Audit Report mentioned that some quarterly inspection reports were incomplete, such as the last periodic examination date was not input and not every reports were signed. However, the name of the registered engineer and his registration number were printed on each report, and the contractor's covering letters submitting the reports were also signed by the contractor's senior management. Notwithstanding the above, HD agrees that individual reports should be signed by registered engineers.

Despite the above findings have no material impact to the safe operation of lift and escalator, HD has again urged contractors to timely submit duly completed quarterly inspection reports and every reports be signed by registered engineers. Based on the audit findings, HD has immediately stepped up our effort in monitoring submission of quarterly inspection reports and urged contractors to submit duly completed and signed reports in a timely manner. HD will also take follow-up actions such as issuing reminder letters and warning letters as appropriate as well as reflecting contractors' performance in performance assessments. At present, the overall situation on the submission of quarterly inspection reports has improved, and all quarterly inspection reports for the last quarter have been signed by registered engineers.

Part 3: Lift Modernisation Programme

(e) (i) A copy of the consultancy study report is attached at Appendix 3(e)(i). (English version only)

(ii) Statistics on the number of lift breakdown for the past 3 years by the age of lifts are attached at Appendix 3(e)(ii).

(iii) & (iv) Housing Authority engaged a consultant in 2018 to conduct a study which aimed to improve the strategies and policies of Lift Modernisation Programme at that time by establishing a more systematic, holistic, accountable and customer-oriented approach. The consultancy report has been reviewed and discussed at the Lift Modernisation Technical Vetting Committee (LMTVC) and the Lift Condition Appraisal/Refurbishment (LCAR) Co-ordination Meetings. Upon completion of the consultancy report in 2020, HD has generally accepted the recommendations of the study and already implemented them.

Note by Clerk, PAC: Appendix 3(e)(i) not attached.

Annex

The major recommendations of the consultancy report and HD's follow-up actions are set out below:

(1) Lift age for modernisation (paragraph 10.2.1 of the consultancy report)

The consultancy report suggested that there was no significant difference in the breakdown probability and the major causes of breakdowns for lifts across all age groups. With proper maintenance, lifts with service life up to 40 years can still fulfill relevant safety requirements and hence it was recommended that the age threshold for assessing the need for lift modernisation can be extended from 25 years to 30 years.

As stated in the consultancy report, the need for modernisation works is a decision to be made after considering a basket of factors. Conducting assessment does not mean the decision to carry out the lift modernisation works has been made. The current practice of requiring the submission of technical evaluation report for lifts reaching a service life of 25 years or more is more stringent and such practice was effective all along. The resources required for the assessment are also not significant. Hence, HD considers that it would be more prudent and appropriate to continue with the current practice of assessing lifts with a service life of 25 years or more for lift modernisation.

(2) Lift Modernisation and Lift Safety Enhancement Works (Paragraph 10.2.2 of the Consultancy Report)

The consultancy report recommended that HD should continue to adopt the current arrangement of total replacement approach for lift modernisation works. However, if there are resource and/or technical constraints, apart from replacing the whole lift, consideration can be given to extend the service life of the aged lift by retrofitting three new safety devices, i.e. a double brake system, ascending car overspeed protection device and unintended car movement protection device, by making reference to EMSD's Guidelines for Modernising Existing Lifts.

After conducting feasibility studies and resource planning, in addition to continuing with the Lift Modernisation Programme, we have also rolled out lift safety enhancement projects from 2020 to upgrade lifts without the above-mentioned three safety devices. As at 30 June 2023, 318 lifts have completed the lift safety enhancement works.

(3) Development in Lift Technology (paragraph 10.2.3 of the Consultancy Report) &
(4) Implementation of the Lift Performance Assessment Form (paragraph 10.2.4 of the Consultancy Report)

The consultancy report mentioned that with the advancement of lift technology since the 1990s, the use of solid-state type controllers and variable voltage and variable frequency (VVVF) lift drives became more popular and more energy efficient than the older models. There was hence less urgency to modernise the lifts built in the 1990s than those built in the 1980s. The performance assessment form currently adopted by HD has already included service life and energy efficiency as part of the assessment items.

The consultant recommended a systematic and objective approach to quantitatively assess the performance of existing lifts and to develop a methodology and an assessment form for performance assessment of lifts. The assessment form covers the assessment of lift condition, service quality and risk. From late 2020 onwards, HD has fully adopted the use of the assessment form which, together with the lift technical evaluation report, has to be submitted to the LMTVC for consideration, as one of the factors for determining the priority of lift replacement.

(v) Please refer to Appendix 3(e)(v)-1, Appendix 3(e)(v)-2 and Appendix 3(e)(v)-3 for specimens of lift performance assessment form, scoresheet summary and technical evaluation report adopted under the Lift Modernisation Programme respectively. (English version only)

(f)(i) & (ii) The first stage of the assessment exercise is conducted by DMOs/ PSAs by carrying out annual technical assessments and making recommendations on modernisation programme for all lifts under their management with a service life of 25 years or more.

From late 2020, HD has also been using a lift performance assessment form developed by the consultant to quantify the performance of existing lifts. The lift performance assessment form covers three main assessment areas, namely lift condition, level of service and risk. A weighted score can be generated for each lift based on the assessment. Higher scores represent greater need for modernisation works. However, the assessment and the recommendation of DMOs/PSAs are only some of the factors to be considered in formulating the modernisation programme.

Note by Clerk, PAC: Appendices 3(e)(v)-1 to 3 not attached.

Annex

LMTVC carries out the second stage of the assessment needs taking due consideration of all relevant factors. The LMTVC needs to consider other factors such as work programme, manpower, resources, technical feasibility, public expectation, other major works to be carried out in the estate, etc. apart from the assessment and recommendations submitted in the first stage by DMOs/ PSAs, in order to set priorities and when the work will be carried out. In addition, if the lift/estate has already been included in other improvement works or other major projects, e.g. estate redevelopment in the near future, the lift will be excluded from consideration to ensure that there is no wastage of public resources. After taking holistic consideration of all relevant factors, the LMTVC will formulate and eventually submit lift modernisation programmes for the following financial year and the year after that to the Maintenance Planning and Review Committee for approval.

The decision of the LMVTC to include the 36 lifts, which were not recommended by the local DMOs/PSAs, in the tentative programme for 2024/2025 was made after holistically considered all relevant factors. The lifts concerned will reach a service life of 31 years or more by 2024/2025 and there is a genuine need of carrying out modernisation works.

- End -

Statistics on the Number of Lift Breakdown for the past 3 years by the age of lifts
(from 1/7/2020 to 30/6/2023)

Service year as at 30/6/2023	No. of Lift as at 30/6/2023 (i)	No. of Breakdown from1/7/2020 to 30/6/2023 (ii)	Average Number of Breakdown per Month per Lift from 1/7/2020 to 30/6/2023 (iii) = (ii) / (i) / 36
<15	2,658	9,816	0.10
>=15 to <20	693	3,577	0.14
>=20 to <25	1,325	7,157	0.15
>=25 to <30	777	4,714	0.17
>=30 to <35	499	2,455	0.14
>=35 to <40	56	1,003	0.50
>=40 to <45	45	346	0.21
>=45	3	32	0.30
Total	**6,056**	29,100	**0.13**