

CHAPTER 2

Transport and Logistics Bureau Highways Department

<h3>Maintenance of highway structures by the Highways Department</h3>
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**Audit Commission
Hong Kong
31 March 2026**

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.

Report No. 86 of the Director of Audit contains 8 Chapters which are available on our website (<https://www.aud.gov.hk>).



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MAINTENANCE OF HIGHWAY STRUCTURES BY THE HIGHWAYS DEPARTMENT

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MAINTENANCE OF HIGHWAY STRUCTURES BY THE HIGHWAYS DEPARTMENT

Executive Summary

1. The Highways Department (HyD) is responsible for the maintenance of public roads and associated facilities, including highway structures, under its purview. According to HyD, a highway structure is a structure designed and constructed for carrying vehicles, bicycles and pedestrians over, under or through a physical obstruction or hazard, and may be a vehicular bridge, a footbridge, an underpass or a subway. In addition, covers to walkways, noise barriers and enclosures, sign gantries and culverts are also classified as highway structures. As at 31 December 2025, HyD administered 9 road maintenance contracts to safeguard the safety and reliability of the public road network. According to the management and maintenance (M&M) provisions of the contracts, contractors are required to conduct inspections of highway structures and undertake structural maintenance. When maintenance works are required beyond the scope of M&M provisions, HyD may separately issue task orders and pay the contractors for the non-routine maintenance works. In 2024-25, \$377 million was incurred by the Structure Maintenance Teams of HyD on the maintenance works for highway structures under road maintenance contracts, including \$104 million for inspection and routine maintenance works, and \$273 million for non-routine maintenance works. The Audit Commission (Audit) has recently conducted a review to examine the work of HyD in the maintenance of highway structures.

Inspection and routine maintenance works

2. *Need to remind HyD's staff to thoroughly review the inspection programmes submitted by contractors.* According to the contract provisions, contractors should submit the inspection programmes for 6-monthly inspections, general inspections and principal inspections (hereinafter referred to as routine inspections) for HyD's verification. Audit analysis of the inspection programmes for the 2,831 vehicular bridges and underpasses, footbridges and subways in the Electronic Maintenance Management System (EMMS) for the period from April 2022 to September 2025 revealed the following inadequacies in the inspection programmes:

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- (a) ***Some required inspections not scheduled.*** 11 (0.4%) highway structures had not been scheduled for general inspections which required close visual inspection at two-year intervals during the period. For the 755 highway structures which required principal inspections as they reached their ages of 10, 20, 30, 40 or so forth during the period, 11 (1.5% of 755) had not been scheduled for principal inspections which required in-depth check on the structural integrity of the highway structures; and
- (b) ***Intervals of inspections not meeting the stipulated requirement.*** According to the contract provisions, contractors should plan and programme inspections on highway structures such that the interval between two 6-monthly inspections or one 6-monthly inspection and one general inspection or principal inspection is 5 to 7 months. Audit noted that, among the 13,165 routine inspections scheduled during the period, the inspection dates of 20 (0.2%) inspections were more than 7 months after the previous inspections, ranging from 8 to 12 months (i.e. with delays ranging from 1 month to 5 months) (para. 2.5).
3. ***Need to remind contractors to submit inspection reports in a timely manner.*** According to the contract provisions, contractors are required to submit inspection reports within 7 days after the completion of the inspections. Audit examined the EMMS records of the 5,984 routine inspections for the 1,856 vehicular bridges and underpasses, footbridges and subways conducted under the 6 contracts commencing in or after April 2022, and found that the inspection reports of 784 (13%) routine inspections were submitted more than 7 days after the inspection dates, with delays ranging from 1 day to 192 days (averaging 17 days). Moreover, among these late submissions, HyD had only issued default notices to the concerned contractors for 453 (58% of 784) cases (paras. 2.7 and 2.8).
4. ***Room for improvement in monitoring the rectification of defects.*** Audit analysed the EMMS records for the 10,185 defects identified by the contractors from the routine inspections conducted for the 2,831 vehicular bridges and underpasses, footbridges and subways during the period from April to September 2025 and noted that:

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- (a) ***Rectification of defects not recorded as completed in EMMS.*** Rectification of 1,859 (18% of 10,185) defects had not yet been recorded as completed as at 31 December 2025. Audit could not ascertain the progress/completion of rectification of these defects; and

 - (b) ***Rectification of defects recorded as completed in EMMS.*** Rectification of 8,326 (82% of 10,185) defects were recorded as completed as at 31 December 2025. Of which:
 - (i) ***Dates of completion of rectification after due dates.*** For 2,121 (26% of 8,326) defects, the dates of completion of rectification recorded in EMMS were after the due dates for rectification, with time elapsed from the due dates ranging from 1 day to 96 days (averaging 5 days). Since the dates of completion of rectification could not be backdated in EMMS, the dates of completion recorded might not reflect the actual dates of completion and could not show whether the rectifications of defects were completed in a timely manner or had been delayed; and

 - (ii) ***Due dates for rectification and/or dates of completion of rectification not recorded.*** For 257 (3% of 8,326) defects, due dates for rectification and/or dates of completion of rectification were not recorded in EMMS. Audit could not ascertain if these defects had been rectified within the stipulated timeframe (para. 2.12).
5. ***Need to ensure that the rectification completion records uploaded to EMMS by the contractors comply with the contract provisions.*** According to the contract provisions, upon the completion of rectification works, contractors should take photographic records showing that the defects have been rectified. The locations of the defects should be identifiable from the photographs and the photograph-taking dates should be shown on the photographs. Audit sample checked the EMMS records for 126 rectified defects within the scope of M&M provisions (involving 30 routine inspections carried out during the period from April to September 2025) and noted that for some defects, the photographs showing rectification of defects had not been uploaded to EMMS or dated, or rectification could not be identified in the photographs (para. 2.15).

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6. **Monitoring of contractors' performance.** Payments for M&M works are performance-linked. HyD conducts Engineer's inspections (EIs) and Engineer's audits (EAs) as independent checking procedures in monitoring the contractors' performance (para. 1.5). Audit examination revealed the following areas for improvement:

- (a) **Room for improvement in conducting EIs.** According to HyD's Maintenance Administration Handbook, HyD's staff should plan and carry out EIs. They would input the records of EIs and upload the inspection photographs to the Road Maintenance Monitoring System (RMMS) as an evidence of EIs carried out. For any defects identified during EIs, RMMS provides a function to generate a notification form of defect (NF) automatically. However, Audit noted that records of some EIs carried out for M&M works or cleansing work were mistakenly input as site check records. In addition, the first phase of RMMS did not provide statistics by works nature for EI records related to M&M works and cleansing work (paras. 2.23 and 2.24); and

- (b) **Room for improvement in conducting EAs.** HyD's staff or appointed consultants plan and conduct audits on M&M works carried out by the road maintenance contractors. Audit sample check of EAs carried out for the 2 road maintenance contracts under a consultancy agreement with the agreement period from March 2024 to August 2025 revealed the following inadequacies:
 - (i) while the consultant should carry out EAs for all the 77 general inspections, principal inspections and special inspections on the vehicular bridges, footbridges and underpasses on red or pink routes, only 60 EAs (i.e. shortfall of 17 EAs) were conducted during the period;

 - (ii) of the 151 NFs issued to the contractors, 76 had been issued 1 day to 67 days (averaging 13 days) after conducting EAs. Due to the late issuance of NFs by the consultant, the due dates for rectification were extended accordingly; and

 - (iii) according to the RMMS records, of 89 NFs issued by the consultant, the contractor had failed to rectify the defects within the stipulated timeframe for 9 (10%) NFs. Of these 9 cases, default notices had

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not been issued for 8 cases as at 31 December 2025 (paras. 2.26 and 2.27).

Non-routine maintenance works

7. *Need to regularly review the status of projects.* From time to time, non-routine maintenance of highway structures is carried out to rectify defects found on the highway structures which are beyond the scope of M&M provisions or to implement the Government's initiatives. For works of non-recurrent nature to be funded by the Capital Works Reserve Fund (CWRF), HyD includes them in the full list of items proposed to be funded by CWRF Block Allocations. According to HyD, as at 30 September 2025, the progress of the 83 projects related to the non-routine maintenance of highway structures under the purview of HyD's Structure Maintenance Teams in the full list of items proposed to be funded by CWRF Block Allocations for 2025-26 (hereinafter referred to as "the list for 2025-26") submitted to the Legislative Council in January 2025 was as follows:

- (a) 62 (75%) projects had been completed, among which 3 (5% of 62) projects were completed 5 to 15 months (averaging 9 months) after the proposed completion dates stated in the list for 2025-26;
- (b) 8 (9%) projects were in progress, among which the proposed completion dates were in the first half of 2025 for 4 (50% of 8) projects and in the second half of 2023 for 1 (13% of 8) project as stated in the list for 2025-26; and
- (c) 13 (16%) projects were still under planning, among which the proposed completion dates of 7 (54% of 13) projects were before 30 September 2025 (paras. 3.3 and 3.4).

8. *Need to keep under review the lists of defects for scheduling non-routine maintenance works.* According to HyD, bearings and vehicle parapets are essential components to ensure the long-term proper functioning of bridges and to protect road users in case of traffic accidents respectively. Audit reviewed the lists of defects as at 31 December 2025 and noted that 24 defects (involving 10 highway structures) related to bearings or vehicle parapets with relatively high severity levels were identified during inspections from April 2022 to September 2024. The rectification works of these defects were of non-recurrent nature and required works beyond the

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scope of M&M provisions. Up to 31 January 2026, the rectification works of 8 (33%) defects (involving 6 highway structures) found in bearings were not included in the list for 2025-26 and task orders for rectifying these defects were yet to be issued. According to HyD, the common defect of these bearings was surface rusting which would not pose any imminent danger to the bridge structure and necessary interim remedial works were carried out in February 2026 to restore the bearing conditions (paras. 3.6 and 3.7).

9. ***Need to remind HyD's staff to properly maintain the records of site checks/visits.*** According to HyD's Maintenance Administration Handbook, in order to monitor the progress of works, works supervisors should conduct daily site checks on the progress and quality of works, and record the observations. Inspectors of Works and Engineers/Chief Technical Officers should also conduct site visits at least once per week and once per two weeks respectively for periodic checking. Audit selected 40 task orders with payments made during the period from April 2022 to September 2025 for examination. However, up to 28 February 2026, the works supervisors' site check records of 4 (10%) task orders had not been provided for Audit's inspection. As regards the compliance issue of periodic checking, HyD informed Audit that unless Inspectors of Works and Engineers/Chief Technical Officers identified specific issues or noteworthy observations which warranted documentation for a task order, there was no documentation for site visits in any centralised register. In Audit's view, the fact that the records of site visits have not been fully maintained is less than satisfactory (paras. 3.12 to 3.15).

10. ***Room for improvement in submitting or collecting relevant completion documents for finalisation of task orders.*** As the contractor is paid for the works done, measurement of the works done under a task order is essential for payment purpose. Audit sample examination of the relevant records of 50 completed task orders with payments made during the period from April 2022 to September 2025 revealed that:

- (a) while the contractors should submit the hidden works records to the Regional Offices within 14 days after completion of a task order, for 23 (46%) task orders, the contractors took more than 14 days to submit the relevant records, ranging from 16 to 671 days (averaging 139 days);
- (b) while the Regional Offices should submit the completion data and relevant documents to the Maintenance Accounts and Quantity Surveying Unit

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within 60 days after completion of a task order, for 33 (66%) task orders, the Regional Offices took more than 60 days to submit the completion data and relevant documents, ranging from 61 to 700 days (averaging 175 days);

- (c) while the contractors should measure the works done and enter the measurement into a dimension book for submission to the Maintenance Accounts and Quantity Surveying Unit within 90 days after completion of a task order, for 30 (60%) task orders, the contractors took more than 90 days to submit the dimension books; and
- (d) among the 47 (94%) completed task orders with relevant documents submitted and outstanding issues cleared, the procedures of receiving the relevant documents and clearing outstanding issues had taken 24 to 2,229 days (averaging 263 days) after completion of the task orders (paras. 3.27 and 3.28).

Other related issues

11. *Need to critically evaluate the reasonableness of non-schedule rates for beautification works.* In 2024 and 2025, as part of the government-wide district governance work on improving environmental hygiene and beautifying the cityscape, HyD carried out refurbishment and beautification works of 36 footbridges/subways across the 18 districts. For 16 footbridges/subways, since the Schedule of Rates stipulated in the road maintenance contracts did not include applicable rates for some works elements, quotations from sub-contractors were invited and non-schedule rates were adopted. Audit examination of the evaluation process of quotations regarding the beautification works of the 16 footbridges/subways revealed that:

- (a) the unit rates calculated based on the prices quoted by the sub-contractors varied significantly from \$165 to \$3,429 per square metre. According to HyD, the significant variation was due to the different nature and scope of beautification works;
- (b) in assessing the reasonableness of the quoted price for some beautification works, the ranges of the benchmark unit rates used by HyD based on similar past works were wide;

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- (c) certain unit rate assessments relied on benchmarks from dissimilar works; and
- (d) the beautification works of one structure had its unit rates for specific works elements benchmarked separately against comparable works, whereas unit rates for the beautification works of other structures comprising multiple works elements were evaluated for the works as a whole (paras. 4.3, 4.6 and 4.7).

12. ***Need to enhance maintenance procedures for beautification works of highway structures.*** Since 2017, HyD has been drawing up thematic designs each year for selected bridges or subways with high pedestrian flow at prominent locations. In December 2025 and January 2026, Audit conducted field inspections of 10 footbridges/subways with beautification works previously carried out and noted defects in 8 of them. Defects identified comprised peeling paint and wallpapers, water stains and graffiti. Although some of these defects had been reported by the contractors to HyD, up to 31 January 2026, no separate task orders had been issued to contractors to rectify them (para. 4.10).

13. ***RMMS.*** HyD has developed and implemented RMMS since the end of 2022 to digitalise the monitoring and administration of highway structures maintenance works involving task orders. The pilot stage and customisation stage of the first phase of RMMS were first launched in December 2022 and May 2024 respectively (para. 4.14). Audit found that there was scope for improvement, as follows:

- (a) ***Need to ensure the completeness of information and timely processing of forms in RMMS.*** According to the workflow of the first phase of RMMS, HyD's staff needs to complete site check records in the system for their supervisors' checking and review the hidden works records and completion reports submitted by the contractors in RMMS before certifying the completion of works. Audit sample check of 20 task orders of the 9 road maintenance contracts with the final payments made in the third quarter of 2025 revealed that:
 - (i) 4 (20%) task orders were not recorded in RMMS; and

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- (ii) some records of the remaining 16 (80%) task orders were not found in RMMS while some remained in draft or pending approval status (paras. 4.16 and 4.17); and
- (b) *Need to ensure that a system security audit is completed prior to implementation of a system.* According to the Practice Guide for Security Risk Assessment & Audit issued by the then Office of the Government Chief Information Office (currently known as the Digital Policy Office), a security audit should be performed prior to the implementation or major enhancement of a system. The agreement between HyD and the developer of the first phase of RMMS stipulated that an information technology security audit report should be submitted to HyD two weeks before commissioning of the customised RMMS (i.e. May 2024). However, the developer had only engaged an information technology company to conduct a security audit for the system in November 2025 and completed the security audit report in mid-February 2026 (paras. 4.19, 4.20 and 4.21(b)).

Audit recommendations

14. **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 Highways should:**

Inspection and routine maintenance works

- (a) **remind HyD's staff to thoroughly review the inspection programmes submitted by contractors to ensure that the frequency and intervals of inspections are conducted in accordance with the contract provisions (para. 2.9(a));**
- (b) **remind contractors to submit the inspection reports in a timely manner (para. 2.9(b));**
- (c) **continue to issue default notices for late submission of inspection reports according to the contract provisions (para. 2.9(c));**
- (d) **take measures to ensure that due dates for rectifications of defects within the scope of M&M provisions and dates of completion of**

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rectification of these defects are properly recorded in EMMS by the contractors (para. 2.16(a));

- (e) ascertain whether defects within the scope of M&M provisions had been rectified within the stipulated timeframe and continue to issue default notices for late rectification of defects according to the contract provisions (para. 2.16(b));
- (f) take measures to ensure that the rectification completion records uploaded to EMMS by the contractors comply with the contract provisions (para. 2.16(d));
- (g) take measures to ensure that EIs are conducted in accordance with the Maintenance Administration Handbook with proper documentation (para. 2.29(a));
- (h) remind HyD's staff to input the EI records correctly in RMMS in order to generate NFs when necessary (para. 2.29(b));
- (i) take measures to ensure that the consultants carry out EAs in accordance with the consultancy agreements. In particular, the consultants have to:
 - (i) carry out EAs on all general inspections, principal inspections and special inspections on the vehicular bridges, footbridges and underpasses on red or pink routes;
 - (ii) issue NFs showing the defects to the contractors as soon as practicable; and
 - (iii) issue default notices for non-compliance of NFs in a timely manner (para. 2.29(c));

Non-routine maintenance works

- (j) regularly review the status of projects in the full list of items proposed to be funded by CWRF Block Allocations (para. 3.9(a));

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- (k) **keep under review the lists of defects for scheduling non-routine maintenance works (para. 3.9(b));**
- (l) **remind HyD's staff to properly maintain the records of site checks/visits (para. 3.24(a));**
- (m) **take measures to ensure that the site checks/visits are conducted at the frequencies stipulated in the Maintenance Administration Handbook (para. 3.24(b));**
- (n) **remind contractors to submit hidden works records and dimension books in a timely manner for processing payments (para. 3.33(b));**
- (o) **step up efforts in improving the timeliness of:**
 - (i) **compiling the completion data and gathering the relevant documents of completed non-routine maintenance task orders; and**
 - (ii) **clearing outstanding issues of completed non-routine maintenance task orders with the contractors (para. 3.33(d));**

Other related issues

- (p) **critically evaluate the reasonableness of non-schedule rates for beautification works (para. 4.12(a));**
- (q) **consider incorporating commonly used items in beautification works into the Schedule of Rates for future road maintenance contracts where appropriate (para. 4.12(b));**
- (r) **enhance maintenance procedures for the beautification works of highway structures (para. 4.12(c));**
- (s) **take measures to ensure that the information in RMMS is complete and all required documents are reviewed/approved in a timely manner in RMMS (para. 4.26(a)); and**

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- (t) **take measures to ensure that a system security audit is completed prior to implementation of a system (para. 4.26(b)).**

Response from the Government

15. The Secretary for Transport and Logistics welcomes the audit recommendations and supports the proposed follow-up actions of HyD. The Director of Highways 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 Highways Department (HyD) is responsible for the maintenance of public roads and associated facilities, including highway structures, under its purview. According to HyD, a highway structure is a structure designed and constructed for carrying vehicles, bicycles and pedestrians over, under or through a physical obstruction or hazard, and may be a vehicular bridge, a footbridge, an underpass or a subway. In addition, covers to walkways, noise barriers and enclosures, sign gantries and culverts are also classified as highway structures.

1.3 HyD ensures the safety and reliability of the public road network by engaging contractors under road maintenance contracts to carry out inspections and maintenance works (Note 1). As at 31 December 2025, HyD administered 9 road maintenance contracts which were divided according to the classification of roads and geographical areas as follows:

- (a) 2 contracts for expressways and high speed roads, including 1 contract for New Territories East, Kowloon East and Hong Kong Island, and 1 contract for New Territories West, Kowloon West and roads in Hong Kong Port Area; and
- (b) 7 contracts for roads excluding expressways and high speed roads, including 1 contract for Hong Kong Island, 2 contracts for Kowloon and 4 contracts for the New Territories.

Note 1: *The road maintenance contracts cover the inspection and maintenance works for public roads (including local carriageways, expressways, cycle tracks and footpaths), highway structures and roadside slopes, etc.*

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Table 1 shows the number of different highway structures (Note 2) under the 9 road maintenance contracts as at 31 December 2025.

Table 1
Number of highway structures under the 9 road maintenance contracts
(31 December 2025)

Highway structure	Hong Kong Island	Kowloon	New Territories	Total
	(Number)			
Footbridge and subway	276 (17%)	334 (20%)	1,044 (63%)	1,654 (100%)
Vehicular bridge and underpass	194 (15%)	238 (18%)	858 (67%)	1,290 (100%)
Sign gantry	132 (11%)	296 (26%)	718 (63%)	1,146 (100%)
Noise barrier and enclosure	12 (2%)	62 (8%)	695 (90%)	769 (100%)
Others (Note)	144 (20%)	89 (13%)	477 (67%)	710 (100%)

Source: Audit Commission analysis of HyD records

Note: Others included covers to walkways and culverts, etc.

Inspection and routine maintenance works

1.4 According to the management and maintenance (M&M) provisions of HyD's road maintenance contracts, contractors are required to conduct inspections of highway structures and undertake structural maintenance. In particular, contractors are required to:

Note 2: *According to HyD, with reference to the road features specified in HyD's road maintenance contracts, road tunnels (excluding those within the Tsing Ma Control Area and the Tsing Sha Control Area which fall within the scope of the management-operation-maintenance contracts let out by the Transport Department) are categorised as "Tunnels" and not "Highway Structures" for maintenance purpose. HyD's dedicated tunnel sections are responsible for ensuring the structural integrity and maintenance of these tunnels.*

- (a) conduct different types of inspections at the frequencies stipulated in the contract provisions. Contractors are required to plan and programme the inspections on highway structures in accordance with the contract requirements;
- (b) carry out structural maintenance works listed in the contract provisions at their own costs (e.g. removing and repairing surface rusting, spalling or burst or cracked paint on steel for a total area not exceeding 0.1 square metres);
- (c) conduct cleansing to highway structures within the designated contract areas in the relevant districts and keep these in a state of satisfactory cleanliness. In particular, full and intermediate scale of cleansing are required to be carried out on footbridges and subways at the intervals stipulated in the contract provisions; and
- (d) establish and maintain an effective Electronic Maintenance Management System (EMMS) to facilitate planning, programming, inventory data collection, maintenance history recording, data storage, complaint handling, preparing management reports and retrieval of all aspects of the maintenance, inspection, remedial and repair works.

1.5 Payments for M&M works are performance-linked. A contractor's performance is measured every three months. HyD adopts independent checking procedures in monitoring the contractor's performance, as follows:

- (a) ***Engineer's inspections (EIs)***. HyD's staff periodically visit the active sites shown in the contractor's works programme to check the workmanship and quality of works during execution, especially hidden works (Note 3). A default notice (Note 4) will be issued to the contractor for non-compliance

Note 3: *Hidden works are works of which the measurement cannot be verified after their completion because they would be covered up or put out of view.*

Note 4: *A default notice refers to a notice to the contractor for works undertaken by the contractor not in compliance with the specifications of the contract. It shows the type of non-compliances (e.g. inspection not carried out as programmed, defects not rectified within stipulated timeframe) and the amount to be deducted from payments to the contractor.*

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observed during an EI. EIs may be carried out together with the contractor or by HyD's staff alone and generally no advance notice will be given; and

- (b) **Engineer's audits (EAs).** HyD's staff or appointed consultants will conduct EAs on the works performed in accordance with HyD's instructions/guidelines for planning, sampling and audit checking of M&M works. For EAs conducted by HyD's staff, the monthly sample size is 5% of the number of inspection reports. For EAs conducted by consultants, the number of audits is stated in the respective consultancy agreements. The performance standard of the contractor is assessed based on the findings of EAs and the average of the performance figures in the preceding 3-monthly period of July, October, January and April will be used for calculating the monthly payment to the contractor in each 3-monthly period. Unless prior arrangement for gaining access is required, HyD or appointed consultants shall normally give not more than 24 hours' advance notice to the contractor before carrying out EAs.

Non-routine maintenance works

1.6 When maintenance works are required beyond the scope of M&M provisions, HyD may separately issue non-routine maintenance (i.e. non-M&M) task orders and pay the contractors for the non-routine maintenance works. Common non-routine maintenance works include:

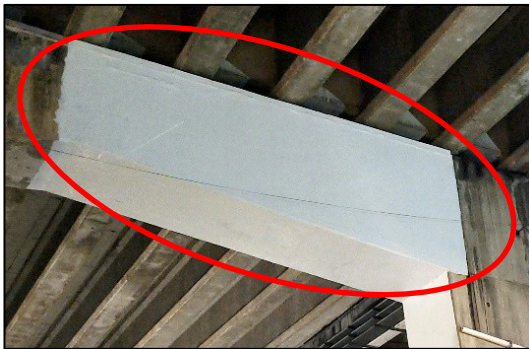
- (a) **Concrete repair and reinforcement.** While many highway structures are exposed to severe environmental conditions or chemical attacks, they may require the application of protective coating (see Photograph 1(a) for an example) to inhibit carbonation and chemical contamination, and the reinforcement of concrete surface to enhance durability;
- (b) **Replacement or repair of defective components.** The defective components usually include movement joints and bearings (see Photographs 1(b) and (c) for examples) of highway structures;
- (c) **Beautification works.** These are the refurbishment and beautification works for highway structures (see Photograph 1(d) for an example); and

- (d) **Additional cleansing.** While cleansing tasks are included in the provisions of the contracts and scheduled on a regular basis, HyD may require additional cleansing (e.g. removing graffiti found on the highway structures).

Photographs 1(a) to (d)

Examples of non-routine maintenance works

(a) Application of protective coating



(b) Replacement of defective movement joints



(c) Replacement of a defective bearing



(d) Implementation of beautification works



Source: HyD records

Road Maintenance Monitoring System

1.7 Since the end of 2022, HyD has developed and implemented the Road Maintenance Monitoring System (RMMS) as a major digitalisation initiative to enhance efficiency and transparency on the monitoring and administration of highway

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structure maintenance works involving task orders. RMMS has been implemented in two phases. The first phase, which includes the pilot stage and the customisation stage launched in December 2022 and May 2024 respectively, incorporates core functionalities such as electronic form submission, real-time tracking and monitoring of progress. HyD's staff can log on to RMMS during outdoor inspections and electronically notify contractors of facility damages, enabling contractors to promptly receive the relevant data and arrange for repair works. The rollout of the second phase commenced in October 2025, and is expected to be fully available for use by mid-2026. It incorporates enhancements such as automatic alerts or warnings to contractors with unsatisfactory maintenance progress, which facilitates early follow-up actions of defects/outstanding works. It also reduces the time for recording transmittal amongst HyD's staff and contractors' staff.

Responsible offices of HyD

1.8 The teams and unit of HyD involved in the administration of road maintenance contracts are as follows:

- (a) ***Structure Maintenance Teams.*** The two Regional Offices of HyD (i.e. the Urban Region and the New Territories Region), which are each led by a Regional Highway Engineer, are responsible for administering the road maintenance contracts of their designated geographical areas. Under the Regional Offices, the District and Maintenance Divisions led by a Chief Highway Engineer or a Principal Project Coordinator are responsible for managing the Structure Maintenance Teams to monitor the structural maintenance of the highway structures in their responsible areas (Note 5).

Note 5: *According to HyD's division of labour as set out in the regional instruction, the Structure Maintenance Teams of the District and Maintenance Divisions are responsible for maintenance of structural condition of roads, e.g. the main structure, structural accessories and components (e.g. movement joints and bearings) of highway structures. As regards the maintenance of pavement condition (including road markings) and roadside slopes, they are under the purview of the Road Maintenance Teams and the Slope Teams of the respective District and Maintenance Divisions. In addition, maintenance of cross-boundary highway structures in Hong Kong port areas (e.g. the Hongkong-Zhuhai-Macao Bridge and the Shenzhen Bay Bridge) is under the responsibility of the Cross Boundary Division under the New Territories Region. This audit review has focused on the work of the Structure Maintenance Teams which are responsible for the bulk of highway structures in Hong Kong excluding those in the cross-boundary areas.*

As at 31 December 2025, there were 88 staff in the Structure Maintenance Teams in the two Regional Offices; and

- (b) *Maintenance Accounts and Quantity Surveying (MAQS) Unit.* Under the Technical Branch of HyD’s Headquarters, MAQS Unit assists the Regional Offices and other Divisions to process payments and ascertain final values of task orders for HyD’s contracts including the road maintenance contracts. As at 31 December 2025, there were 55 staff in the Unit.

An extract of the organisation chart of HyD as at 31 December 2025 is shown at Appendix A.

Financial provision

1.9 The maintenance of highway structures is under the programme area “District and Maintenance Works” of HyD (Note 6). According to HyD, in 2024-25, \$377 million was incurred by the Structure Maintenance Teams on the maintenance works for highway structures under road maintenance contracts, including \$104 million for inspection and routine maintenance works, and \$273 million for non-routine maintenance works.

Audit review

1.10 In 2021, the Audit Commission (Audit) completed a review of “Highways Department: Maintenance of public footpaths”. The results were included in Chapter 1 of the Director of Audit’s Report No. 77 of November 2021.

Note 6: *This programme area also covers maintenance of at-grade roads, roadside slopes, road tunnels, etc., coordination and control of openings on public roads, attendance to emergencies (such as typhoons, rainstorms, landslips and road subsidence), minor improvements to roads and reconstruction or rehabilitation of road pavements, planning and administration of road infrastructure, provision of technical advice to the Government and private sector developers on road matters as well as implementation of local road works to match development.*

Introduction

1.11 In November 2025, Audit commenced a review to examine the work of HyD in the maintenance of highway structures. The audit review has focused on the following areas:

- (a) inspection and routine maintenance works (PART 2);
- (b) non-routine maintenance works (PART 3); and
- (c) other related issues (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

1.12 The Secretary for Transport and Logistics welcomes the audit recommendations and supports the proposed follow-up actions of HyD. She has said that the Transport and Logistics Bureau:

- (a) attaches great importance to the inspection and maintenance of highway structures, as such works are vital to keep the structures in good condition and provide a safe walking and driving experience for pedestrians and drivers respectively; and
- (b) will continue to oversee the work of HyD to ensure that it will take appropriate follow-up actions as undertaken in their response to the audit recommendations, including strengthening the supervision over contractors' performance (e.g. through regular reminders), and enhancing maintenance record management (e.g. through digitalisation and provision of refresher trainings for staff).

1.13 The Director of Highways agrees with the audit recommendations.

Acknowledgement

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

PART 2: INSPECTION AND ROUTINE MAINTENANCE WORKS

2.1 This PART examines HyD's work in monitoring the inspection and routine maintenance works of highway structures, focusing on:

- (a) inspections performed by contractors (paras. 2.3 to 2.10);
- (b) maintenance works within the scope of M&M provisions (paras. 2.11 to 2.17);
- (c) cleansing of highway structures (paras. 2.18 to 2.22);
- (d) monitoring of contractors' performance (paras. 2.23 to 2.30); and
- (e) EMMS (paras. 2.31 to 2.34).

2.2 HyD administers road maintenance contracts with M&M provisions to conduct inspections and routine maintenance for highway structures. Table 2 shows the details of the 9 road maintenance contracts in effect as at 31 December 2025.

Inspection and routine maintenance works

Table 2

**Road maintenance contracts administered by HyD
(31 December 2025)**

Contract	Designated contract area	Contract period (Note)	Estimated contract sum (\$ million)
<i>Road maintenance contracts (excluding expressways and high speed roads)</i>			
A	Tuen Mun and Yuen Long Districts	1.4.2021 – 31.3.2026	795
B	Tsuen Wan and Kwai Tsing Districts	1.4.2021 – 31.3.2027	732
C	Tai Po and North Districts	1.4.2022 – 31.3.2027	690
D	Sha Tin, Sai Kung and Islands Districts	1.4.2024 – 31.3.2029	1,077
E	Kowloon West	1.4.2020 – 31.3.2026	809
F	Kowloon East	1.4.2024 – 31.3.2029	789
G	Hong Kong Island	1.4.2025 – 28.2.2030	1,044
<i>Expressways and high speed roads maintenance contracts</i>			
H	New Territories West and Kowloon West, and roads in Hong Kong Port Area	1.4.2022 – 31.3.2028	1,058
I	New Territories East, Kowloon East and Hong Kong Island	1.4.2025 – 28.2.2030	552

Source: HyD records

Note: According to HyD, the durations of the contracts are arranged to ensure that the commencement dates of new contracts are staggered. This arrangement helps avoid a situation where multiple contracts enter their mobilisation and gearing-up periods simultaneously, which may otherwise constrain HyD's capacity to manage emergency services, particularly during adverse weather conditions.

Inspections performed by contractors

2.3 According to HyD, inspection is an integral part of maintenance. The purpose of maintenance inspection is to identify the problems occurred or about to occur, investigate the causes of the deterioration and gather information about the condition of various parts of the highway structures. It facilitates an evaluation of the costs of any possible maintenance options and the selection of the most appropriate remedial measures to extend the service life of the highway structures.

2.4 According to the contract provisions, contractors are required to conduct the following types of inspection on the highway structures in accordance with HyD's guidelines:

- (a) **6-monthly inspection.** This is a very brief check for obvious defects which may lead to safety problems or lead to loss or restriction of use of the structure. Visual inspection (Note 7) should be carried out for all visible and readily accessible parts. Inspection should be carried out at six-month intervals. Such an inspection is especially important for footbridges and subways as they are generally much smaller structures with a more direct impact on the general public;
- (b) **General inspection (GI).** This is a visual examination of all visible and accessible parts of a highway structure. Close visual inspection (Note 8) will be conducted for some specific structure elements (e.g. movement joints and bearings). Binoculars are usually used to inspect the elevated parts. Inspection should normally be carried out at two-year intervals;
- (c) **Principal inspection (PI).** This is an in-depth check on the structural integrity of a highway structure. The purpose is to provide a detailed

Note 7: *According to HyD, the purposes of a visual inspection are to determine basic conditions of all facilities, components, members, attachments and coating systems and to identify any missing parts, obvious damage, deterioration or matters which may require further examination. Visual inspections shall normally be made within 20 metres from the element to be inspected unless otherwise specified.*

Note 8: *According to HyD, the purposes of a close visual inspection are to inspect from a close distance the basic conditions of all facilities, components, members, attachments and coating systems and to identify any obvious damage, deterioration or areas which may require further examination.*

diagnosis of the health condition of highway structures and recommend improvement works. PI should be conducted in accordance with the requirements of GI, with additional tests and surveys, when the highway structures reach the ages of 10, 20, 30, 40 or so forth; and

- (d) ***Special inspection.*** Special inspection in the form of visual inspection or close visual inspection as appropriate is carried out as and when required, and will normally be conducted to address problems with specific concern (e.g. heavy flooding or watermain burst in the area of the structure, major accident impact or fire on or near the structure).

Need to remind HyD's staff to thoroughly review the inspection programmes submitted by contractors

2.5 According to the contract provisions, contractors should submit the inspection programmes for 6-monthly inspections, GIs and PIs (hereinafter referred to as routine inspections) for HyD's verification. Audit analysis of the inspection programmes for the 2,831 vehicular bridges and underpasses, footbridges and subways in EMMS for the period from April 2022 to September 2025 (Note 9), involving 13,165 routine inspections, revealed the following inadequacies in the inspection programmes:

- (a) ***Some required inspections not scheduled.*** Some required inspections of highway structures had not been scheduled in the inspection programmes, as follows:
 - (i) 7 (0.2%) highway structures had not been scheduled for any type of inspections during the period. According to HyD, these highway structures were lift tower structures or extensions of existing structures which were subsumed in the inspections of their corresponding main structures;
 - (ii) 11 (0.4%) highway structures had not been scheduled for GIs which required close visual inspection at two-year intervals during the period. According to HyD, 1 highway structure was subsumed in

Note 9: *The analysis included the inspection programmes submitted under the 9 road maintenance contracts listed in Table 2 in paragraph 2.2.*

Inspection and routine maintenance works

GI of its main structure while the remaining 10 highway structures had been scheduled for GIs in November and December 2025, with delays ranging from 2 to 35 months (averaging 6 months) (Note 10); and

- (iii) for the 755 highway structures which required PIs as they reached their ages of 10, 20, 30, 40 or so forth during the period, 11 (1.5% of 755) had not been scheduled for PIs which required in-depth check on the structural integrity of the highway structures. According to HyD, 3 highway structures were subsumed in PIs of their main structures while the remaining 8 highway structures had been scheduled for PIs in the first quarter of 2026, with delays ranging from 1 month to 13 months (averaging 6 months); and

- (b) *Intervals of inspections not meeting the stipulated requirement.* According to the contract provisions, contractors should plan and programme inspections on highway structures such that the interval between two 6-monthly inspections or one 6-monthly inspection and one GI or PI is 5 to 7 months. Audit noted that, among the 13,165 routine inspections scheduled during the period, the inspection dates of 20 (0.2%) inspections were more than 7 months after the previous inspections, ranging from 8 to 12 months (i.e. with delays ranging from 1 month to 5 months).

2.6 In Audit's view, HyD needs to remind its staff to thoroughly review the inspection programmes submitted by contractors to ensure that the frequency and intervals of inspections are conducted in accordance with the contract provisions.

Need to remind contractors to submit inspection reports in a timely manner

2.7 According to the contract provisions:

Note 10: *According to HyD, the longest delay (i.e. a delay of 35 months) for GI of a highway structure was due to the contractor's mistaken planning of this structure in the GI programme during the transition from the previous contract to the current one. The delays for GI of the other 9 highway structures ranged from 2 to 4 months.*

Inspection and routine maintenance works

- (a) ***Contracts commencing before April 2022.*** Contractors are required to submit inspection reports within 7 days after the completion of the inspections in both hard copy and digital format; and
- (b) ***Contracts commencing in or after April 2022.*** Contractors are required to submit inspection reports within 7 days after the completion of the inspections in digital format (i.e. upload to EMMS) only.

2.8 ***Late submission of inspection reports.*** Audit examined the EMMS records of the 5,984 routine inspections for the 1,856 vehicular bridges and underpasses, footbridges and subways conducted under the 6 contracts commencing in or after April 2022 (i.e. Contracts C, D, F, G, H and I), and found that the inspection reports of 784 (13%) routine inspections were submitted more than 7 days after the inspection dates, with delays ranging from 1 day to 192 days (averaging 17 days). According to the contract provisions, HyD would issue a default notice for late submission of inspection report. In February and March 2026, HyD informed Audit that:

- (a) among the 784 late submission of reports, it had issued default notices to the concerned contractors for 453 (58%) cases; and
- (b) it had been issuing default notices to the contractors for late submission of inspection reports in accordance with the contract provisions. For cases with default notices yet to be issued, HyD was liaising with the contractors to ascertain the actual duration of delays. Default notices would be issued after confirming the duration of delays.

In Audit's view, HyD needs to remind contractors to submit the inspection reports in a timely manner, and continue to issue default notices for late submission of inspection reports according to the contract provisions.

Audit recommendations

2.9 **Audit has *recommended* that the Director of Highways should:**

- (a) **remind HyD's staff to thoroughly review the inspection programmes submitted by contractors to ensure that the frequency and intervals of inspections are conducted in accordance with the contract provisions;**

Inspection and routine maintenance works

- (b) **remind contractors to submit the inspection reports in a timely manner; and**
- (c) **continue to issue default notices for late submission of inspection reports according to the contract provisions.**

Response from the Government

2.10 The Director of Highways agrees with the audit recommendations. He has said that:

- (a) HyD has already reminded its staff to thoroughly review the inspection programmes submitted by contractors. Starting from the second half of 2026, refresher training will be arranged for staff on this issue every year;
- (b) HyD has already included a standing discussion item at the monthly meetings with contractors to closely monitor the schedule of submission of inspection reports. Furthermore, HyD is developing an additional procedure requiring the responsible Engineer or Chief Technical Officer (E/CTO) to conduct half-yearly checks of the inspection programmes against the inspection reports submitted for each structure. The new procedure will be promulgated within the first half of 2026;
- (c) HyD has stepped up its efforts to liaise with the contractors to ascertain the actual duration of delays in the submission of inspection reports and issue default notices swiftly afterwards; and
- (d) in the second phase of RMMS, the programme uploaded by contractors will be shown in the system for checking, whereas monthly summary of default notices has been made available in the system for review and necessary follow-up action.

Maintenance works within the scope of management and maintenance provisions

2.11 According to the contract provisions, contractors are responsible for carrying out the structural maintenance works listed in the contracts at their own costs.

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In general, these defects are required to be rectified within one month of the date of inspection. For some specific defects (e.g. damage to pedestrian/vehicle parapets), they are required to be rectified within 36 hours or 3 days. HyD will issue a default notice to the contractor for delay in rectification of defects.

Room for improvement in monitoring the rectification of defects

2.12 According to the contract provisions, EMMS established and maintained by the contractors should be equipped with the functions to facilitate monitoring the status of defects identified in the inspections conducted by contractors. Audit analysed the EMMS records for the 10,185 defects identified by the contractors from the routine inspections conducted for the 2,831 vehicular bridges and underpasses, footbridges and subways during the period from April to September 2025 and noted that:

- (a) ***Rectification of defects not recorded as completed in EMMS.*** Rectification of 1,859 (18% of 10,185) defects had not yet been recorded as completed as at 31 December 2025. Audit could not ascertain the progress/completion of rectification of these defects; and

- (b) ***Rectification of defects recorded as completed in EMMS.*** Rectification of 8,326 (82% of 10,185) defects were recorded as completed as at 31 December 2025. Of which:
 - (i) ***Dates of completion of rectification on or before due dates.*** For 5,948 (71% of 8,326) defects, the dates of completion of rectification recorded in EMMS were on or before the due dates for rectification;

 - (ii) ***Dates of completion of rectification after due dates.*** For 2,121 (26% of 8,326) defects, the dates of completion of rectification recorded in EMMS were after the due dates for rectification, with time elapsed from the due dates ranging from 1 day to 96 days (averaging 5 days). According to HyD, since the dates of completion of rectification could not be backdated in EMMS, the dates of completion recorded might not reflect the actual dates of completion and could not show whether the rectifications of defects were completed in a timely manner or had been delayed; and

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- (iii) *Due dates for rectification and/or dates of completion of rectification not recorded.* For 257 (3% of 8,326) defects, due dates for rectification and/or dates of completion of rectification were not recorded in EMMS. Audit could not ascertain if these defects had been rectified within the stipulated timeframe.

2.13 In March 2026, HyD informed Audit that the rectification of all the 10,185 defects mentioned in paragraph 2.12 had been completed. In Audit's view, HyD needs to take measures to ensure that due dates for rectifications of defects within the scope of M&M provisions and dates of completion of rectification of these defects are properly recorded in EMMS by the contractors. Moreover, HyD needs to ascertain whether defects within the scope of M&M provisions had been rectified within the stipulated timeframe and continue to issue default notices for late rectification of defects according to the contract provisions.

2.14 *Need to consider including the detailed requirements of spot checks on the rectification completion records in HyD's guidelines.* According to HyD, given the large volume of records and the defects were mostly minor in nature, HyD's staff should carry out spot checks on rectification completion records of M&M works (Note 11). For 5,145 defects identified by the contractors of 7 road maintenance contracts from the routine inspections conducted during the period from April to September 2025 and subsequently rectified (Note 12), Audit analysed the EMMS records and noted that, as at 31 December 2025:

- (a) 4,416 (86% of 5,145) defects were not selected for spot checks by HyD's staff; and
- (b) the spot checks on rectification completion records for 729 (14% of 5,145) defects had been recorded by HyD's staff. Of which, the checking of 265 defects were recorded more than 30 days after the dates of completion of rectification, ranging from 31 to 221 days (averaging 58 days).

Note 11: *In addition to the spot checks, EAs would also be conducted on M&M works carried out by contractors for monitoring purpose (see para. 1.5(b)).*

Note 12: *For 3,181 rectified defects under the other 2 contracts, although the lists of defects could be generated from EMMS, the historical records of HyD's checking could not be generated for analysis purpose.*

Audit notes that the detailed requirements of spot checks (e.g. the frequency and selection basis) have not been stipulated in HyD's guidelines. In Audit's view, in order to better monitor contractors' rectification works, HyD needs to consider including the detailed requirements of spot checks on the rectification completion records, such as the frequency and selection basis, in its guidelines.

2.15 *Need to ensure that the rectification completion records uploaded to EMMS by the contractors comply with the contract provisions.* According to the contract provisions, upon the completion of rectification works, contractors should take photographic records showing that the defects have been rectified. The locations of the defects should be identifiable from the photographs and the photograph-taking dates should be shown on the photographs. Audit sample check of the EMMS records for 126 rectified defects within the scope of M&M provisions (involving 30 routine inspections carried out during the period from April to September 2025) revealed the following:

- (a) for 2 (2%) defects, the photographs showing rectification of defects had not been uploaded to EMMS as at 31 December 2025;
- (b) for 6 (5%) defects, rectification could not be identified in the photographs; and
- (c) for 26 (21%) defects, the photographs showing rectification of defects had not been dated.

In Audit's view, HyD needs to take measures to ensure that the rectification completion records uploaded to EMMS by the contractors comply with the contract provisions.

Audit recommendations

2.16 **Audit has recommended that the Director of Highways should:**

- (a) **take measures to ensure that due dates for rectifications of defects within the scope of M&M provisions and dates of completion of rectification of these defects are properly recorded in EMMS by the contractors;**

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- (b) **ascertain whether defects within the scope of M&M provisions had been rectified within the stipulated timeframe and continue to issue default notices for late rectification of defects according to the contract provisions;**
- (c) **consider including the detailed requirements of spot checks on the rectification completion records, such as the frequency and selection basis, in HyD's guidelines; and**
- (d) **take measures to ensure that the rectification completion records uploaded to EMMS by the contractors comply with the contract provisions.**

Response from the Government

2.17 The Director of Highways agrees with the audit recommendations. He has said that:

- (a) HyD has already reminded contractors to properly input the due dates for rectification and dates of completion of rectification in EMMS. HyD has also included a standing discussion item at the monthly meetings with contractors to closely monitor their performance of inputting the dates into EMMS in a timely manner and will reflect their performances in their quarterly performance reports;
- (b) in the second phase of RMMS, the system will automatically check the timeliness of submission of rectification records and generate default notices for any untimely recording of defect rectifications (see para. 4.24). HyD has also included a standing discussion item at the monthly meetings with contractors to closely monitor the timeliness of defect rectification;
- (c) despite the existing arrangements on spot checks and EAs stipulated in HyD's Maintenance Administration Handbook (MAH), HyD is reviewing the relevant requirements in MAH and will further elaborate them as appropriate (e.g. by stipulating the frequency and selection basis of the spot checks). The review will be completed by mid-2026; and

- (d) HyD has reminded contractors to exercise due care when submitting rectification completion records. HyD will request the contractors to provide further information where the submitted records are ambiguous or unclear. It has also included a standing discussion item at the monthly meetings with contractors to closely monitor whether they have thoroughly reviewed the records before submission and will reflect their performances in their quarterly performance reports.

Cleansing of highway structures

2.18 Contractors are required to conduct cleansing to the highway structures within their designated contract areas and keep these highway structures in a state of satisfactory cleanliness. The periodic cleansing deters the occurrence of corrosion and facilitates inspection and maintenance of the structures. General requirements of cleansing work on highway structures by the contractors include the following:

- (a) full-scale cleansing is required for footbridges and subways (Note 13) quarterly;
- (b) for flyovers, debris/rubbish left on copings, upstands and movement joints are required to be cleared quarterly. Metal parapets are required to be cleansed twice per year and concrete parapets are required to be cleansed once per year; and
- (c) for underpasses, the metal cladding/lining and concrete surfaces are required to be cleansed twice per year.

Note 13: *According to HyD, it is responsible for the structural maintenance of the footbridges and subways under its purview. It deploys the road maintenance contractors on a regular basis to wash the structural parts, including walls and ground surfaces, of footbridges and subways to maintain the parts in good structural conditions. As regards immediate hygiene problems such as vomitus or faecal matter (including urine), the Food and Environmental Hygiene Department, apart from providing sweeping services to the floor surface of footbridges and subways, will arrange washing as early as practicable after sweeping to cleanse the localised spot.*

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Need to ensure that the planned time slots of operation are included in the cleansing programmes

2.19 According to the contract provisions, contractors should submit the cleansing programmes to HyD in the form of timetable showing at least the route and the planned time slots (i.e. start and completion times) of operation for each highway structure. Audit sample check of the cleansing programmes of 45 highway structures (5 from each of the 9 road maintenance contracts) for the period from April to September 2025 revealed that the cleansing programmes submitted for 4 contracts did not indicate the planned time slots of operation.

2.20 In Audit's view, detailed cleansing programmes including the planned time slots of operation are important for HyD's on-site checking of contractors' cleansing work (i.e. EIs). HyD needs to take measures to ensure that the planned time slots of operation are included in the cleansing programmes of highway structures submitted by contractors.

Audit recommendation

2.21 **Audit has recommended that the Director of Highways should take measures to ensure that the planned time slots of operation are included in the cleansing programmes of highway structures submitted by contractors.**

Response from the Government

2.22 The Director of Highways agrees with the audit recommendation. He has said that HyD:

- (a) has reminded contractors to include the planned time slots of operation in the cleansing programmes of highway structures; and
- (b) has also included a standing discussion item at the monthly meetings with contractors to closely monitor whether they have included such information in the programmes and will reflect their performances in their quarterly performance reports.

Monitoring of contractors' performance

Room for improvement in conducting EIs

2.23 According to MAH, HyD's staff should plan and carry out EIs according to the contractors' works programmes or daily reports. Selection of works and frequency for conducting EIs should be based on works nature, location, significance and impact to the public. At least one active site should be inspected in a week for each of the M&M task orders (Note 14). For cleansing of highway structures, two active sites should be inspected in a week for each of the M&M task orders. Default notices would be issued to the contractors for non-compliance observed during EIs. For any defects found, notification forms of defect (NFs) would be issued to contractors for rectification.

2.24 According to HyD, its staff would input the records of EIs and upload the inspection photographs to RMMS as an evidence of EIs carried out. For any defects identified during EIs, RMMS provides a function to generate NFs automatically. However, Audit noted that:

- (a) records of some EIs carried out for M&M works or cleansing work were mistakenly input as site check records (i.e. for site check of non-routine maintenance works — see para. 3.12(a)); and
- (b) although the first phase of RMMS provided filter function for users to filter out records related to a specific task order, it did not provide statistics by works nature for EI records related to M&M works and cleansing work. In this connection, Audit could not ascertain if HyD's staff conducted EIs at the frequency required by MAH.

2.25 Upon enquiry, HyD informed Audit in February and March 2026 that, following the implementation of the first phase of RMMS in May 2024, report/summary for monitoring the compliance of EI frequency had already been planned for provision in the second phase of RMMS, which would be available for use by mid-2026 (see para. 4.25(b)). In Audit's view, as EIs serve the purpose of

Note 14: *For each road maintenance contract, an M&M task order would be issued for each district on a yearly basis. For example, for Contract F (involving 6 districts in total), 6 M&M task orders were issued in April 2024.*

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checking the workmanship and quality of works during execution (especially hidden works), HyD needs to take measures to ensure that EIs are conducted in accordance with MAH with proper documentation. Moreover, HyD needs to remind its staff to input the EI records correctly in RMMS in order to generate NFs when necessary.

Room for improvement in conducting EAs

2.26 For determining whether the M&M works are undertaken in a satisfactory manner by the contractors, HyD's staff or appointed consultants plan and conduct audits on the M&M works carried out by the road maintenance contractors. Upon receipt of inspection reports from the contractors, the inspected items will be selected for auditing. For the 7 road maintenance contracts (excluding expressways and high speed roads), EAs are carried out by appointed consultants under 6 consultancy agreements and for the 2 expressways and high speed roads maintenance contracts, EAs are carried out by HyD's staff.

2.27 ***EAs carried out by consultants.*** Audit sample check of EAs carried out for the 2 road maintenance contracts under a consultancy agreement with the agreement period from March 2024 to August 2025 revealed the following inadequacies:

- (a) ***Number of EAs carried out not meeting requirements.*** According to the consultancy agreement, the consultant should plan and carry out EAs on contractors' maintenance works and the number of audits was stated in the consultancy agreement. In addition, the consultant should carry out EAs for all GIs, PIs and special inspections on the vehicular bridges, footbridges and underpasses on red or pink routes (Note 15). However, Audit noted that while there were a total of 77 GIs, PIs and special inspections on red or pink routes carried out by the contractors during the period, only 60 EAs (i.e. shortfall of 17 EAs) were conducted by the consultant;

Note 15: *“Red route” generally refers to main roads with high traffic volume, connecting major areas, densely populated areas and city centres, and “pink route” generally refers to secondary major roads, such as traffic-sensitive roads connecting trunk roads and local roads between districts, or primary and secondary roads with traffic flow just below that of red routes.*

- (b) ***Samples taken out of sequence without justifications documented.*** According to the consultancy agreement, to prevent manipulation of the audits, the audit samples should be generated at random by using the computer facilities installed at the office of HyD. The consultant should follow the sequence of the samples on the computer-generated list in conducting EAs and provide justification if the audits are conducted out of sequence. Audit examination of the sampling records of the agreement revealed that, among 90 lists of samples generated, some samples in 5 (6%) lists were taken out of sequence without justifications documented. Upon enquiry, HyD informed Audit in February 2026 that the consultant had provided the justifications verbally after receiving the computer-generated lists;
- (c) ***Advance notice of EAs given to contractors contrary to contract requirement.*** According to the road maintenance contracts, unless prior arrangement for gaining access is required, HyD or the consultant shall normally give not more than 24 hours' advance notice notifying the contractor of the day of carrying out EAs, and not more than 2 hours' advance notice of the sites selected. However, Audit sample examination of 18 notification records to the contractor revealed that the consultant had given more than 24 hours' advance notices before the days of carrying out EAs in 8 cases;
- (d) ***Late issuance of NFs by the consultant.*** According to HyD, the consultant would verbally inform the contractor the defects found on site during an EA and issue an NF as soon as practicable after confirming that the defects were within the scope of M&M provisions. The contractor should rectify the defects within the time limits stipulated in NFs. Audit analysis of the 151 NFs revealed that 76 NFs had been issued to the contractors 1 day to 67 days (averaging 13 days) after conducting EAs. Due to the late issuance of NFs by the consultant, the due dates for rectification were extended accordingly; and
- (e) ***Default notices not duly issued.*** According to the consultancy agreement, if the contractor fails to rectify the defects in NFs within the stipulated timeframe, default notices inducing deduction in the monthly fee will be issued by the consultant. Audit examination of the RMMS records for

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89 NFs (Note 16) issued by the consultant revealed that for 9 (10%) NFs, the contractor had failed to rectify the defects within the stipulated timeframe. Of these 9 cases:

- (i) a default notice had been issued in January 2025 for 1 case; and
- (ii) for the remaining 8 cases, while the contractor had later rectified the defects in February and March 2025, the consultant had not issued any default notices to the contractor as at 31 December 2025. Upon enquiry, HyD informed Audit in January 2026 that it had issued the relevant default notices (involving \$180,000) to the contractor during the process of finalisation of the relevant M&M task orders in January 2026.

2.28 In Audit's view, HyD needs to take measures to ensure that the consultants carry out EAs in accordance with the consultancy agreements. In particular, the consultants have to:

- (a) carry out EAs on all GIs, PIs and special inspections on the vehicular bridges, footbridges and underpasses on red or pink routes;
- (b) follow the sequence of the samples on the computer-generated list in conducting EAs and properly document the justifications if the audits are conducted out-of-sequence;
- (c) give not more than 24 hours' advance notice notifying the contractor of the day of carrying out EAs, and not more than 2 hours' advance notice of the sites selected;
- (d) issue NFs showing the defects to the contractors as soon as practicable; and
- (e) issue default notices for non-compliance of NFs in a timely manner.

Note 16: *The remaining 62 NFs were issued before the implementation of RMMS for the contracts and therefore, not recorded in RMMS.*

Audit recommendations

- 2.29 **Audit has recommended that the Director of Highways should:**
- (a) **take measures to ensure that EIs are conducted in accordance with MAH with proper documentation;**
 - (b) **remind HyD's staff to input the EI records correctly in RMMS in order to generate NFs when necessary; and**
 - (c) **take measures to ensure that the consultants carry out EAs in accordance with the consultancy agreements. In particular, the consultants have to:**
 - (i) **carry out EAs on all GIs, PIs and special inspections on the vehicular bridges, footbridges and underpasses on red or pink routes;**
 - (ii) **follow the sequence of the samples on the computer-generated list in conducting EAs and properly document the justifications if the audits are conducted out-of-sequence;**
 - (iii) **give not more than 24 hours' advance notice notifying the contractor of the day of carrying out EAs, and not more than 2 hours' advance notice of the sites selected;**
 - (iv) **issue NFs showing the defects to the contractors as soon as practicable; and**
 - (v) **issue default notices for non-compliance of NFs in a timely manner.**

Response from the Government

2.30 The Director of Highways agrees with the audit recommendations. He has said that:

- (a) EI reports/summaries for monitoring compliance with EI frequency will be included in the second phase of RMMS. This will enable HyD to easily review whether EIs are conducted in accordance with the requirements stipulated in MAH and to maintain proper documentation;
- (b) HyD has reminded its staff to input the EI records correctly in RMMS. Starting from the second half of 2026, refresher training on the use of RMMS will be arranged for staff every year; and
- (c) refresher training sessions are being arranged for consultants every year to reiterate the requirements stipulated in the consultancy agreements, covering the requirements on advance notice periods, sample sequence compliance, and timely issuance of NFs and default notices, etc. HyD is planning to state the timeframe in the future EA consultancy agreements for the consultants to follow in respect of issuing NFs and default notices.

Electronic Maintenance Management System

2.31 As mentioned in paragraph 1.4(d), contractors are required to establish and maintain an effective EMMS to facilitate retrieval of all aspects of the maintenance, inspection, remedial and repair works. According to the contract provisions, all programme/progress data, maintenance records for all types of works carried out by the contractor, and reports from the contractor pertaining to the management and maintenance of the road network should be incorporated into EMMS.

Need to make better use of the information in EMMS for monitoring the contractors' performance

2.32 A number of audit observations in the above paragraphs revealed that the contractors did not fully utilise EMMS to report the inspection and maintenance works, e.g. record of completion of rectification of defects (see para. 2.12). In order to facilitate the record keeping and HyD's monitoring of contractors' performance, in

addition to ensuring that contractors report their inspection and maintenance works in EMMS on a timely basis, there is merit for HyD to make better use of the information in EMMS, and discuss with contractors to enhance the functions of EMMS for management analysis where appropriate. For example, with the effective use of EMMS, HyD can easily identify any required inspections not scheduled (see para. 2.5) and any completion of rectification of defects not recorded (see para. 2.12).

Audit recommendation

2.33 **Audit has *recommended* that the Director of Highways should make better use of the information in EMMS for monitoring the contractors' performance, and discuss with contractors to enhance the functions of EMMS for management analysis where appropriate.**

Response from the Government

2.34 The Director of Highways agrees with the audit recommendation. He has said that HyD has reminded its staff to make better use of the information in EMMS and to initiate discussions with the contractors on further enhancements, including additional functions to facilitate management analysis.

PART 3: NON-ROUTINE MAINTENANCE WORKS

3.1 This PART examines HyD’s work in monitoring non-routine maintenance works of highway structures, focusing on:

- (a) planning of non-routine maintenance works (paras. 3.3 to 3.10);
- (b) administration of works under non-routine maintenance task orders (paras. 3.11 to 3.25); and
- (c) checking of measurement of works completed under non-routine maintenance task orders (paras. 3.26 to 3.34).

3.2 During the period from 2022-23 to 2025-26 (up to September 2025), total payments made for non-routine maintenance of highway structures under the road maintenance contracts were \$862 million (see Table 3).

Table 3

**Payments made for non-routine maintenance
of highway structures under the road maintenance contracts
(2022-23 to 2025-26 (up to September 2025))**

Highway structure	2022-23	2023-24	2024-25	2025-26 (up to September 2025)	Overall
	(\$ million)				
Vehicular bridge and underpass	101	155	165	63	484 (56%)
Footbridge and subway	76	63	75	45	259 (30%)
Others (Note)	25	38	33	23	119 (14%)
Total	202	256	273	131	862 (100%)

Source: Audit analysis of HyD records

Note: Others included covers to walkways, noise barriers and enclosures, culverts and sign gantries, etc.

Planning of non-routine maintenance works

3.3 According to HyD, from time to time, non-routine maintenance of highway structures is carried out to rectify defects found on the highway structures which are beyond the scope of M&M provisions or to implement the Government's initiatives. For works of non-recurrent nature to be funded by the Capital Works Reserve Fund (CWRF), HyD includes them in the full list of items proposed to be funded by CWRF Block Allocations. Each project on the list has a project title, a proposed cost estimate and a proposed completion date. Before the commencement of the works, an E/CTO prepares a paper, setting out the project scope, justifications, financial implications, and scheduled commencement and completion dates, to obtain the technical and financial approval by respective authorities (Note 17).

Need to regularly review the status of projects

3.4 According to HyD, there were 83 projects related to the non-routine maintenance of highway structures under the purview of HyD's Structure Maintenance Teams in the full list of items proposed to be funded by CWRF Block Allocations for 2025-26 (hereinafter referred to as "the list for 2025-26") submitted to the Legislative Council in January 2025. The progress of the 83 projects as at 30 September 2025 was as follows:

- (a) 62 (75%) projects had been completed, among which 3 (5% of 62) projects were completed 5 to 15 months (averaging 9 months) after the proposed completion dates stated in the list for 2025-26;
- (b) 8 (9%) projects were in progress, among which the proposed completion dates were in the first half of 2025 for 4 (50% of 8) projects and in the second half of 2023 for 1 (13% of 8) project as stated in the list for 2025-26; and
- (c) 13 (16%) projects were still under planning, among which the proposed completion dates of 7 (54% of 13) projects were before 30 September 2025. Audit sample checked a project for the replacement of bearings on a

Note 17: *According to HyD, the technical approval for works of non-recurrent nature should be obtained from the Chief Highway Engineer or Principal Project Coordinator. The financial approval of the authorities should be sought according to Financial Circular No. 3/2011.*

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vehicular bridge (Note 18) with the proposed completion date in the second half of 2024. Up to 31 January 2026, the responsible E/CTO had not yet submitted a paper to obtain the technical and financial approval, and the relevant works had not yet commenced.

3.5 In February and March 2026, HyD informed Audit that:

- (a) similar to other works contracts, the progress of maintenance works was affected by various factors, some of which might fall outside the contractors' control, such as inclement weather and epidemics;
- (b) the work progress of the project with the proposed completion date in the second half of 2023 as mentioned in paragraph 3.4(b) was affected by the outbreak of the coronavirus disease (COVID-19) epidemic, and the project was completed on 3 October 2025; and
- (c) in the latest GI of the sampled highway structure as mentioned in paragraph 3.4(c) conducted in September 2025, only minor defect of non-urgent nature was noted for one bearing, and no significant defect was noted for all other bearings of the highway structure. Accordingly, replacement of the bearing was not required at this stage, and the rectification works would be scheduled to be carried out under routine maintenance.

Audit notes that some of the projects in the list for 2025-26 may not be implemented as proposed for various reasons as mentioned above. In Audit's view, HyD needs to regularly review the status of projects in the full list of items proposed to be funded by CWRP Block Allocations.

Note 18: *The primary function of bearings (see Photograph 1(c) in para. 1.6) is to provide support to the bridge by transferring the loads from deck to pier while allowing for movement and rotation of deck.*

***Need to keep under review the lists of defects
for scheduling non-routine maintenance works***

3.6 According to HyD, bearings and vehicle parapets are essential components to ensure the long-term proper functioning of bridges and to protect road users in case of traffic accidents respectively. Audit noted that, among the 15 (3+4+1+7) projects which were completed or to be completed after the proposed completion dates as mentioned in paragraph 3.4(a) to (c), 5 projects were related to the replacement of impaired bearings and 2 projects were related to the enhancement of vehicle parapets. Audit further reviewed the lists of defects as at 31 December 2025 and noted that 24 defects (involving 10 highway structures) related to bearings or vehicle parapets with relatively high severity levels at “4” or “3” (Note 19) were identified during inspections from April 2022 to September 2024. The rectification works of these defects were of non-recurrent nature and required works beyond the scope of M&M provisions. Audit checked these 24 defects against the projects in the list for 2025-26 and noted that:

- (a) the rectification works of 16 (67%) defects (involving 4 highway structures) were completed as at 31 January 2026 or included in the list for 2025-26; and
- (b) the rectification works of 8 (33%) defects found in bearings (with severity level at “3” and involving 6 highway structures) were not included in the list for 2025-26 and task orders for rectifying these defects were yet to be issued up to 31 January 2026.

3.7 In February and March 2026, HyD informed Audit that:

- (a) regarding the 8 defects yet to be rectified mentioned in paragraph 3.6(b), the common defect was surface rusting which would not pose any imminent danger to the bridge structure. Necessary interim remedial works (i.e. derusting and local protective painting) were carried out in February 2026 to restore the bearing conditions. The conditions of these

Note 19: *Defects identified during routine inspections are designated with a severity level from “0” to “4” according to the attention level required ranging from no attention required to urgent/immediate attention required. In January 2026, HyD provided to Audit the lists of defects for the 9 contracts in effect as at 30 September 2025. Among the 9 lists, 2 lists did not indicate the severity levels of the defects.*

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bearings had been closely monitored and replacement would be planned when necessary;

- (b) bridges were usually supported on bearing systems comprising multiple bearing units with adequate buffer. As a bearing system was composed of a group of structural components designed for ensuring long-term proper functioning of a bridge, an individual component with defect at severity level at “3” or above alone would not affect the overall functionality of the bridge. When a highway structure was identified with defect(s) of individual component(s) at severity level(s) at “3” or “4”, HyD would inspect the highway structure concerned in a timely manner to assess its overall structural integrity and stability; and
- (c) HyD would also arrange necessary remedial works, such as derusting and local protective painting, as an interim measure to ensure safe use of the structure by the public, with a view to allowing sufficient time for procurement of new component(s) (especially bearings which are tailor-made for individual bridges), preparation of necessary temporary works (which are often complex) and coordination among relevant authorities for the associated temporary traffic arrangement. HyD would then continue to closely monitor the overall condition of the highway structure and plan for long-term rectification works (e.g. replacement of bearings) as needed, in order to restore good condition of the highway structure. The above approach was commonly adopted in the industry worldwide.

Audit notes that HyD attaches great importance to maintaining highway structures. According to HyD, as regards impaired bearings, severe defects can affect the riding quality and comfort of vehicular bridges if they are not rectified in a timely manner, and it had put in place a robust maintenance strategy to avoid such problems. In Audit’s view, HyD needs to keep under review the lists of defects for scheduling non-routine maintenance works.

Need to promptly finalise project accounts and release unused funds upon completion of relevant works

3.8 According to HyD’s guidelines, upon completion of works under a project funded by CWRP Block Allocations, the project account should be finalised, and approval to delete the item from block allocations should be sought as early as

practicable to enable more effective monitoring and control of expenditures. Officers should regularly review whether commitment can be released by deleting completed items to avoid unnecessary lock-up of resources. Audit noted that, among the 62 completed non-routine maintenance projects mentioned in paragraph 3.4(a), all relevant task orders for 21 projects (with total approved cost estimates of \$46 million) had been finalised as at 30 September 2024 and all works of these projects had been completed. However, these 21 projects were still included in the list for 2025-26 submitted to the Legislative Council in January 2025 and HyD's staff had not yet released the unused funds of \$12 million. Audit considers that HyD needs to promptly finalise the project accounts and release unused funds upon completion of relevant works.

Audit recommendations

- 3.9 **Audit has recommended that the Director of Highways should:**
- (a) **regularly review the status of projects in the full list of items proposed to be funded by CWRP Block Allocations;**
 - (b) **keep under review the lists of defects for scheduling non-routine maintenance works; and**
 - (c) **promptly finalise the project accounts and release unused funds upon completion of relevant works.**

Response from the Government

3.10 The Director of Highways agrees with the audit recommendations. He has said that HyD:

- (a) has reminded its staff to:
 - (i) regularly review the status of projects; and

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- (ii) continue to keep track of defects for which interim remedial measures have been implemented while permanent rectification works have yet to be carried out; and
- (b) is developing an additional procedure requiring the responsible E/CTOs to conduct half-yearly review on the status of the projects and to finalise the project accounts on a timely basis upon completion of works. The new procedure will be promulgated within the first half of 2026. Starting from the second half of 2026, refresher training will also be arranged for staff in relation to this new procedure every year.

Administration of works under non-routine maintenance task orders

3.11 As mentioned in paragraph 1.6, when maintenance works are required beyond the scope of M&M provisions, HyD may separately issue task orders and pay the contractors for the non-routine maintenance works. According to MAH, prior to the issuance of a task order, a cost estimate should be prepared, then checked by an Inspector of Works (IOW) and endorsed by E/CTO. The authority to issue task orders is subject to the financial limits specified in MAH.

Need to remind HyD's staff to properly maintain the records of site checks/visits

- 3.12 According to MAH, in order to monitor the progress of works:
- (a) ***Daily supervision.*** Works supervisors should conduct daily site checks on the progress and quality of works, and record the observations; and
 - (b) ***Periodic checking.*** IOWs should conduct site visits at least once per week to verify the progress and quality of works, to handle site problems, and to investigate and handle complaint. E/CTOs should conduct site visits at least once per two weeks to monitor the overall progress of works and the contractor's performance on site, and to resolve major site problems/interfaces and difficult complaints.

3.13 Audit sample check of 40 task orders with payments made during the period from April 2022 to September 2025 revealed that daily site checks had been conducted by works supervisors for 36 (90%) task orders. For the remaining 4 (10%) task orders, up to 28 February 2026, the site check records had not been provided for Audit’s inspection.

3.14 As regards the compliance issue of periodic checking, HyD informed Audit in February and March 2026 that:

- (a) IOWs and E/CTOs regularly conducted site visits in the districts under their purview which were not task-order based (i.e. not confined to the supervision of task orders). While each IOW and E/CTO was required to conduct site visits at least once per week and once every two weeks respectively, there was no specific minimum inspection frequency stipulated for individual task orders; and
- (b) unless IOWs and E/CTOs identified specific issues or noteworthy observations which warranted documentation for a task order, there was no documentation for site visits in any centralised register.

3.15 Based on Audit’s understanding, the purpose of site visits conducted by IOWs and E/CTOs might be related to a wide range of duties, including monitoring of routine maintenance works and non-routine maintenance works, assessment of general conditions of highway structures within the districts, as well as attending to other ad-hoc assignments/accidents, etc. In relation to the supervision of task orders, the fact that the records of such site visits have not been fully maintained is less than satisfactory. According to General Circular No. 3/2024 “Management of Government Records”:

- (a) records, irrespective of its physical format or media, are valuable resources of the Government to support evidence-based decision making, meet operational and regulatory requirements and are essential for an open and accountable government; and
- (b) good records management enhances operational efficiency and effectiveness while minimising costs.

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In Audit's view, HyD needs to remind its staff to properly maintain the records of site checks/visits and take measures to ensure that the site checks/visits are conducted at the frequencies stipulated in MAH.

Room for improvement in monitoring slow progress of works

3.16 The progress of the works should be closely monitored throughout the whole duration of a task order. According to MAH:

- (a) if any works lag behind schedule and it is likely to miss the target completion date of a task order, an E/CTO should issue a reminder letter requesting the contractor to take all necessary measures to expedite the works;
- (b) if the works have become overdue, a warning letter should be issued to require the contractor to take necessary steps immediately to expedite the completion of the works concerned;
- (c) once a task order is completed after the target completion date, the responsible engineer should conduct an assessment for granting extension of time (EoT) as soon as possible, irrespective of whether the contractor has submitted a notice of claim within the stipulated timeframe (Note 20); and
- (d) by comparing the actual completion date and the extended completion date (or the target completion date if EoT has not been granted) of a task order with overrun, the responsible engineer should consider whether to withhold

Note 20: *A contractor may submit a notice of claim to explain for overrun in completion and apply for EoT. The time limit of submitting the notice of claim is within 28 days after the cause of any overrun (for contracts adopting the "General Conditions of Contract for Civil Engineering Works" form) or within 8 weeks after becoming aware of a probable overrun (for contracts adopting the "New Engineering Contract — Term Service Contract" form).*

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the amount of liquidated damages for overrun in an interim payment to the contractor (Note 21) if any.

3.17 Audit examined the records of the non-routine maintenance task orders of highway structures with payments made during the period from April 2022 to September 2025. Among the 5,792 task orders with target completion dates on or before 30 September 2025:

- (a) 4,934 (85%) task orders were completed on or before the target completion dates stipulated in the task orders; and
- (b) 858 (15%) task orders were completed after the target completion dates stipulated in the task orders, with overruns ranging from 1 day to 1,007 days (averaging 52 days).

3.18 Among the 858 task orders completed after the target completion dates, Audit sample check of 30 task orders (with overruns ranging from 18 to 1,007 days) revealed that:

- (a) *Issuance of reminder letters.* For 27 (90%) task orders, up to 31 January 2026, the reminder letters had not yet been made available for Audit's inspection;
- (b) *Issuance of warning letters.* For 21 (70%) task orders, up to 31 January 2026, the warning letters had not yet been made available for Audit's inspection. Among the 9 (30%) task orders with warning letters issued, while MAH had not specified the timeframe to issue the warning letters, HyD took 2 to 219 days (averaging 58 days) after the respective target completion dates to issue the warning letters for the first time; and

Note 21: *According to MAH, a contractor can apply for interim payment for the completion of a part of a task order by submitting all necessary documents to support the application. Upon receipt of the application, HyD's Regional Offices should check the quantities of tasks claimed and the correctness of contract rates used in order to assess whether the claim value truly reflected the completion of the tasks. The aggregated interim payments for any task order of non-routine maintenance works should not exceed 90% of the estimated value of the task order.*

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- (c) *Assessment for granting EoT.* For 18 (60%) task orders, up to 31 January 2026, the assessments for granting EoT had not yet been made available for Audit's inspection. For the 12 (40%) task orders with assessments provided:
 - (i) while MAH required the responsible engineer to conduct the assessments as soon as possible, HyD took 5 to 2,211 days (averaging 698 days) after completion of the tasks orders to complete the assessments; and
 - (ii) there were 8 (67%) task orders with no EoT granted or the actual completion dates being later than the extended completion dates, and hence leading to imposition of liquidated damages. Up to 31 January 2026, for all of the 8 task orders, liquidated damages had been deducted from the final payments to the contractors.

3.19 In February 2026, HyD informed Audit that:

- (a) reminder letters and warning letters should only be issued when the cause of the late progress was attributable to the contractor's fault. Conversely, if such letters were issued when the cause was beyond the contractor's control (e.g. inclement weather), they might be construed by the contractor as acceleration instructions, which could potentially give rise to compensation claims or dispute;
- (b) the works of some sampled task orders were carried out during the outbreak of COVID-19 epidemic or affected by adverse weather conditions in recent years. EoT assessments would take these circumstances into account when reviewing the completion dates; and
- (c) for the case mentioned in paragraph 3.18(c)(i) where the assessment for granting EoT was completed 2,211 days after completion of the task order, the assessment was under dispute by the contractor, who therefore took additional time to submit supplementary information and supporting documents for the assessment.

3.20 Audit considers that HyD needs to step up efforts in monitoring the progress of task orders with slow progress of works and remind its staff to complete the assessments for granting EoT within a practicable timeframe.

Need to check the completion of works in a timely manner

3.21 Upon completion of a non-routine maintenance task order, HyD will arrange to check the completion of works. According to MAH, within 2 days after completion of a task order, the contractor is required to report completion in a completion form. Within 2 working days from the date of receipt of the completion form, the responsible IOW should check or arrange to check the completed works.

3.22 Among the non-routine maintenance task orders of highway structures with payments made during the period from April 2022 to September 2025, 5,794 task orders were completed on or before 30 September 2025. Among these 5,794 task orders, Audit sample checked 50 completed task orders and noted that:

- (a) for 33 (66%) task orders, the responsible IOWs checked completion of works within 4 working days after completion; and
- (b) for 17 (34%) task orders, the responsible IOWs took 6 to 161 working days (averaging 47 working days) after completion to check the completion of works.

3.23 In February 2026, HyD informed Audit that late checking of the completion of works was usually due to the late submission of completion forms by contractors. Audit considers that HyD needs to check the completion of works in a timely manner after receiving the completion forms from the contractors.

Audit recommendations

3.24 **Audit has *recommended* that the Director of Highways should:**

- (a) **remind HyD's staff to properly maintain the records of site checks/visits;**

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- (b) **take measures to ensure that the site checks/visits are conducted at the frequencies stipulated in MAH;**
- (c) **step up efforts in monitoring the progress of task orders with slow progress of works;**
- (d) **remind HyD's staff to complete the assessments for granting EoT within a practicable timeframe; and**
- (e) **check the completion of works in a timely manner after receiving the completion forms from the contractors.**

Response from the Government

3.25 The Director of Highways agrees with the audit recommendations. He has said that:

- (a) HyD will develop a standardised register and require its staff to separately record the carrying out of site checks/visits. The new register will be promulgated by mid-2026;
- (b) HyD has reminded its staff to issue reminder letters and/or warning letters promptly. Slow progress of works may be brought up at the monthly meetings with the contractors. Liquidated damages will be imposed for task orders with overruns as appropriate. For task orders with prolonged overruns, the issue will be escalated to the management of HyD and the contractors for appropriate steering and follow-up actions;
- (c) red flag and to-do-list functions have been developed in the second phase of RMMS to remind the Regional Offices to conduct EoT assessments; and
- (d) system-generated reminders will be issued to the responsible staff for each task order, reminding them to check the completion of works after receiving the completion forms from the contractors. Starting from the second half of 2026, refresher training will also be arranged for staff every year.

Checking of measurement of works completed under non-routine maintenance task orders

3.26 After checking the completion of works, HyD will arrange for checking the measurement of the works and process the final payment of the task order. Audit analysis of the 5,794 completed non-routine maintenance task orders with payments made during the period from April 2022 to September 2025 (see para. 3.22) revealed that:

- (a) for 5,363 (93%) task orders, HyD took 15 to 2,776 days (averaging 352 days) after completion of the task orders to process the final payments; and
- (b) for the remaining 431 (7%) task orders, HyD had not yet made the final payments as at 30 September 2025. These included 298 task orders with works completed within 1 year and 18 task orders with works completed for more than 3 years.

Room for improvement in submitting or collecting relevant completion documents for finalisation of task orders

3.27 As the contractor is paid for the works done, measurement of the works done under a task order is essential for payment purpose. According to HyD, to check the measurement and process the final payment for a completed task order, the following documents and procedure are required:

- (a) ***Hidden works records.*** Within 14 days after completion of the task order, the contractor shall submit the hidden works records to the Regional Offices. A hidden works record documents the measurement of works that cannot be verified after the works are covered up or put out of view. As far as practicable, a hidden works record should be prepared and agreed on site before works are covered up or removed;
- (b) ***Completion data and relevant documents.*** Within 60 days after completion of a task order, the responsible E/CTO of the Regional Offices should submit the completion data and relevant documents, including the task order, hidden works records, a certification of completion, a complete set

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of variations, photographs and detailed records of the works done, to MAQS Unit;

- (c) ***Dimension books.*** Within 90 days after completion of a task order, the contractor should measure the works done and enter the measurement into a dimension book for submission to MAQS Unit. In case of late submission of dimension books, HyD may require recovery of interim payments from the contractor. If the responsible E/CTO of the Regional Offices is satisfied that the late submission of a dimension book is not due to the fault of the contractor (e.g. disputes) and that the previous interim payment should not be recovered, he/she should withhold the recovery of interim payment with reasons. If an interim payment is recovered, it will be repaid to the contractor when the dimension book is subsequently submitted; and
- (d) ***Clearance of outstanding issues.*** The Regional Offices shall clear the outstanding issues of a completed task order, for example, to agree the amount of liquidated damages with the contractor after conducting the assessment for granting EoT.

3.28 Audit sample examination of the relevant records of 50 completed task orders (see para. 3.22) revealed that:

- (a) for 23 (46%) task orders, the contractors took more than 14 days after completion of the task orders to submit the hidden works records, ranging from 16 to 671 days (averaging 139 days);
- (b) for 33 (66%) task orders, the Regional Offices took more than 60 days after completion of the task orders to submit the completion data and relevant documents to MAQS Unit, ranging from 61 to 700 days (averaging 175 days);
- (c) for 30 (60%) task orders, the contractors took more than 90 days after completion of the task orders to submit the dimension books to MAQS Unit. These included late submission for 29 (58%) task orders (taking 102 to 701 days, averaging 232 days) and pending submission for 1 (2%) task order which had been completed for 245 days up to 31 January 2026. Audit sample checked 5 task orders regarding the recovery of interim payments and noted that the responsible E/CTOs had withheld the recovery for

22 times in total. While these 22 withholding actions were all marked with the same reason as hidden works records not agreed, 11 (50% of 22) withholding actions were taken after certifying the respective hidden works records (i.e. the respective hidden works records had been agreed between HyD and the contractors); and

- (d) regarding clearance of outstanding issues, among the 49 completed task orders with the relevant documents (as mentioned in para. 3.27(a) to (c)) submitted:
 - (i) for 47 (96%) task orders, the Regional Offices had cleared all outstanding issues. The procedures of receiving the relevant documents and clearing outstanding issues had taken 24 to 2,229 days (averaging 263 days) after completion of the task orders; and
 - (ii) for 2 (4%) task orders, as at 31 January 2026, the Regional Offices had not yet cleared all outstanding issues. These task orders were completed in March 2022 and September 2024 respectively.

3.29 In March 2026, HyD informed Audit that:

- (a) the clearance of outstanding issues, in particular the assessment of EoT and the associated quantum of liquidated damages, as well as the valuation of variations, required substantiation and input from the contractors; and
- (b) on some occasions, the contractors had taken a long time to compile and submit the necessary information to HyD for assessment.

3.30 In order to expedite the finalisation of task orders, Audit considers that HyD needs to:

- (a) properly document the reasons for late submission of hidden works records and dimension books by contractors;
- (b) remind contractors to submit hidden works records and dimension books in a timely manner for processing payments;

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- (c) properly document the reasons for withholding the recovery of interim payments in case of late submission of dimension books; and
- (d) step up efforts in improving the timeliness of:
 - (i) compiling the completion data and gathering the relevant documents of completed non-routine maintenance task orders; and
 - (ii) clearing outstanding issues of completed non-routine maintenance task orders with the contractors.

Need to remind HyD's staff to conduct office checks and technical checks in a timely manner

3.31 According to HyD's Site Staff Manual, MAQS Unit arranges to check the measurement of the works of the sampled task orders in various ways, among others, including:

- (a) ***Office check.*** This is to verify the correctness of works done (e.g. thicknesses, finishes, class of concrete, type of material used) under a task order. For sampled task orders, MAQS Unit will return the documents to the Regional Offices and require the Offices to perform office checks within 21 days after receipt of the documents; and
- (b) ***Technical check.*** This is to perform professional review of the submissions from the Regional Offices and the contractors, and the compliance with the contract provisions. For sampled task orders, MAQS Unit has to conduct technical checks within 42 days upon receipt of the documents returned from the Regional Offices after office checks.

3.32 Among the 50 completed task orders selected for Audit's review, MAQS Unit had arranged to check the measurement for 47 task orders (see para. 3.28(d)(i)). Audit noted that:

- (a) for 8 (17%) task orders, the Regional Offices took more than 21 days to perform office checks after receipt of the documents returned from MAQS Unit, ranging from 26 to 64 days (averaging 36 days); and

- (b) except for 4 task orders which were returned from the Regional Offices after office checks in January 2026 and undergoing technical checks as at 31 January 2026, technical checks had been completed for 43 task orders, in which for 4 (9% of 43) task orders, MAQS Unit took more than 42 days to conduct technical checks upon receipt of the documents returned from the Regional Offices after office checks, ranging from 55 to 85 days (averaging 66 days).

Audit considers that HyD needs to remind its staff to conduct office checks and technical checks for the sampled non-routine maintenance task orders in a timely manner.

Audit recommendations

3.33 **Audit has *recommended* that the Director of Highways should:**

- (a) **properly document the reasons for late submission of hidden works records and dimension books by contractors;**
- (b) **remind contractors to submit hidden works records and dimension books in a timely manner for processing payments;**
- (c) **properly document the reasons for withholding the recovery of interim payments in case of late submission of dimension books;**
- (d) **step up efforts in improving the timeliness of:**
 - (i) **compiling the completion data and gathering the relevant documents of completed non-routine maintenance task orders; and**
 - (ii) **clearing outstanding issues of completed non-routine maintenance task orders with the contractors; and**
- (e) **remind HyD's staff to conduct office checks and technical checks for the sampled non-routine maintenance task orders in a timely manner.**

Response from the Government

3.34 The Director of Highways agrees with the audit recommendations. He has said that:

- (a) system-generated reminders will be issued to the responsible staff for each task order, reminding them to urge the contractors to submit hidden works records and dimension books in a timely manner. In the second phase of RMMS, an additional field will be included to require the contractors to provide justifications for any long-outstanding submissions;
- (b) HyD has reminded its staff to:
 - (i) properly document the reasons for withholding the recovery of interim payments;
 - (ii) compile completion data, gather the relevant documents and clear all outstanding issues in a timely manner;
 - (iii) urge the contractors to submit the required information promptly so as to facilitate the payment process; and
 - (iv) conduct office checks and technical checks for the sampled non-routine maintenance task orders in a timely manner; and
- (c) starting from the second half of 2026, refresher training on the above key issues will be arranged for staff every year.

PART 4: OTHER RELATED ISSUES

4.1 This PART examines other related issues on the maintenance of highway structures, focusing on:

- (a) beautification works (paras. 4.2 to 4.13);
- (b) RMMS (paras. 4.14 to 4.27); and
- (c) application of innovative technologies (paras. 4.28 to 4.32).

Beautification works

4.2 Since 2017, tying in with their maintenance and renovation programmes, HyD has been drawing up thematic designs each year for selected bridges or subways with high pedestrian flow at prominent locations. Following the 2022 Policy Address, HyD was assigned to carry out refurbishment and beautification works for 111 highway structures/retaining walls across districts in 2023.

4.3 In 2024 and 2025, as part of the government-wide district governance work on improving environmental hygiene and beautifying the cityscape, HyD carried out refurbishment and beautification works of two footbridges/subways (see Photographs 2(a) and (b) for an example) in each of the 18 districts in two phases (i.e. a total of 36 footbridges/subways) with a view to enhancing the safety, accessibility and comfort of these facilities while enhancing the streetscape at the same time. According to HyD, all of these refurbishment and beautification works have been completed at an estimated cost of \$62.7 million (each works ranging from \$38,700 to \$6.7 million) and the actual expenditure up to 31 December 2025 was \$55.3 million.

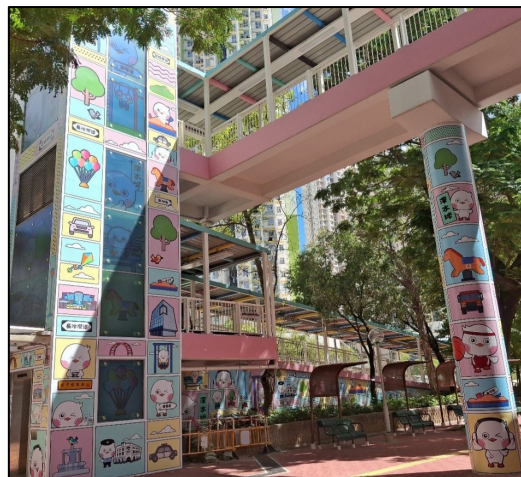
Photographs 2(a) and (b)

An example of beautification works: Footbridge at Lai Chi Kok Road and Tonkin Street

(a) Before beautification works



(b) After beautification works



Source: HyD records

Need to critically evaluate the reasonableness of non-schedule rates

4.4 According to HyD, under the road maintenance contracts between HyD and the contractors, beautification works on highway structures are undertaken by the road maintenance contractors. However, in certain cases, taking into account the contractors' resource constraints and engagement in pressing tasks, HyD may arrange for some beautification works to be carried out by other contractors (e.g. through open tender). In this connection, of the 36 beautification works, 27 were carried out by the road maintenance contractors under the relevant contracts and 9 were awarded to a contractor through a tender exercise.

4.5 For the beautification works of 27 footbridges/subways carried out by the road maintenance contractors, separate task orders were issued because the works were beyond the scope of M&M provisions under the road maintenance contracts. According to the road maintenance contracts, the Schedule of Rates stipulated in the contracts should be applied for the measurement of works of the task orders. However, where the Schedule of Rates does not include applicable rates for the required works and non-schedule rates are necessary, such rates have to be ascertained

by HyD according to the contract provisions. According to HyD, its existing practice for the formulation of a non-schedule rate for beautification works is as follows:

- (a) as stipulated in the contract provisions, the road maintenance contractor in the respective region is requested to advise the actual costs reasonably incurred (such as material costs, supplier's and sub-contractor's costs, labour costs, plant costs, etc). If quotations from sub-contractors are invited, they shall be submitted to HyD and opened at the presence of both HyD's staff and the contractor's staff;
- (b) HyD's engineer grade officer or project coordinator assesses the reasonableness of the quoted prices by comparing the unit rate (e.g. price per square metre) with those of similar past works;
- (c) a fixed percentage according to the contract provisions would be added to the quoted price to account for profit, overheads, management and supervision fees of the contractor for the calculation of non-schedule rate; and
- (d) the relevant documents will be submitted to the Regional Highway Engineer for approval.

4.6 Of the beautification works of the 27 footbridges/subways carried out by the road maintenance contractors, the Schedule of Rates was applied in the measurement of works for 11 footbridges/subways. For the remaining 16 footbridges/subways, since the Schedule of Rates did not include applicable rates for some works elements, quotations from sub-contractors were invited and non-schedule rates were adopted (see Table 4). With HyD's approval, the beautification works of these 16 footbridges/subways were carried out by 5 different sub-contractors. Audit noted that among them, a sub-contractor was awarded the beautification works of 8 footbridges/subways (with a total quoted price of \$26.8 million), which were maintained by the same road maintenance contractor. According to HyD:

- (a) the sub-contractor awarded the beautification works of 8 footbridges/subways was the current general structure maintenance sub-contractor of the road maintenance contractor;

Other related issues

- (b) there was merit that sub-contractors of road maintenance contractors might utilise their existing resources and leverage their experience in structure maintenance works to formulate more competitive quotations. Having the same sub-contractor carrying out similar beautification works could also achieve a synergistic effect, resulting in improved efficiency; and
- (c) it was considered that such working relationship would not affect the acceptability of their quotations as long as the quotation invitation and evaluation process was conducted in a fair and proper manner.

Table 4

**Beautification works carried out for the 36 footbridges/subways
(2024 to 2025)**

Works carried out by	Number of footbridges/subways	Average unit rate (Note 1) (\$ per square metre)	Total estimated costs (Note 2) (\$ million)
Road maintenance contractors			
- involving adoption of non-schedule rates for some works	16	1,308.7	51.6
- applying the Schedule of Rates	11	1,050.1	7.7
Contractor with contract awarded in a tender exercise	9	1,006.7	3.4
Overall	36	1,154.2	62.7

Source: Audit analysis of HyD records

Note 1: The average unit rate was determined by averaging the unit rates of individual structures, where the unit rate of individual structure was calculated by dividing the estimated cost of the beautification works of a structure by its beautification area.

Note 2: Total estimated costs consisted of costs of temporary traffic arrangements, overhead and profits of non-schedule rates, contingencies, etc.

Remarks: The scope of beautification works of individual footbridge/subway may vary and hence their estimated costs may differ significantly (see para. 4.7(a)).

4.7 In order to review the evaluation process of quotation, Audit examined the beautification works of the 16 footbridges/subways involving adoption of non-schedule rates and found that:

- (a) the unit rates calculated based on the prices quoted by the sub-contractors (see para. 4.5(b)) varied significantly from \$165 to \$3,429 per square metre. According to HyD, the significant variation was due to the different nature and scopes of beautification works. For example, some works only involved painting of existing structures, while others covered the design, supply, and installation of thematic wallpapers. Certain works also included the design and execution of modifications of structures. Given these substantial variations, the unit rates among different beautification works might not be directly comparable;
- (b) in assessing the reasonableness of the quoted prices for some beautification works, the ranges of the benchmark unit rates used by HyD based on similar past works were wide. For example, in the beautification works of two structures, the difference between the lower and upper benchmark unit rates was 216% from \$773 to \$2,442 per square metre;
- (c) certain unit rate assessments relied on benchmarks from dissimilar works. For instance, some works involving wallpaper installation and basic painting were compared to beautification works that included thematic painting and minor structural modifications. Similarly, some chromatic painting works were benchmarked against thematic painting works; and
- (d) for the beautification works of one structure involving both wallpaper installation and thematic painting, the unit rates for these specific works elements were benchmarked separately against comparable works, whereas unit rates for the beautification works of other structures comprising multiple works elements were evaluated for the works as a whole.

4.8 In March 2026, HyD informed Audit that:

- (a) the territory-wide structure beautification initiative was the Government's new initiative to enhance the walking environment and the benchmark rates available for assessment were therefore limited at this early stage. With the increasing number of beautification works being completed, more

Other related issues

benchmark unit rates would gradually become available to facilitate future assessments; and

- (b) the unit rate of non-schedule items depended on various factors. In addition to the nature of the works, it was affected by the prevailing market conditions, site constraints, availability of site access and extent of temporary works required. These factors had been taken into account when selecting the benchmarks for unit rate assessment and dissimilar works could also be referenced in this regard.

4.9 In May 2020, the Development Bureau promulgated a memorandum stating that where the use of non-schedule rate is unavoidable, officers administering the term contracts should adopt a prudent approach to ensure that the usage is soundly justified without abuse. In Audit's view, there is a cause of concern that the reasonableness of the unit rates may not have been fully evaluated and soundly justified. Audit considers that HyD needs to critically evaluate the reasonableness of non-schedule rates for beautification works. In addition, there is merit for HyD to consider incorporating commonly used items in beautification works into the Schedule of Rates for future road maintenance contracts where appropriate.

Need to enhance maintenance procedures for beautification works of highway structures

4.10 As mentioned in paragraph 4.2, since 2017, HyD has been drawing up thematic designs each year for selected bridges or subways with high pedestrian flow at prominent locations. In December 2025 and January 2026, Audit conducted field inspections of 10 footbridges/subways with beautification works previously carried out and noted defects in 8 of them. Defects identified comprised peeling paint and wallpapers, water stains and graffiti (see Photographs 3(a) to (d) for examples). Audit further checked the records of inspections conducted for these footbridges and subways in 2025 and noted that some of these defects had been reported by the contractors to HyD. However, since rectification of these defects were not within the scope of M&M provisions, separate task orders were necessary. Up to 31 January 2026, no separate task orders had been issued to contractors for these defects.

Photographs 3(a) to (d)

Examples of defects on beautification works of footbridges/subways

(a) Peeling paint



(b) Peeling wallpaper



(c) Water stain



(d) Graffiti



Source: Photographs taken by Audit staff on 18 December 2025, 27 and 28 January 2026

Other related issues

4.11 According to HyD, the stated objective of the beautification works of highway structures is to improve the walking experience of pedestrians and enhance citizens' sense of well-being in their daily life. In Audit's view, the premature defects would undermine this objective by compromising the intended aesthetic enhancement and diminishing the pedestrian experience. Given that these beautification works often involve non-standard materials and intricate designs, their preservations require dedicated and specific care. To ensure long-term sustainability and visual integrity of these public assets, Audit considers that HyD needs to enhance maintenance procedures for the beautification works of highway structures.

Audit recommendations

- 4.12 **Audit has recommended that the Director of Highways should:**
- (a) **critically evaluate the reasonableness of non-schedule rates for beautification works;**
 - (b) **consider incorporating commonly used items in beautification works into the Schedule of Rates for future road maintenance contracts where appropriate; and**
 - (c) **enhance maintenance procedures for the beautification works of highway structures.**

Response from the Government

4.13 The Director of Highways agrees with the audit recommendations. He has said that HyD:

- (a) has reminded its staff to continue to assess the reasonableness of non-schedule rates with due care concerning factors mentioned in paragraph 4.8(b);
- (b) is considering incorporating commonly used beautification works items into the Schedule of Rates for future road maintenance contracts; and

- (c) is reviewing the maintenance procedures of beautification works and considering incorporating relevant provisions in future road maintenance contracts to be awarded after 2026.

Road Maintenance Monitoring System

4.14 As mentioned in paragraph 1.7, HyD has developed and implemented RMMS since the end of 2022 to digitalise the monitoring and administration of highway structures maintenance works involving task orders. RMMS is designed for managing different workflows of inspection, submission and approval during the administration and supervision of the construction activities of all HyD's road maintenance contracts. It is fully accessible via a web-browser by a computer or mobile devices with secured internet connection. The development of the first phase of RMMS was divided into the pilot stage and customisation stage, and the systems of these stages were first launched in December 2022 and May 2024 respectively. The total development cost of the first phase of RMMS was \$6 million.

4.15 The objectives for the implementation of the first phase of RMMS are to enhance operational efficiency, improve data accuracy, reduce paperwork and streamline HyD's internal processes. Both the road maintenance contractors and HyD's staff can access the system. Some key components and functionalities of the first phase of RMMS are as follows:

- (a) ***Form submission and routing.*** Users can submit completed electronic forms through RMMS based on their roles. RMMS automatically routes the forms to the designated approvers or reviewers to eliminate the need for manual distribution and tracking of physical documents;
- (b) ***Tracking and monitoring.*** RMMS allows users to track the progress of forms in real-time, identify bottlenecks or delays, and generate reports on form completion and processing time;
- (c) ***Integration and data management.*** RMMS may integrate with other systems for importing form fields with pre-existing data, store form submissions and enable data retrieval for further analysis or integration with other processes; and

Other related issues

- (d) *Security and access control.* RMMS uses two-factor authentication, requiring each user to verify his identity with both a password and a verification code generated by an authenticator application in mobile device.

Need to ensure the completeness of information and timely processing of forms in RMMS

4.16 According to the workflow of the first phase of RMMS, RMMS lists all uncompleted task orders each day and HyD's staff needs to complete site check records in the system for their supervisors' checking. HyD's staff should also review the hidden works records and completion reports submitted by the contractors in RMMS before certifying the completion of works.

4.17 Audit sample check of 20 task orders of the 9 road maintenance contracts with the final payments made in the third quarter of 2025 revealed that:

- (a) 4 (20%) task orders were not recorded in RMMS; and
- (b) for the remaining 16 (80%) task orders:
 - (i) some records of task orders were not found in RMMS, including site check records, completion reports and hidden works records of 9, 10 and 13 task orders respectively; and
 - (ii) some records of task orders in RMMS remained in draft or pending approval status, including site check records, completion reports and hidden works records of 2, 4 and 3 task orders respectively.

4.18 In Audit's view, the full benefits of the digitalisation initiative of monitoring and administration of highway structures maintenance works have been compromised by the incomplete records and delays in form processing. In order to achieve the objective, HyD needs to take measures to ensure that the information in RMMS is complete and all required documents are reviewed/approved in a timely manner in RMMS.

Need to ensure that a system security audit is completed prior to implementation of a system

4.19 According to the Practice Guide for Security Risk Assessment & Audit issued by the then Office of the Government Chief Information Office (currently known as the Digital Policy Office), a security audit should be performed prior to the implementation or major enhancement of a system.

4.20 The agreement between HyD and the developer of the first phase of RMMS stipulated that an information technology security audit report, including findings and corrective actions taken, should be submitted to HyD two weeks before commissioning of the customised RMMS. Audit noted that a security audit of the customised RMMS had not been performed before its first launch in May 2024 (see para. 4.14). According to the email correspondences between HyD and the developer between January and April 2025, Audit noted that the developer misunderstood that HyD would engage an independent third party for conducting security audit. In April 2025, HyD reiterated to the developer of his responsibility.

4.21 Upon enquiry, HyD informed Audit in January and February 2026 that:

- (a) the internal security audit for the pilot stage was completed by the developer in August 2023. For the customisation stage, the system had to be adopted progressively for all road maintenance contracts. Since the customisation process was highly complicated as the system had to accommodate requirements, workflows and usage patterns of different contracts and users, it had taken more than one year to complete the whole process since May 2024, including making necessary adjustments in September 2025 taking into account the users' feedback;
- (b) in November 2025, the developer had engaged an information technology company to conduct a security audit for the system. The security audit report was completed in mid-February 2026; and
- (c) during the customisation stage, the risk of data security had been managed and assessed to be limited because:

Other related issues

- (i) RMMS did not process classified data, which reduced confidentiality impact and compliance exposure during the pilot period;
- (ii) RMMS was technically isolated, with no integration or network connection with other internal systems or external systems;
- (iii) two-factor authentication was implemented for users' access, reducing the likelihood of unauthorised access from common credential-based attack;
- (iv) the servers were housed in HyD's premises, instead of premises of the road maintenance contractors or public cloud based, reducing the chance of unauthorised physical access; and
- (v) before the completion of the security audit, there was no direct exchange of data with other systems.

4.22 In Audit's view, since security audit is a major component of information technology security management for ascertaining the effective implementation of security measures against departmental information technology security policies, standards, and other contractual or legal requirements, HyD needs to take measures to ensure that a system security audit is completed prior to implementation of a system.

Need to keep in view the enhancement of RMMS

4.23 Taking into account the audit observations in PARTS 2 and 3, Audit noted there were some limitations in the first phase of RMMS, as follows:

- (a) ***Default notices issued to contractors.*** Default notices issued were recorded in RMMS, including details such as the default types and associated task order numbers. However, the specific highway structures to which these default notices pertained were not recorded and therefore could not be identified in the system. As a result, the number of default notices issued for each highway structure was not available for analysis;

- (b) **EI.** Although the system allowed users to filter records by task order, it did not provide statistics by works nature for EI records related to M&M works and cleansing work (see para. 2.24(b)); and
- (c) **Progress of non-routine maintenance works.** There were no automatic reminder functions (e.g. exception reports or alerts) for the Regional Offices to conduct EoT assessments for task orders with overruns, check completion of works under non-routine maintenance task orders, obtain hidden works records from contractors, and submit completion data and relevant documents to MAQS Unit (see paras. 3.18(c), 3.22 and 3.28(a) and (b)) in a timely manner.

4.24 According to HyD, in order to streamline, digitalise and automate the existing workflows for road maintenance and monitoring, another consultant was engaged to develop the second phase of RMMS at an estimated cost of \$10 million. The key objectives of this system include:

- (a) enhancing work efficiency and productivity in public services, and promoting paperless operations;
- (b) streamlining the processes for M&M, EI and EA; and
- (c) providing a management dashboard which includes statistics and analysis of works to enable centralised visualisation of road maintenance activities.

Furthermore, by exchanging data with EMMS, the second phase of RMMS automatically performs checking and issues default notices to contractors for certain non-compliances (e.g. late submission of reports and rectification of defects). In addition, the system is deployed under the management of the Government Cloud Infrastructure System platform, with backup and replication services to ensure higher system availability, scalability and adaptive configuration, as well as round-the-clock business continuity.

4.25 In February 2026, HyD informed Audit that:

- (a) **Default notices issued to contractors.** Default notices serve to record the non-compliances found under individual task orders for subsequent

Other related issues

payment deduction. To meet operational needs, a monthly summary of default notices has been made available in the second phase of RMMS for review and necessary follow-up. Nevertheless, further enhancement of RMMS with additional functions to summarise or search all default notices issued for a particular highway structure would be considered in future enhancement of RMMS;

- (b) ***EI***. Report/summary for monitoring the compliance of EI frequency has already been planned for provision in the second phase of RMMS, which will be available for use by mid-2026; and
- (c) ***Progress of non-routine maintenance works***. In the second phase of RMMS, red flag and to-do-list functions have been developed to remind the Regional Offices to conduct EoT assessments for task orders with overruns, check completion of works under non-routine maintenance task orders and obtain hidden works records from contractors. Completion data can also be automatically submitted to MAQS Unit via system interface, and the reminder function for submitting relevant documents will be available in the second phase of RMMS by the second quarter of 2026.

Audit considers that HyD needs to keep in view the enhancement of RMMS in order to ensure an effective management of road maintenance and monitoring activities.

Audit recommendations

4.26 **Audit has *recommended* that the Director of Highways should:**

- (a) **take measures to ensure that the information in RMMS is complete and all required documents are reviewed/approved in a timely manner in RMMS;**
- (b) **take measures to ensure that a system security audit is completed prior to implementation of a system; and**
- (c) **keep in view the enhancement of RMMS in order to ensure an effective management of road maintenance and monitoring activities.**

Response from the Government

4.27 The Director of Highways agrees with the audit recommendations. He has said that:

- (a) while the customisation stage of the first phase of RMMS was launched in May 2024 and HyD had provided basic training to its staff and contractors' staff, some staff experienced some teething problems with the system and needed more time to get familiar with its functions. HyD has been collecting their views and planning tool-box training to address these issues, and has reminded them in various forums, such as monthly progress meetings, to complete the information and to review/approve all required documents in a timely manner in RMMS. Starting from the second half of 2026, refresher training will also be arranged for HyD's staff and contractors' staff every year;
- (b) HyD has reminded its staff to plan for a system security audit with reference to the implementation timeframe and complication of the system to ensure that the system security audit is completed prior to the implementation of a system; and
- (c) HyD will continue to enhance RMMS in order to ensure an effective management of road maintenance and monitoring activities. Meanwhile, the second phase of RMMS is expected to be fully available for use by mid-2026.

Application of innovative technologies

4.28 According to HyD, repairing and maintaining roads in densely developed Hong Kong faces a number of challenges, for example, the accelerated rate of road deterioration due to heavy traffic, the considerable growth in public road network and the difficulties in implementing temporary traffic arrangements. To overcome the challenges, HyD keeps abreast of the latest research, development, and practical applications of innovative technologies with a view to enhancing the efficiency and reducing manpower in maintenance of highway structures. Some innovative technologies have been adopted on a trial basis for a few of the inspection and maintenance works of highway structures in order to reduce the manpower requirement and step up the related works, which include:

Other related issues

- (a) ***Small unmanned aircrafts (SUAs).*** SUAs can be used to acquire high definition images and video footages conveniently and safely of structures that were previously difficult to be accessed by inspectors (e.g. bridge towers, exterior walls and undersides of bridges across the sea or with busy carriageways). When equipped with mapping functions, SUAs can quickly generate three-dimensional models of structures for documentation and surveying to support emergency repair works;
- (b) ***Remotely operated underwater vehicle (ROV).*** As stipulated in the road maintenance contracts, underwater close visual inspection of highway structures between low water level and the seabed/riverbed must be conducted using underwater video recording within touching distance. Owing to occasionally strong water currents on site, this would pose risk to the diving inspector. The use of ROV can minimise the risk to diving inspector for the close visual inspection;
- (c) ***Robotic dog.*** Robotic dog can navigate different terrain and confined spaces (e.g. bridge cell). With a multi-sensor system integrating Light Detection and Ranging sensors, an RGB camera and a thermal camera, the robotic dog can be used to acquire images and video footages of structures safely (see Photographs 4(a) and (b) for an example); and
- (d) ***Building Information Modelling (BIM).*** By creating a single three-dimensional model to visualise as-built drawings for highway structures, engineers can view structural components and identify conflicts between existing elements and proposed repair or strengthening works before repair works commences. This facilitates clash detection for retrofitting works and maintenance planning of highway structures.

Photographs 4(a) and (b)

An example on the use of a robotic dog

(a) A robotic dog



(b) Image shown in a controller captured by a robotic dog



Source: HyD records

Need to keep in view the implementation progress of different innovative technologies

4.29 During the period from January to March 2026, HyD informed Audit the implementation progress of the abovementioned innovative technologies as follows:

- (a) **SUA.** HyD had already formed a SUA team and obtained the necessary pilot licences, enabling structural inspections of road structures and slopes to be carried out. It had also participated in the Low-altitude Economy Regulatory Sandbox Project, utilising SUA to conduct beyond visual line of sight road inspections at five trial sites including two bridges at the Ap Lei Chau and Cross Bay Link. HyD expected that future regulatory development with relief of requirements, such as allowing SUA operations over bridges and marine vessels, permitting flights beyond two kilometres from take-off location and supporting remote operation from offices, would enable more inspections of highway structures using SUAs. When such relief of requirements was put in place, HyD would review its requirements/instructions with the contractors, consultants and in-house staff in relevant contract documents and guidelines to update the use of SUAs;

Other related issues

- (b) **ROV.** To conduct close visual inspection of highway structure, one road maintenance contractor proposed the trial use of ROV;
- (c) **Robotic dog.** Given the development and availability of this technology in the market, one of the road maintenance contractors proposed a trial use of a robotic dog to support structure inspection with the aim of minimising the need for maintenance personnel to enter tight bridge cells for inspection; and
- (d) **BIM.** In February 2024, HyD introduced the BIM Asset Management Standard to unify data formats for asset information, enabling seamless BIM data integration into its asset management information system. Specifications for updating BIM models would be incorporated into upcoming road maintenance contracts effective from April 2026. Contractors would be tasked to update BIM models upon receiving master models from HyD's project offices.

4.30 Audit notes that the use of SUA, ROV, robotic dog and BIM for the maintenance of highway structure are still on trial or in early development stage. With a view to evaluating the suitability and effectiveness of applying these technologies in its future maintenance works, Audit considers that HyD needs to keep in view the implementation progress of different innovative technologies and consider conducting reviews on their applications when appropriate.

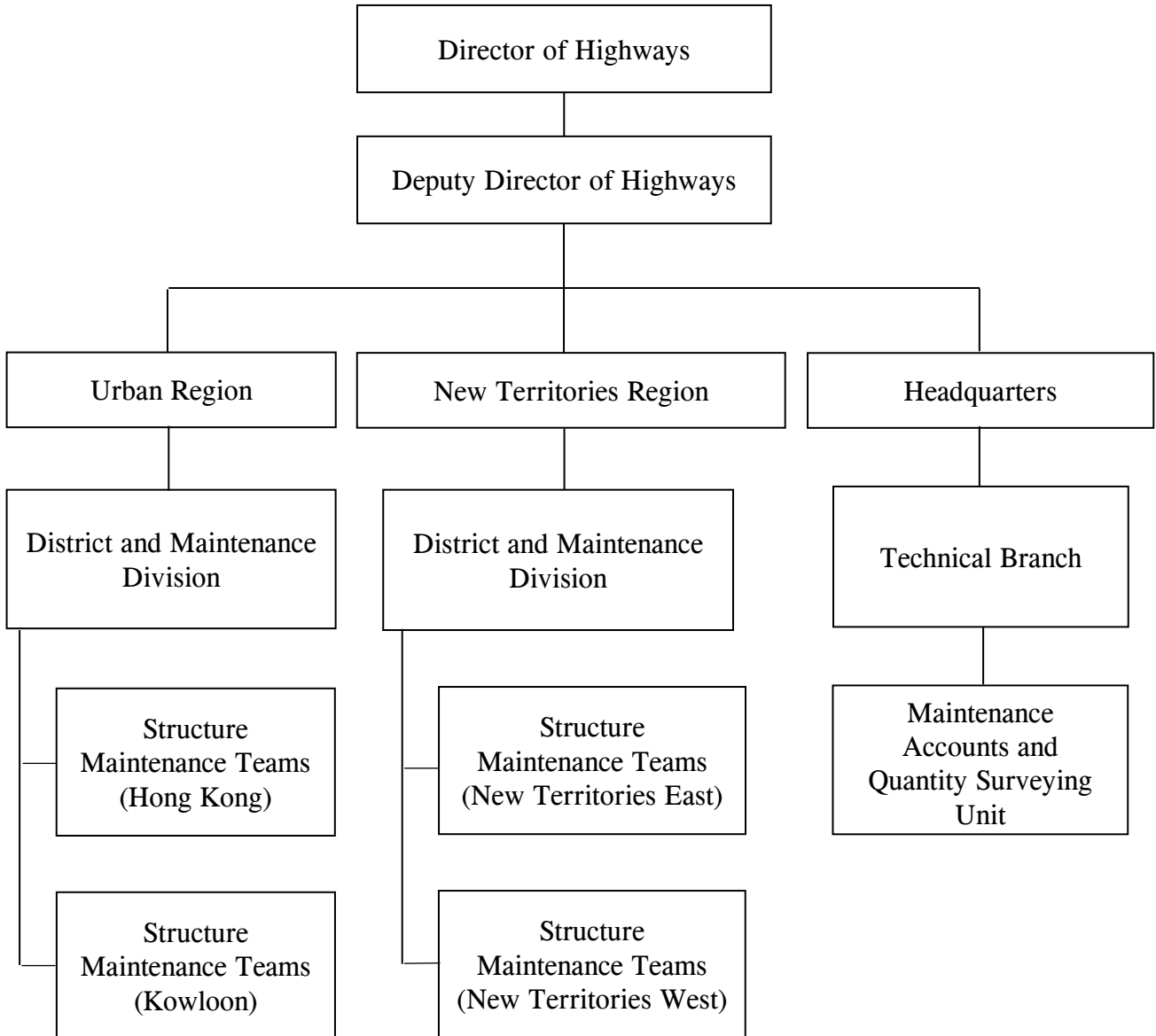
Audit recommendation

4.31 **Audit has recommended that the Director of Highways should keep in view the implementation progress of different innovative technologies (including SUA, ROV, robotic dog and BIM) and consider conducting reviews on their applications when appropriate.**

Response from the Government

4.32 The Director of Highways agrees with the audit recommendation. He has said that HyD will continue to keep in view the implementation progress of different innovative technologies and consider conducting reviews on their applications when appropriate.

**Highways Department:
Organisation chart (extract)
(31 December 2025)**



Source: *Audit analysis of HyD records*

Acronyms and abbreviations

Audit	Audit Commission
BIM	Building Information Modelling
CWRF	Capital Works Reserve Fund
EA	Engineer's audit
EI	Engineer's inspection
EMMS	Electronic Maintenance Management System
EoT	Extension of time
E/CTO	Engineer or Chief Technical Officer
GI	General inspection
HyD	Highways Department
IOW	Inspector of Works
MAH	Maintenance Administration Handbook
MAQS	Maintenance Accounts and Quantity Surveying
M&M	Management and maintenance
NF	Notification form of defect
PI	Principal inspection
RMMS	Road Maintenance Monitoring System
ROV	Remotely operated underwater vehicle
SUA	Small unmanned aircraft