

## 新聞稿

### Press Release

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#### **MTR Implements Eight Follow-up Actions Targeted Asset Inspection in Progress and Strengthening Community Collaboration to Provide Better Support to Passengers**

MTR Corporation submitted the investigation results on the Tseung Kwan O Line incident which took place on 22 May 2025 ([Annex 1](#)) to the Government on 21 June 2025 and has formulated a follow-up action plan on incident prevention and response ([appendix of Annex 1](#)) in response to the requests made by the Government. The eight follow-up actions cover a special inspection of critical railway assets and mid- to long term measures, with the aim to strengthening the overall resilience of the railway network.

Meanwhile, the Corporation will also reinforce resource deployment and associated handling to enhance its recovery and response capabilities, as well as strengthen collaboration with local communities and consider adding a free cross-harbour shuttle bus route to further enhance incident handling.

These measures will be carried out in accordance with the holistic review of the railway asset management and maintenance regime which was announced in 2023. The Corporation has been progressively implementing relevant initiatives over the past two years including accelerating the application of innovation and technology, enhancing the process of risk management, tackling the constraints of the "golden two hours" maintenance window during non-traffic hours, as well as fostering "Just Culture" for staff and their capabilities on asset and risk management. With the long term use of railway asset, the Corporation will maintain efficient, reliable and safe railway service by continuously reinforcing the monitoring and management of asset quality. We aim to achieve three objectives through the implementation of the eight follow-up actions.

#### **1. Strengthening overall resilience of the railway network**

Railway operation involves a myriad of equipment, components and precise coordination of highly sophisticated systems. The Corporation adopts a stringent asset renewal and maintenance regime to ensure the effective operation of equipment. In addition to regular maintenance, the Corporation will implement the following immediate and mid-to long term measures to continuously strengthen the railway system's reliability and resilience as well as to reduce incidents that may lead to prolonged service disruptions.

- **Immediate one-off targeted and special inspection of critical assets:** the special inspection will cover all the overhead line spanning about 700km in length and over 600 signalling points on the mainline for reassurance of reliable equipment performance. [To be completed by the end of August 2025]
- **Strengthened daily monitoring of the existing asset condition data for critical assets:** further reinforcement of data monitoring of critical railway assets (including tracks, overhead line, trains and signalling points) through technology to detect early signs of anomaly for proactive actions, thus enhancing predictive maintenance. [Mechanism to be established by the end of August 2025 for ongoing implementation]
- **Risk-based re-assessment of critical assets/equipment:** critical review of the existing management and maintenance of critical railway assets to identify key risk areas and opportunities for stronger integration and coordination so as to formulate an effective follow-up action plan on the arrangement for maintenance and renewal, enhancement of drills and application of innovative technologies to assist in maintenance and recovery. [Follow-up action plan to be formulated by the end of December 2025 for ongoing implementation]

## 2. Strengthening emergency recovery and response capabilities

- **Formulation of measures for extreme scenarios during recovery:** with lessons learnt from recent incidents, the Corporation will formulate “last resort” plans and enhance the composition and deployment arrangements of emergency response teams, and also enhance the recovery and communication tools and equipment for staff. These measures aim to strengthen the allocation of resources and associated deployment, speeding up the handling of incidents. [To be completed by the end of September 2025]
- **Enhance readiness to manage incidents of scale:** reinforcing drills and exercises with different emergency scenarios to further strengthen the decision and execution capabilities of MTR personnel. Members of the public and government departments will be invited to participate in targeted drills on scenarios about incidents that may lead to prolonged service disruptions. [Drills to be enhanced starting from July 2025; Targeted drill with the public to be held in the fourth quarter of 2025 and ongoing implementation on a regular basis]

## 3. Deepening the care and support to passengers during service disruptions

- **Enhance free shuttle bus arrangement:** The Corporation understands that when cross-harbour service cannot be provided on the Tseung Kwan O Line, passengers will have to make a detour to cross the harbour via the other three railway lines (i.e. the East Rail Line, Tsuen Wan Line and Tung Chung Line). To better cater to the needs of passengers, the Corporation will consider adding a shuttle bus route running between Hong Kong Island East and LOHAS Park Station on the Tseung Kwan O Line, subject to actual road conditions, when the cross-harbour service of the Tseung Kwan O Line is suspended. The signage and queuing arrangements for free shuttle buses at critical

stations such as Tiu Keng Leng Station will also be enhanced. [To be completed by the end of August 2025]

- **Provide more travel information:** to facilitate passengers' travelling decisions and minimise the inconvenience caused, timely updates on travel advice and recovery progress will be further strengthened as far as practicable. [From July 2025 for ongoing implementation]
- **Rally community-based support for passengers:** taking Tseung Kwan O area as a trial, the Corporation will explore strengthening collaboration with relevant government departments and local communities, mobilising community support to assist passengers affected. [To be completed by the end of August 2025]

"MTR Corporation is committed to providing safe, reliable and efficient railway service. Railway operation involves various sophisticated systems. When handling emergency situations, we will prioritize the safety of passengers and staff while carrying out response and recovery measures to maintain railway service as far as practicable. We understand the public have high expectations for MTR service, and endeavor to carry out prevention and maintenance work to reduce the occurrence of incidents, as well as minimise the impact on passengers during service disruptions," said Dr Jacob Kam, Chief Executive Officer of MTR Corporation.

In 2023, the Corporation announced a holistic review of the railway asset management and maintenance regime, and committed more than HK\$65 billion for railway asset renewal and strengthening maintenance between 2023 and 2027. The Corporation will continue to closely liaise and report to relevant government departments on the progress of the abovementioned actions.

The Corporation has also submitted the investigation results for the East Rail Line incident that took place on 27 April 2025. Please refer to Annex 2 for details.

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#### About MTR Corporation

To Keep Cities Moving, MTR makes encounters happen and rendezvous for a more connected tomorrow. As a recognised world-class operator of sustainable rail transport services, we are a leader in safety, reliability, customer service and efficiency.

MTR has extensive end-to-end railway expertise with over 45 years of railway projects experience from design to planning and construction through to commissioning, maintenance and operations. Going beyond railway delivery and operation, MTR also creates and manages dynamic communities around its network through seamless integration of rail, commercial and property development.

With more than 50,000 dedicated staff\*, MTR carries over 10 million passenger journeys worldwide every weekday in Hong Kong, Mainland China and beyond. Together, we Go Smart and Go Beyond.

For more information about MTR Corporation, please visit [www.mtr.com.hk](http://www.mtr.com.hk).

\*includes our subsidiaries, associates and joint ventures in Hong Kong and worldwide

## **1 Executive Summary**

- 1.1 At about 1714 hours on 22 May 2025, the traction power to the overhead line between North Point Station (NOP) and Yau Tong Station (YAT) of the Tseung Kwan O Line (TKL) was interrupted due to the tripping of Direct Current Circuit Breakers (DCCB). At about the same time, the signalling system of the TKL was found to have failed. TKL train service was suspended and MTR Free Shuttle Bus service was provided during the incident.
- 1.2 Recovery teams immediately proceeded to the site for recovery work. During the recovery process when different trains passed the concerned section, intermittent tripping of the traction power occurred. By 1937 hours, the cause was identified to be related to the overhead line. Upon implementing further train regulation, train service of the TKL was partially resumed at 2032 hours between Tiu Keng Leng Station (TIK) and Po Lam Station (POA)/LOHAS Park Station (LHP). Although the cross-harbour section of the TKL remained suspended, all stations of the MTR network remained in operation through different railway lines. Full train service of the TKL was resumed at 2233 hours after the recovery work. The incident caused a service suspension of 319 minutes.
- 1.3 An independent external expert, Professor SL Ho [former Associate Vice President (Academic Support) and Chair Professor of Electricity Utilisation of the Hong Kong Polytechnic University] was engaged in the post-incident investigation for identifying the cause of the incident and formulating recommendations to prevent recurrence.
- 1.4 The investigation confirmed that the DCCB intermittent tripping was caused by a sagged overhead line jumper wire, which resulted in flashover with the train roof when trains were running at normal speed. The power current surge during the flashover had activated the

protection by tripping of the respective DCCB and also caused interference to the signalling system of the TKL. The incident location adopts a special overhead line configuration specific to the tunnel floodgate section. The sagging of the jumper wire was primarily attributed to undesirable clamp position during first installation leading to slightly excessive jumper wire length free hanging. In this special overhead line configuration, the concerned jumper wire with excessive length sagged below the contact wire with the absence of support strap. While the support strap was intended for smoothening the wiring routing rather than holding the jumper wire in the right position, the strap actually helped hold the jumper wire in position and mitigated the effect of sagging due to the clamp installed at an undesirable position.

- 1.5 Follow-up actions were taken immediately to reinforce the support fixtures of all similar jumper wires with the same configuration in the TKL and to inspect other locations in other operating lines adopting similar overhead line configurations near the floodgate sections. The Corporation will implement the recommendations of the technical investigation, including the enhancement of jumper wire configuration design specifically for overhead line at the TKL floodgate sections, supplementing extra maintenance guidelines and necessary staff training to raise awareness, adopting straps of higher durability, and formulating innovation & technology (I&T) solution for facilitating fault diagnosis and recovery.
- 1.6 Regarding the signalling system failure, the investigation found that a threaded metal rod of a high-level cable tray in the Signaling Equipment Room (SER) was inadvertently in contact with the signalling cubicle after the installation works of another equipment. This resulted in unintended earthing connection, hence making the signalling equipment susceptible to power current surge. It is therefore recommended to further strengthen the earthing check after installation works as well as the regular earthing check in SERs.

- 1.7 As the TKL is the only cross-harbour railway link in Kowloon East serving primarily Tseung Kwan O (TKO) areas, the evening peak service suspension inevitably impacted a substantial number of passengers who rely on the TKL to commute. The approach to incident handling, involving passenger information dissemination, MTR Free Shuttle Bus arrangement, and support and care for passengers has room for further improvement. There is also an opportunity to further collaborate with local communities for incident support.
- 1.8 The Corporation acknowledges the varying degrees of inconvenience caused to passengers by this incident as well as the East Rail Line incidents on 5 February and 27 April 2025, and the concern expressed by the Government as well as the public. A review has been conducted to identify areas for further strengthening incident prevention and handling and an action plan has been formulated and detailed in the Appendix to this report.

Time	Event
1714	DCCB tripped and caused interruption to the traction power between TKL NOP and YAT of POA/LHP-bound track (the affected section). Three trains tripped to stop at the affected section, of which two trains had passengers onboard. The DCCB was shortly reclosed to regain the traction power.
1715	The signalling system was found failed for the sections from NOP to YAT and the TKO area, when a total of 11 trains were in the area.
1721	The Corporation declared major incident. Train service between NOP and TIK was suspended. Arrangement was being made for passengers to alight from affected trains at the nearest platforms.
1739	The first train at the affected section with passengers on board was arranged to arrive at YAT platform 3. Passengers were arranged to alight from the train.
1742	Train service of the whole TKL was suspended.
1806	MTR Free Shuttle Bus service commenced operation.
1808	Passengers on all TKL trains completed alighting from trains at the nearest station platforms.
1815	The signalling system of the TKL resumed upon rebooting.
1831	The second train (without passengers onboard) was arranged to leave the affected section and move to YAT for inspection at low speed. No DCCB tripping occurred.
1836	The third train (without passengers onboard) was arranged to leave the affected section and move to YAT at normal speed for inspection. The DCCB tripped again.

<b>Time</b>	<b>Event</b>
1911	A train was arranged to send recovery team and Fire Services Department (FSD) personnel for inspection and fault-shooting from Quarry Bay Station (QUB) to YAT at low speed. No DCCB tripping occurred.
1937	Another non-passenger service train was arranged to move at normal speed from QUB to YAT through the incident location for a test run. The DCCB tripped again. As this train was not present in the affected section when the DCCB was first tripped, it was confirmed that the cause of the tripping was not due to trains but an overhead line issue.
2032	Upon narrowing down the system and section in fault, train service was arranged to partially resume between TIK and POA, and between TKO and LHP. Then all TKL stations had train service through different lines.
2033	The recovery team located the overhead line jumper wire which showed sign of flashover having occurred near QUB in the vicinity of the cross-harbour tunnel floodgate.
2139	The concerned jumper wire was removed to enable service resumption at the affected section.
2208	Upon completion of the recovery work, the DCCB was reclosed for track checks at low speed and normal speed.
2233	Full train service resumed on the TKL upon completion of checking.



### **3 Fault Identification and Immediate Service Recovery Action**

- 3.1 At about 1714 hours, traction power to the overhead line between NOP and YAT of the TKL (POA/LHP-bound track) was interrupted as a result of the tripping of the DCCB, leading to a power stoppage when three trains were in the affected section. Shortly after, the signalling system of the TKL halted at sections from NOP to YAT and TKO signalling control areas, which required re-booting.
- 3.2 At that time, for the three trains tripped to stop in the affected section, the first train (with passengers onboard) just passed the location between QUB and YAT (where an overhead line jumper wire with excessive length was later found), the second train (with passengers onboard) was arriving at QUB platform 3, and the third train (without passengers onboard) was arriving at NOP platform 3.
- 3.3 The traction power system resumed shortly after reclosing the DCCB. The three trains were arranged to move to the nearest platforms for passengers to alight from the trains. The signalling system later resumed at 1815 hours after rebooting.
- 3.4 The affected trains were arranged to leave the affected section for further inspection. Two non-passenger service trains were also arranged to send recovery teams as well as FSD personnel for inspections and fault-shooting along the tunnel between QUB and YAT. In the course of moving the trains to YAT, the DCCB tripped twice again when two respective trains moved at normal speed. One tripping (at 1937 hours) was caused by the non-passenger service train, which was not present in the affected section when the DCCB tripping first occurred at 1714 hours. It was then confirmed that the fault was not caused by trains but was related to overhead line. Further train regulation, including clearing those trains which had experienced tripping from the mainline, was implemented to enable the partial resumption of the TKL train service between TIK and POA, and between TKO and LHP from 2032 hours

while the cross-harbour section remained suspended for the recovery team to continue fault identification along the cross-harbour tunnel section.

3.5 At 2033 hours, the recovery team identified a sagged overhead line jumper wire showing signs of flashover having occurred near QUB (in the vicinity of tunnel floodgate). The jumper wire was then removed at 2139 hours. Full train service on the TKL was resumed at 2233 hours.

3.6 During the incident, fault symptoms from different equipment, namely trains, overhead lines and signalling system were observed and it posed challenges in the initial fault identification. The recovery efforts took time due to the need for various safety precautions to be taken and train regulations to be implemented within the TKL.

#### **4 Train Service and MTR Free Shuttle Bus Arrangement**

- 4.1 At about 1721 hours, train service between NOP and TIK was suspended. Subsequently at 1742 hours, train service of the whole TKL was suspended.
- 4.2 All TKL trains affected were arranged to travel to the nearest stations in which passengers of all trains completed alighting at various station platforms in safe and orderly manner by about 1808 hours. No train with passengers was left in-between stations beyond this time.
- 4.3 The Corporation arranged three MTR Free Shuttle Bus routes, plying between TKO and LHP, LHP and POA, and between East Tsim Sha Tsui Station and TKO. Franchised bus and ferry services were also stepped up with the coordination of the Transport Department's Emergency Transport Co-ordination Centre.
- 4.4 Throughout the incident, passengers were informed of service arrangements via Traffic News on MTR Mobile, station notices and Public Announcements, as well as through the media.
- 4.5 More than 130 additional staff were deployed at relevant stations to assist passengers, including addressing passenger enquiries, facilitating the MTR Free Shuttle Bus queuing arrangements, etc. During the incident, a total of 154 bus trips were operated which carried 9,850 passengers. It was observed that the MTR Free Shuttle Bus operation in TIK Public Transport Interchange was busy and congested.
- 4.6 Given that the TKL is the only cross-harbour railway link in Kowloon East serving primarily TKO areas, the evening peak service suspension inevitably impacted a substantial number of passengers who rely on the TKL to commute. Passengers who want to cross the harbour by train service can still use the other three lines (namely the East Rail Line, Tsuen Wan Line and Tung Chung Line). However, passengers in TKO area need to make a detour via Kwun Tong Line in order to use the other

lines. In view of the above, enhancement will be explored on MTR Free Shuttle Bus arrangements, including cross-harbour route, signage and queueing arrangements (e.g. in TIK which is a key terminus station where KTL terminates). It should nonetheless be noted that the capacity of cross-harbour shuttle bus service is much lower than that of the heavy rail system, and the service level of shuttle bus service may be limited by road congestion, especially during peak hours.

- 4.7 To facilitate passengers' travelling decision, provision of information relating to travel advice and recovery progress could be further strengthened. Also as timely manpower support deployment is usually challenging during service disruption since the arrival of supporting teams from other districts may be affected by road traffic or train service disruption, strengthening collaboration with relevant government departments and local communities for more timely incident support deployment could be explored. Regular drills with these local stakeholders shall be arranged to familiarize them with the emergency response procedures.

## 5 Investigation Findings

5.1 An independent external expert, Professor SL Ho [former Associate Vice President (Academic Support) and Chair Professor of Electricity Utilisation of the Hong Kong Polytechnic University] was engaged in the post-incident investigation for identifying the cause of the incident and formulating recommendations to prevent recurrence.

### 5.2 Overhead Line Configuration at the Incident Location

5.2.1 The overhead line configuration at the incident location, i.e. the tunnel floodgate section of QUB, adopts a special configuration with a short length of single contact wire designed for disconnection during floodgate closure whereas the other sections adopt typical arrangement of twin contact-wires design with a messenger wire above for suspension of the jumper wire.

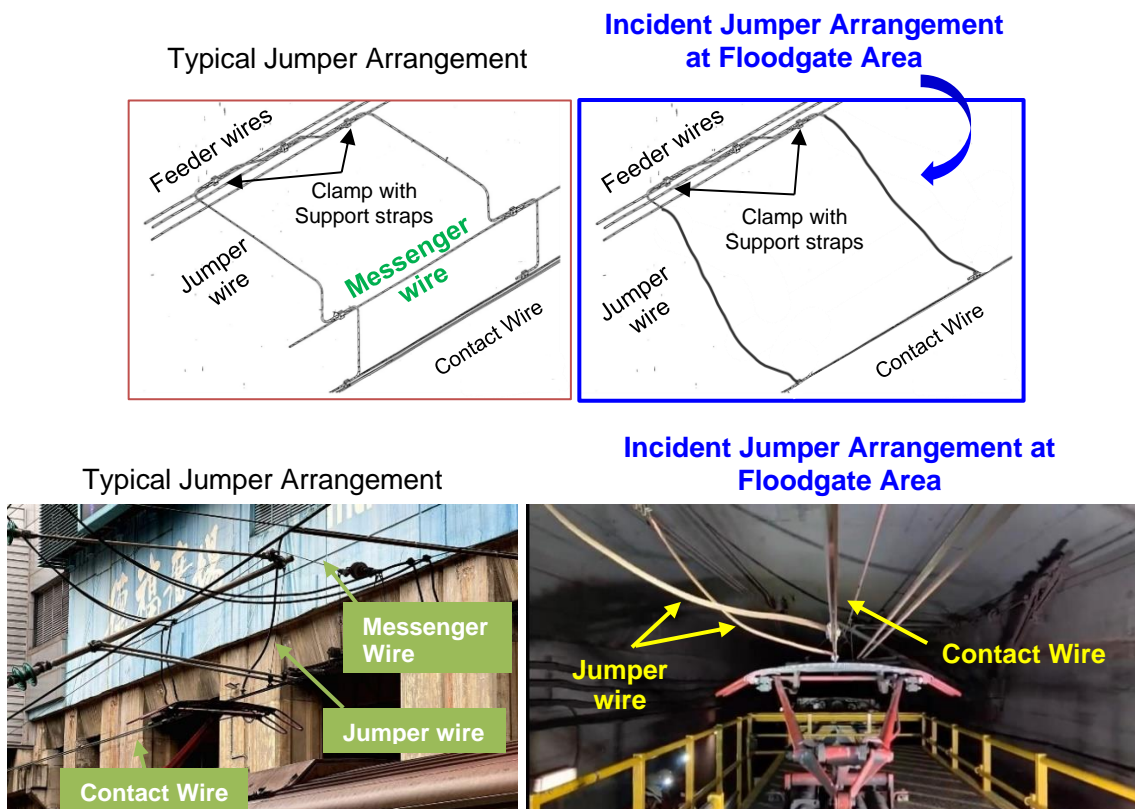


Figure 1: Illustration of Overhead Line Configuration

5.2.2 For typical arrangement, the jumper wire connects the feeder wires and contact wire through messenger wires with adequate length to allow for thermal expansion without causing excessive sagging, and is secured by clamps and usually with additional support straps. For the overhead line configuration at the incident where a tunnel floodgate is located which would be lowered in case of emergency, the jumper wire is directly connected to the contact wire.

### 5.3 Cause of Overhead Line Power Supply Failure

5.3.1 A section of an overhead line jumper wire at the incident location was found sagging below the contact wire level, showing signs of flashover having occurred and exhibiting broken and loosened strands. All clamps of the incident jumper wires were intact while 3 out of 6 support straps were not found present after the incident. Subsequent inspection found flashover marks on the roof of the incident train. Current protection device, namely DCCB, automatically tripped during the flashover.

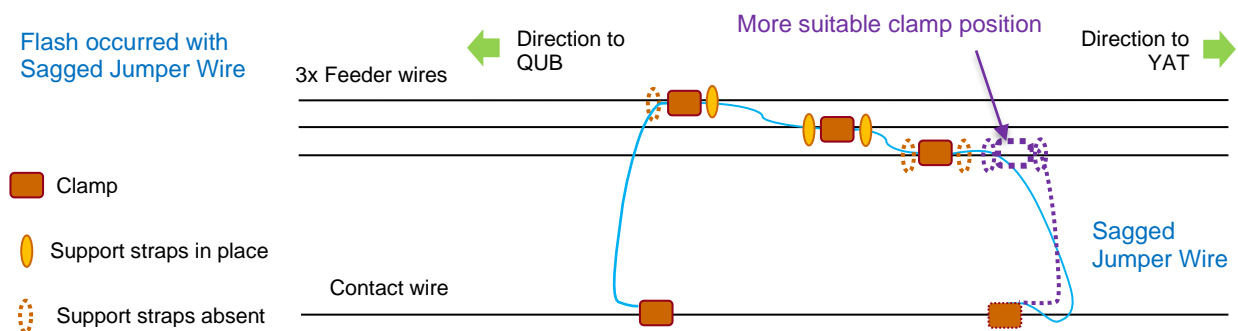


Figure 2: Illustration of the Sagged Jumper Wire

- 5.3.2 A post incident site inspection of the affected jumper wire on the other hand revealed that the section of the jumper wire near QUB remained slightly above the contact wire, despite the absence of support strap. The jumper wire would remain above the contact wire, provided that the clamps were installed at more suitable locations as illustrated in Figure 2.
- 5.3.3 Based on detailed review with the independent external expert, sagging of jumper wire below the contact wire was primarily attributed to undesirable clamp position during first installation leading to slightly excessive jumper wire length. In this special overhead line configuration, the concerned wire with excessive length was sagged below the contact wire with the absence of support strap. While the support strap was intended for smoothening the wiring route rather than holding the jumper wire in the right position, the strap actually helped hold the jumper wire in position and mitigated the effect of sagging due to the clamp being at an undesirable position. As the jumper wire sagged below the contact wire, it caused abnormal interaction with train pantographs during train passage, eventually leading to flashover with the roof of the incident train.
- 5.3.4 A new jumper wire with proper clamp position and reinforced support fixture was reinstated to the incident location in the immediate non-traffic hours. Subsequently, inspections were conducted at other locations adopting similar overhead line configuration near floodgate sections, including other operating lines. No abnormal sagging was observed, and the support fixtures for jumper wires at these locations were also reinforced as a precautionary measure.

#### 5.4 Maintenance Arrangements for Overhead Line

- 5.4.1 A structured maintenance regime is in place for the concerned overhead line equipment, including:
- (a) Scheduled maintenance of the concerned tension length in every

1.5-year (last performed in June 2024)

- (b) Annual high level visual inspection by wagon (last conducted in June 2024)
- (c) Annual track patrolling by overhead line maintenance team (last conducted in January 2025)

5.4.2 According to the Corporation's record, no sagging of the incident jumper wire below the contact wire was observed during the most recent rounds of maintenance and inspection. The incident jumper wire and support strap had been in place since its original installation in 1989.

5.4.3 As the overhead line configuration at such floodgate sections differ from those of other typical overhead line arrangements, there is a need to enhance the design specifically for such overhead lines at floodgate sections of the TKL to strengthen system resilience in order to prevent recurrence. Supplementary maintenance guidelines and straps of higher durability will be introduced for this kind of asset/equipment.

5.4.4 To build additional assurance on asset condition, a one-off special inspection, on top of regular maintenance, on critical overhead lines sections are being conducted for all lines.

## 5.5 Interference to Signalling Indication and Control of TKL

5.5.1 Post incident investigation showed that the signalling cubicle of the signalling equipment for NOP area was connected to its dedicated earth to protect from interference due to power current surge. However, a threaded metal rod of a high-level cable tray in the SER was inadvertently in contact with the signalling cubicle after the installation of another equipment. This resulted in an unintended connection between the signalling earth and the main earth (a shared earthing path used by other station equipment) simultaneously.

5.5.2 As a result, the NOP signalling equipment became susceptible to and



was interfered by the surge noise due to power current surge through the unintended connection between the two earths, causing the halting of the signalling indication and control of NOP signalling control area. The halting happened duly according to the protection design of the signalling system. Subsequently, the signalling equipment responsible for TKO signalling control area was also affected due to contaminated communication messages sent from the NOP signalling equipment, hence affecting the signalling system of the NOP, QUB, TKO, Hang Hau, POA and LHP areas.

- 5.5.3 The earthing issue at the NOP signalling cubicle was fixed after the incident, and checks on the earthing of all TKL signalling equipment were completed with no abnormality identified. The investigation recommends to further enhance the earthing check after installation works as well as the regular earthing check in SERs.
- 5.5.4 To build additional assurance on the TKL signalling equipment earthing arrangement, a one-off special earthing and electromagnetic compatibility (EMC) arrangement check on all TKL SERs was completed with no abnormality found.

## **6 Conclusion**

- 6.1 The immediate cause of the incident was due to DCCB intermittent tripping which resulted in traction power interruption of the overhead line between NOP and YAT on POA/LHP-bound track of the TKL. The first tripping due to power current surge also caused interference to the signalling system of the TKL. As a result, train service of the TKL was suspended. During the incident, fault symptoms from different equipment were observed, posing challenges in identifying the cause. Recovery efforts took time due to the need for various safety precautions to be taken and train regulations to be implemented within the TKL. After ascertaining that the cause was related to the overhead line issue, train service was partially resumed between TIK and POA/LHP at 2032 hours. Full train service on the TKL was resumed at 2233 hours after the recovery work.
- 6.2 The root cause investigation by the independent external expert confirmed that the DCCB intermittent tripping was caused by a sagged overhead line jumper wire, resulting in flashover with the train roof. The incident location adopts a special overhead line configuration specifically for tunnel floodgate locations. The sagging was primarily attributed to a clamp installed at an undesirable position during first installation leading to slightly excessive jumper wire length. In this special overhead line configuration, the concerned jumper wire with excessive length sagged below the contact wire with the absence of support strap. While the support strap was intended for smoothening the wiring routing rather than holding the jumper wire in the right position, the strap actually helped hold the jumper wire in position and mitigated the effect of sagging due to the clamp installed at an undesirable position. The power current surge had caused the operation of DCCB protection and also interference to the signalling system of the TKL.

- 6.3 Immediate measures were promptly implemented following the incident, and further follow-up actions are being pursued in accordance with the recommendations of the technical investigation.
- 6.4 The TKL is the only cross-harbour railway link in Kowloon East serving primarily TKO areas, the evening peak service suspension impacted passengers who rely on the TKL to commute. The approach to incident handling, involving passenger information dissemination, MTR Free Shuttle Bus arrangement, and support and care for passengers would also be further enhanced.

## **7 Immediate Actions Taken**

7.1 The following immediate actions were taken after the incident.

- (a) Inspection of overhead line at high level between QUB and YAT was conducted during the non-traffic hours on 23 May 2025, with strengthening work completed on similar wires near the incident location.
- (b) Strengthening work was carried out at other tunnel floodgate sections with similar special overhead line configuration, including the TKL between QUB and YAT, the Tsuen Wan Line between Tsim Sha Tsui Station and Admiralty Station, and the Tung Chung Line and Airport Express between Hong Kong Station and Kowloon Station during the non-traffic hours on 24 May 2025.
- (c) The earthing issue at the NOP signalling cubicle was fixed during the non-traffic hours on 24 May 2025. Checks for all other signalling cubicle in the TKL were completed with no abnormality found and a one-off special earthing and EMC arrangement check in all TKL SERs was completed on 15 June 2025.

## **8 Recommendations**

8.1 The technical investigation recommends the following follow-up actions:

- (a) Change the overhead line design specifically at floodgate sections of the TKL to enhance the jumper wire configuration in order to strengthen system resilience and adopt straps of higher durability. [Target completion: end July 2025]
- (b) Introduce supplementary maintenance guidelines and necessary staff training to raise awareness. [Target completion: end July 2025]
- (c) Study the feasibility of I&T solution to enable remote data retrieval of trains/overhead lines at critical locations to facilitate fault diagnosis and recovery. [Target completion: end Sep 2025]
- (d) Further enhance the earthing check after installation works and regular earthing check in SERs to ensure proper earthing arrangement for signalling equipment in SERs. [Target completion: end June 2025]

8.2 The TKL incident on 22 May 2025, as well as the East Rail Line incidents on 5 February and 27 April 2025 have caused varying degrees of inconvenience to passengers. Although each of the incidents has their own specific causes and circumstances warranting stand-alone investigations, the timing proximity does call for an analysis so as to identify areas for further improvement. In particular the approach to incident handling in the case of the TKL which involves passenger information dissemination and MTR Free Shuttle Bus arrangement also has room for further improvement. The Corporation acknowledges the concern expressed by the Government as well as the public for the incidents in recent months, and has formulated an Action Plan to further

enhance incident prevention and handling. Details are at **Appendix** to this report.

## **Appendix**

### **Further Enhancing Incident Prevention and Handling An Action Plan by MTR**

MTR is committed to providing safe, reliable and efficient railway service to passengers. As our assets advance through their lifecycle, the Corporation faces the ongoing challenge of suitably enhancing its maintenance regime to ensure that the railways it operates will persist in delivering a 99.9%-plus on-time service for its annual patronage of 1.9 billion in one of the world's most intensively utilized networks. The recent incidents on the East Rail Line (EAL) on 5 February and 27 April 2025, and the Tseung Kwan O Line (TKL) on 22 May 2025 have caused varying degrees of inconvenience to passengers. Although each of the incidents has their own specific causes and circumstances warranting stand-alone investigations, the timing proximity does call for an analysis so as to identify areas for further improvement. In addition, the approach to incident handling, in particular the case of the TKL which involves passenger information dissemination and emergency transport arrangement and associated communications, also has room for improvement.

The Government has expressed concerns for the incidents in recent months and tasked the Corporation to take robust follow-up actions along three main areas in a well-thought-out manner and continue the ongoing liaison and report to the Government. This Action Plan serves to address the reviews arising from the three incidents based on the directions pronounced by the Government.

While a holistic review on the overall asset management and maintenance regime has taken place in 2023 (AMS Review) with enhancements progressing, the actions identified here will strengthen the initiatives being implemented from the AMS Review. At the AMS Review in 2023, the Corporation has committed \$65 billion in asset renewal and maintenance in the five-year period from 2023-2027, and would implement various initiatives in an ongoing manner beyond the five-year duration.

The Corporation will continue to closely liaise and report to the government on the progress of the actions as stipulated below.

**(a) Strengthening the overall resilience of the railway network**

The railway network of MTR is a complex and highly sophisticated system with a wide range of equipment, a myriad of parts and components and multifarious interfaces. The Corporation attaches great importance to the overall resilience of the railway network, the continuous strengthening of which is crucial to minimizing the occurrence of high-consequence incidents and maintaining our service to the public to keep our city moving. At the same time, given the scale and complexity of the system, we have a clearly defined asset management regime for effective execution and management.

In the wake of the recent incidents, the Corporation has activated both immediate and mid-to-long term measures to reinforce its asset management and maintenance regime and strengthen risk assessment of critical railway assets. These include:

- ***Immediate one-off inspection of targeted critical assets:*** in view of the TKL incident, a one-off inspection of selected critical equipment, namely overhead line system and signalling points, is underway. The scope of the inspection, conducted on top of routine maintenance, will target the overhead line of the network's mainline, spanning ~700 km, and the 600 signalling points also in the mainline to quickly rectify any issue if identified and reassure equipment performance. *[TKL by end June 2025; all remaining lines by end August 2025]*
- ***Strengthened daily monitoring of existing asset condition data of critical assets:*** Making use of different tools and IoTs in place, such as track gauge monitoring system, point monitoring IoT, train performance & health monitoring system, etc., we shall further strengthen the monitoring of the data for critical assets (track, overhead lines, train, and signaling points) with an aim to detect early signs of anomaly for proactive actions, thus enhancing system reliability and resilience. *[mechanism to be established by end August 2025 for ongoing*



*implementation]*

- ***Risk-based re-assessment of critical assets/equipment:*** Focusing on high safety and service consequence, through consolidating information and knowledge in the existing risk management system for safety and service risk, and organizing workshops with participation from frontline staff to gather local wisdom and feedback, the re-assessment will cover a critical review of the existing management and maintenance of the critical railway assets (including subsystems and components), identify key risk areas and opportunities for stronger integration, prioritization, alignment and coordination. We aim to formulate follow-up action plan on the ongoing arrangement for maintenance and renewal (e.g. the data insights, maintenance frequency or replacement priorities of equipment), drills and exercises to strengthen staff capabilities for response and recovery, and application of innovation and technology to assist in maintenance and recovery. *[follow-up action plan to be formulated by end December 2025 for ongoing implementation]*

#### **(b) Strengthening emergency recovery and response capabilities**

While every effort is to be made in upkeeping the asset and its operation system to minimize occurrence of incident or service disruption, we need to prepare also for tackling the incidents in the event that they do occur to minimize the impact on passengers. The Corporation will continue to accord great importance to its emergency response capabilities with the aim to expediting recovery work through ample resource deployment, well-thought planning and preparation and enhanced readiness of staff.

- ***Formulation of “last resort” measures to keep service running:*** To further strengthen the emergency response arrangements for major incidents, with lessons learnt from recent incidents, “last resort” measures<sup>1</sup> for extreme scenarios will be formulated (e.g. engineering vehicle), and it would also be considered in the relevant action plan arising from the risk-based re-

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<sup>1</sup> Last resort measures will be taken when documented remedial measures have been exhausted but to no avail.

assessment under (a). In the meantime, the composition and deployment arrangements of technical and service response teams, as well as the recovery and communication tools and equipment for staff will be enhanced, enabling the decision-making process and execution of the recovery plan on site. In assessing such measures, due consideration will be given to the safe operation of staff and the assets. *[by September 2025]*

- ***Readiness to manage incidents of scale:*** To enhance staff readiness, drills and exercises will be reinforced with different emergency scenarios involving safety and reliability issues. Surprise scenarios and non-scripted elements, where appropriate, will be incorporated to further strengthen the decision and execution capabilities of the response teams. On top of the various regular local and joint drills and exercises currently in place, members of the public and external parties will be invited for targeted drills on selected high consequence scenarios, increasing public awareness during emergency situation through taking part in a simulation. *[Drills progressively enhanced from July 2025, targeted drill with the public by Q4 2025 and ongoing implementation on a regular basis]*

#### **(c) Deepening the caring and support to passengers during service disruptions**

MTR operates an extensive mass transit network in Hong Kong, carrying over 5 million passengers a day, and provides connectivity throughout most parts of Hong Kong. Train service disruption would bring inconvenience to passengers, and road transport alternatives, while available, may not have the equivalent capacity to cater to the demands. With that understanding, MTR will continue to coordinate closely with the Transport Department in enhancing service by other public transport operators during incidents, provide timely and suitable passenger information in different channels, and operate MTR Free Shuttle Bus according to established plans, with the aim to minimize the impact to passengers and provide better support to them.

- **Free shuttle bus arrangement:** With recent incidents and specifically for the TKL, as the only cross-harbour train service link in Kowloon East serving primarily Tseung Kwan O areas, train service suspension during the peak hour brought a lot of inconvenience to passengers concerned. Passengers who want to cross the harbour by train service will have to make a detour via the Kwun Tong Line in order to cross the harbour by the East Rail Line, Tsuen Wan Line or Tung Chung Line. Therefore, the Corporation will enhance existing MTR Free Shuttle Bus arrangement, including cross-harbour shuttle bus route<sup>2</sup>, and signage and queuing arrangements, to address passenger needs. At the same time, the signage and queueing arrangements at Tiu Keng Leng station will also be enhanced considering that it is the major terminus station where the Kwun Tong Line terminates. Similar enhancement will be explored at critical stations in other districts with similar characteristics. It should nonetheless be noted that the capacity of cross-harbour shuttle bus is much lower than that of the heavy rail system, and the service level of shuttle bus service may be limited by road congestion, especially during peak hours. *[by end August 2025]*
- **Travel advice:** To facilitate passengers' travelling decisions, timely updates through various channels on travel advice (e.g. alternative MTR routes, journey time, shuttle bus arrangement, etc.) and recovery progress will be further strengthened as far as practicable. *[from July 2025 for ongoing implementation]*
- **Rally community-based support:** Noting that timely manpower support deployment is usually challenging during service disruptions as the arrival of supporting teams from other districts may be affected by road traffic or the train service disruption, the Corporation will explore strengthening collaboration with relevant government departments and local communities in incident support, taking Tseung Kwan O area as a trial. This enables local collaboration for timely support deployment benefiting the community. *[by end August 2025]*

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<sup>2</sup> Discussion in progress with Transport Department and Hong Kong Police on a new cross-harbour shuttle bus route (between Hong Kong Island East and LOHAS Park Station of TKL) with activation mechanism in case of train service suspension between North Point / Quarry Bay Stations and Yau Tong Station

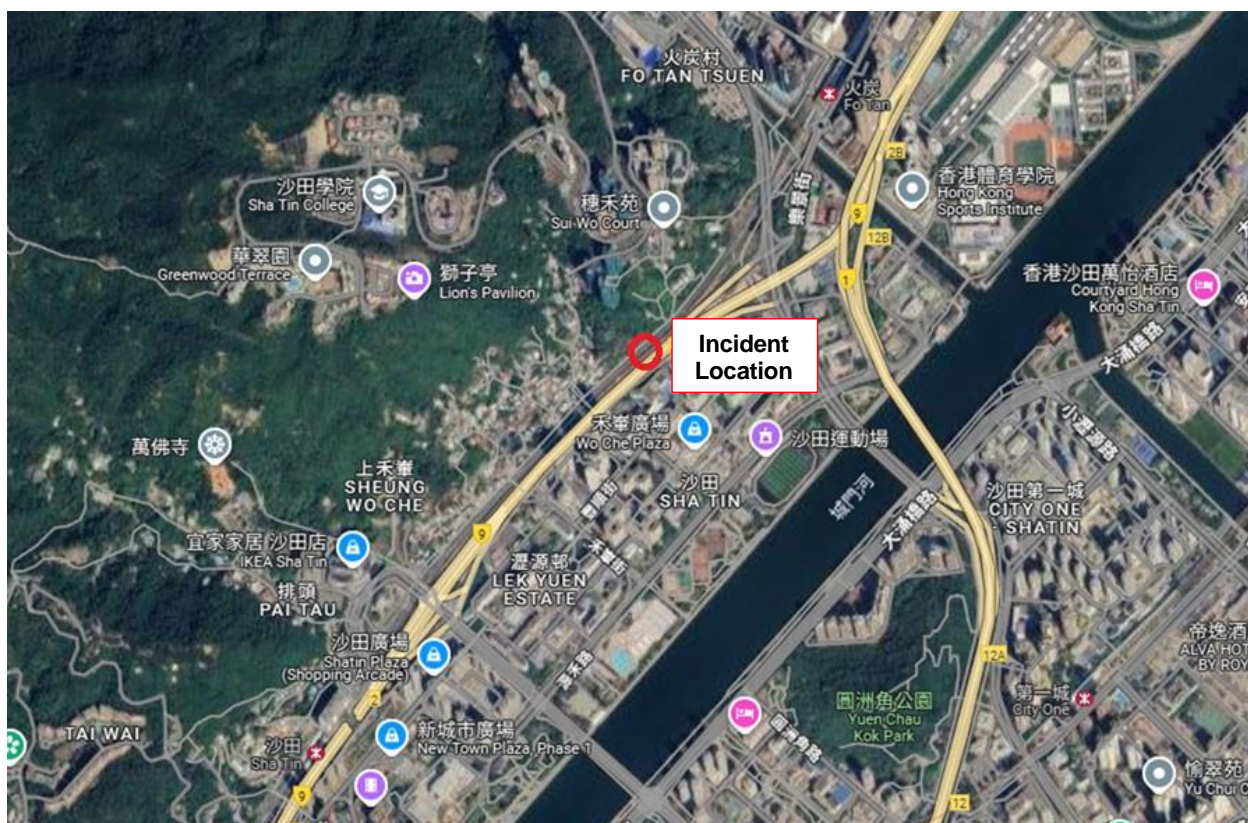
#### **(d) On-going liaison and report**

Further to the AMS Review in 2023, building on the ISO55001 accredited Asset Management System, the Corporation has been making steady progress in further strengthening the railway asset management regime, including committing over \$65 billion on railway asset renewal and maintenance in 2023-2027, accelerating the application of Innovation & Technology for data-driven asset management for a transition to predictive maintenance, facilitating maintenance, recovery and incident handling, enhancing process for risk management, widening non-traffic hour maintenance window, as well as fostering Just Culture and awareness on asset and risk management in staff.

Besides taking forward the relevant measures, the action plan mentioned above in (a) to (c) builds on the solid foundation of the AMS Review, and through Just Culture and staff participation in the process, targets to help further strengthen our capabilities in emergency response, and caring and support to passengers, thereby further enhancing the network resilience. The MTRCL Management attaches great importance to fostering accountability in staff at all levels. With the support of a continuous learning and open communication culture, Just Culture in the Corporation will be consistently promoted and cultivated, enabling timely reporting and addressing issues and challenges in the vast and sophisticated railway system. The Corporation has been implementing the initiatives from the AMS Review in close partnership together with the Government, and will continue to provide relevant government authorities with progress updates and take into account their inputs and advice. The Corporation will continue to monitor the effectiveness of the initiatives during the implementation.

**1 The Incident**

- 1.1 At about 0344 hours on 27 April 2025, the Engineer's Person in Charge (EPIC) of the Engineering Possession for overhead line maintenance work between Sha Tin Station (SHT) and Fo Tan Station (FOT) of the East Rail Line (EAL) reported to the Operations Control Centre (OCC) that during the maintenance work, the elevating platform of the overhead line inspection vehicle (OIV) failed to be lowered after working at chainage A111.402. Recovery team arrived at the site and found that the lowering function of the elevating platform malfunctioned. As the railings on top of the elevating platform were in proximity to the overhead line, there was a need to handle it before moving the OIV. Recovery work was arranged immediately.
- 1.2 EAL train service was maintained with service adjustments made. After the temporary safety measures were implemented, the OIV was slowly hauled away from the incident location at around 0918 hours and train service on the EAL gradually returned to normal at around 1208 hours.
- 1.3 Post-incident investigation was conducted with support from the Original Equipment Manufacturer (OEM), covering aspects including handling, recovery and equipment to determine the cause of the incident and identify any areas for improvement to prevent recurrence. An independent consultant was also engaged to review the investigation findings and recommendations with respect to technical and recovery aspects.



**Figure 1: Illustration of Incident Location**



**Figure 2: The Incident Overhead Line Inspection Vehicle**

Time	Event
0344	EPIC reported to the OCC that the elevating platform of the OIV failed to be lowered. As the railings on top of the platform were in proximity to the overhead line, the OIV could not be moved immediately.
0349	On-board technician followed recovery procedures to lower the platform but in vain.
0430	Rapid Response Unit (RRU) arrived at site and attempted other means to lower the platform but in vain.
0515	Major incident was declared. Full line service was maintained along the EAL since start of passenger service at about 0530 hours, with single line bi-directional service implemented between SHT and FOT. Extra travelling time of about 10-15 minutes was incurred.
0601	Emergency possession was granted by the OCC. After setting up emergency possession, the recovery team tried different means including accessing to vehicle underframe for release of hydraulic oil. However, the hydraulic oil could not be released as there was no special tool to access the valve underneath.
0743	Recovery team commenced cutting platform railings to enable the OIV with more clearance to move without hitting the overhead line.
0845	The OIV was coupled with North and South Locomotives and prepared to move away from the incident location.

<b>Time</b>	<b>Event</b>
0918	<p>The coupled vehicles started moving at caution speed with recovery team onboard the OIV to monitor the overhead line clearance to ensure safe movement.</p> <p>Recovery team manually adjusted the height of the overhead line above the track crossings areas with lower headroom of overhead line fittings to ensure safe movement of the OIV.</p>
1122	The coupled vehicles arrived at FOT for temporary stabling.
1202	Emergency possession was cancelled after the recovery works.
1208	After checking of all railway installations at the incident location, full line service on EAL with normal headway of 4-12 minutes resumed. Major Incident was stepped down.
27^28 April Non-traffic Hours	The coupled vehicles departed FOT for returning to Ho Tung Lau Depot.



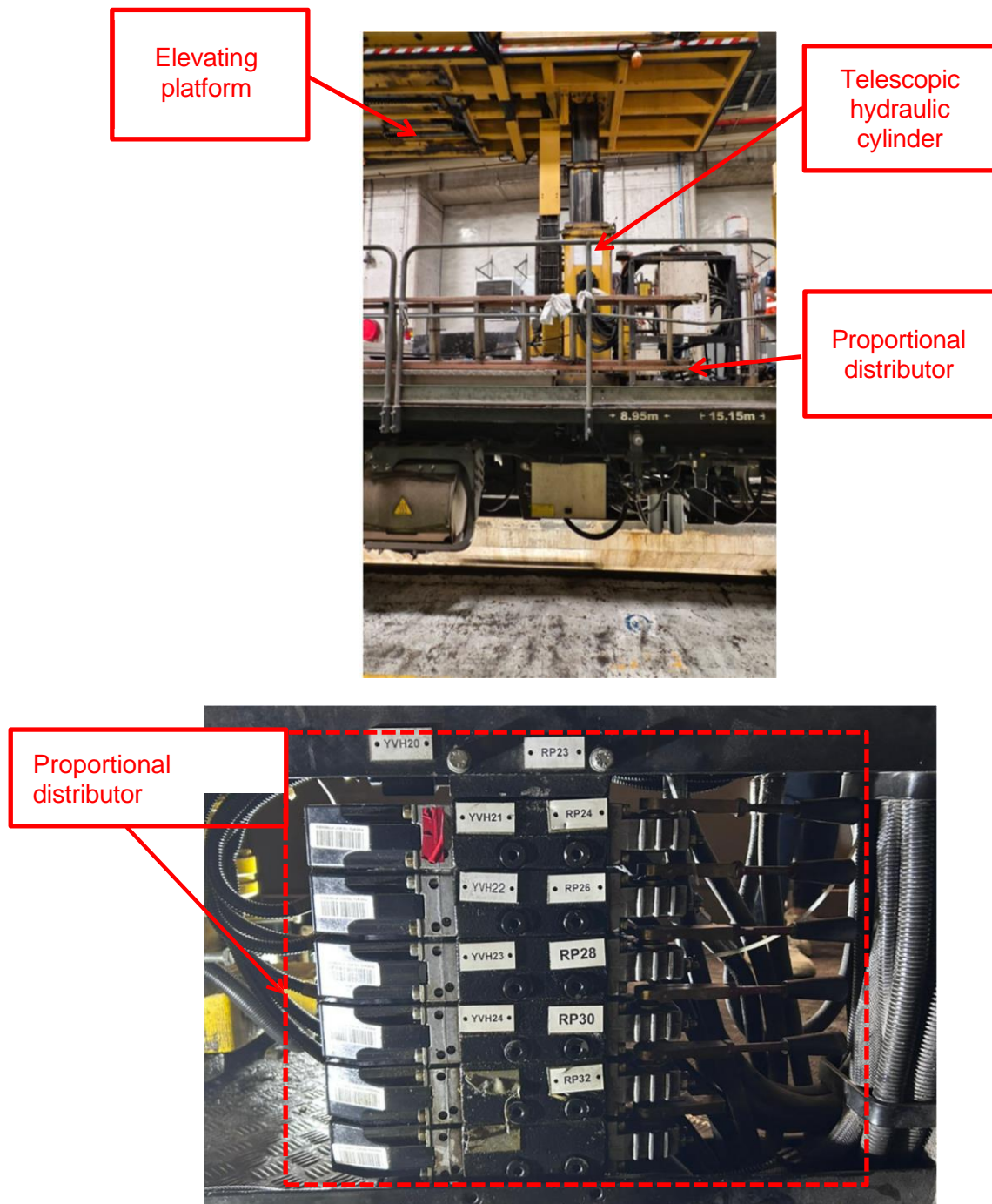
### **3 Train Service Arrangements**

- 3.1 Upon confirming the situation with the recovery team before commencement of passenger service, OCC arranged the necessary service adjustments accordingly and the train service of the entire EAL was maintained.
- 3.2 Full line service was maintained along the EAL since start of passenger service at about 0530 hours, with single line bi-directional service implemented between SHT and FOT. Extra travelling time of about 10-15 minutes was incurred. At 1208 hours, full line service on EAL with normal headway of 4-12 minutes resumed.
- 3.3 Throughout the incident, the Corporation provided timely service updates on relevant train information to the public through media, MTR Mobile and MTR website, while closely coordinating with the Transport Department to enhance services of other public transportation providers. Overall station operations remained orderly.

### **4 Description of the Overhead Line Inspection Vehicle**

- 4.1 The OIV is used for overhead line maintenance activities. It is equipped with an elevating platform for overhead line inspection and maintenance. The vertical movement of the elevating platform is powered by telescopic hydraulic cylinder, which is controlled by the proportional distributor.
- 4.2 The elevating platform can be operated via the in-cab or remote control during normal operations. According to the OEM manual, the elevating platform can be operated through electro-pump or hand pump together with the lever in the proportional distributor under emergency recovery.

- 4.3 The incident OIV has been put into operation since 2009 (i.e. has been in use for 16 years) and is within its service life.



**Figure 3: Mechanism of the Elevating Platform**

## **5 Investigation Findings**

### **5.1 Equipment Fault Finding**

- 5.1.1 A technical investigation conducted after the incident found that a proportional distributor of the OIV was at fault. Simulation tests carried out verified that: when the faulty proportional distributor of the OIV was replaced with a new hydraulic proportional distributor, the OIV's elevation system functioned normally; on the other hand, when the faulty proportional distributor was installed on another working unit, the same failure symptoms were reproduced. Hence, it was confirmed that the incident was caused by a faulty proportional distributor.
- 5.1.2 A detailed inspection of the proportional distributor revealed the presence of milky fluid, metal particles, rust on the spool and valve body, fine scratch and worn marks on the spool, and deteriorated seals. According to the OEM, the milky fluid was the result of oil and water mixing, indicating contaminated hydraulic oil within the system.
- 5.1.3 The contaminated oil with milky fluid and metal particles led to blockage in the oil path, preventing the proportional distributor from functioning properly, and making the system unable to generate sufficient pressure to lower the platform.
- 5.1.4 There was no overhaul or time-based replacement requirement for the proportional distributor specified in the OEM manual. After the incident, the OEM collected the faulty proportional distributor to further evaluate and to identify improvement opportunities.

## 5.2 Review of Regular Maintenance Regime

- 5.2.1 The existing regular maintenance regime of the OIV was developed with reference to the OEM's maintenance regime and further optimized through in-house periodic reviews based on actual operational experience and equipment performance.
- 5.2.2 The proportional distributor is a totally enclosed unit with no strip down overhaul and time-based replacement requirement specified by the OEM. Only visual inspection of oil leakage and functional check are specified.
- 5.2.3 For maintenance treatment of the hydraulic oil, a condition-based approach was adopted. It was filtered by cartridge filter, and while its oil filter should be replaced when needed in accordance with the maintenance procedures, in practice it was replaced during each annual inspection. A sensor was in place for monitoring the condition of the oil filter <sup>1</sup>.
- 5.2.4 The OEM recommends to follow its maintenance regime to conduct regular replacement of the hydraulic oil every 1,000 operating hours or once every year, whichever comes first, to keep the highest possible quality of the oil.
- 5.2.5 In view of the relatively humid climate in Hong Kong, the OEM has also recommended introducing a new maintenance requirement for the hydraulic system. This involves either replacing or conducting a complete overhaul of selected critical hydraulic components, including the proportional distributor, by a specialist in every 10 years.

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<sup>1</sup> An alarm of "oil filter clogging" was once recorded in 2021, upon which the oil filter was replaced. Although no further alarms have occurred since then, the oil filter has continued to be replaced during annual inspections.

### 5.3 Review of Incident Recovery at Site

- 5.3.1 The recovery process was initially carried out in accordance with the recommended procedures outlined in the OEM manual for lowering the elevating platform. The recovery attempt was however unsuccessful. Further efforts, including accessing the OIV's underframe to release hydraulic oil, were also unsuccessful as there was no special tool for accessing the valve underneath. Finally, as a last resort, cutting of platform railings was performed, under appropriate safety precautions, to allow the OIV to be hauled away from the mainline without hitting the overhead line.
- 5.3.2 A review on the recovery process was conducted and it was considered that specialized recovery tools, such as tools for easier access to dismantle necessary valves for oil release, could support staff to more efficiently handle the recovery while continuing to observe appropriate safety precautions during the recovery process.
- 5.3.3 The current risk assessment has covered generic failure scenarios affecting service with the same risk rating for all types of OIVs and the corresponding mitigation measures are not specific to individual unique failure scenario. In view of the range of characteristics among different types of OIVs, there is a need to identify unique and high-consequence failure scenarios associated with particular OIVs, so that relevant mitigation measures could be formulated in advance with a view to addressing the failure and expediting recovery in case of emergencies.
- 5.3.4 If none of the identified recovery measures are viable for any reason, last-resort options, such as destructive methods, will be considered during the risk assessment.

## **6 Conclusion**

- 6.1 After the investigation, it was found that the incident was caused by a faulty proportional distributor. Introduction of a new overhaul regime of selected critical hydraulic components at a regular interval and the regular change of hydraulic oil in accordance with OEM's requirement are required. The investigation also identified areas for improvement in risk assessment, emergency preparedness, addressing unique / high-consequence failure scenarios with provision of specialized recovery tools, and the development of corresponding recovery process and last-resort measures.
- 6.2 A comprehensive review of the entire engineering vehicle fleet with an aim to enhancing the design, maintenance, operational procedures, and emergency repair processes will also be carried out.

## **7 Recommendations**

7.1 Based on the investigation, the following recommendations would be adopted to prevent occurrence of similar incident.

- (a) To introduce new maintenance requirements for the hydraulic system<sup>2</sup> of the OIV. [Target completion: end July 2025]
- (b) To adopt the requirements stipulated in the OEM's manual to replace the hydraulic oil regularly with oil quality monitoring. [Target completion: end July 2025]
- (c) To conduct a review comparing current maintenance regime with the latest OEM maintenance requirement and to update it as appropriate. [Target completion: end July 2025 with regular review in every 3 years]
- (d) To enhance emergency preparedness for OIV after comprehensive service risk assessment, including recovery procedure with last-resort measures and recovery tools with safety precautions, and conduct training and drills after the enhancement. [Target completion: end July 2025]
- (e) To conduct a comprehensive review of the entire engineering vehicle fleet with the engagement of independent consultant to provide professional advice and improvement suggestions, aiming to further enhance the design, maintenance, operational procedures, and emergency repair processes. [Target completion: end July 2025]

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<sup>2</sup> Regular overhaul/replacement of the hydraulic pump, hydraulic motor, and proportional distributor every 10 years. In case of oil leakage found, the hydraulic platform cylinder, crane cylinder, platform cylinder block valve, and crane block valve would be overhauled or replaced, if applicable.