

**For discussion on
27 February 2012**

Legislative Council Panel on Economic Development

**The regulatory regime for the Ngong Ping 360 ropeway and
the investigation and follow-up work related to the recent incidents**

Purpose

This paper updates Members on the Government regulatory regime for the Ngong Ping 360 ropeway and the progress made in the investigation and follow-up work related to the recent spate of incidents.

The Government's Regulatory Regime for the Ngong Ping 360 Ropeway

2. The Government attaches great importance to the operation and service standards of the Ngong Ping 360 ropeway. Ngong Ping 360 must maintain a highly safe and reliable ropeway service, as well as be sensitive to visitors' needs.

Regulation of the Ropeway

3. The Electrical and Mechanical Services Department (EMSD) regulates the Ngong Ping 360 ropeway in accordance with the Aerial Ropeways (Safety) Ordinance ("Ordinance"). Since the commencement of the design stage to its operation, the EMSD has established a regulatory mechanism under the powers given by the Ordinance to monitor the design, construction, installation, testing, examination, operation and maintenance of the Ngong Ping 360 ropeway to ensure public safety.

4. Before construction of the ropeway, the EMSD approved the plans, design, specifications, calculations, installation methods and procedures in accordance with the established Code of Practice and the relevant international standards. During the construction stage, the EMSD deployed staff to carry out inspections to ensure that the ropeway was constructed in accordance with the approved design and specifications.

5. Upon completion of the installation works of the ropeway, the EMSD supervised on site the testing and commissioning results of the cable car system. The EMSD approved the operation of the ropeway for public use after satisfactory completion of all the testing and commissioning results. The EMSD also supervised the subsequent annual inspections, to ensure that the testing and examination of the cable car system (including the main, auxiliary and stand-by drives, braking systems, ropes, car hangers and grips, car door locking devices) comply with the relevant standards.

6. In addition to the monitoring of the cable car system, the EMSD approves the application of operational personnel for the operation and examination of the ropeway, including competent persons, controllers and operators, to ensure that their training, qualifications and experience comply with the requirements of the Ordinance and that they are familiar with the system, so that they can discharge their duties for the safe operation of the ropeway.

7. During the operation period of the Ngong Ping 360 ropeway, the EMSD carries out surveillance inspections, including inspections of the conditions of the main components of the cable car system, review of the records of the cable car monitoring system, to verify that the ropeway operates safely. The EMSD also follows up the maintenance works and inspects the facilities of the maintenance workshops, to ensure that the maintenance of the ropeway meets the safety standards in the aspects of quality, procedures as well as environment.

8. Apart from the regulation of the safety of Ngong Ping 360, the Government also closely monitors its operation and provides advice and support on its rescue plan and transportation arrangements, etc during emergency situations. In accordance with the established reporting mechanism, the Ngong Ping 360 Limited is required to notify, within 30 minutes of occurrence, the EMSD, the Tourism Commission (TC), the Transport Department (TD), the Fire Services Department (FSD) and the Hong Kong Police Force (Police) of suspension of cable car service that is expected to last for 30 minutes or more, so that relevant government departments are kept abreast of the latest developments and can provide the necessary advice and support in a timely manner.

Maintenance of the Ropeway

9. To ensure the safe operation of the ropeway, Ngong Ping 360 carries out regular preventive maintenance and safety examinations in accordance with the maintenance schedule recommended by the manufacturer and approved by the EMSD. This includes daily check, weekly check, monthly check, quarterly check and annual examination of the ropeway. Each day before the commencement of operation, the operational personnel carry out pre-operational examinations to ensure the safe operation of the cable car system. Ngong Ping 360 is also required to employ an independent ropeway surveyor to examine the cable car system annually. Ngong Ping 360 has also established a quality management system which includes formulating detailed internal guidelines and inspection checklists to manage the quality of the operation and maintenance of the ropeway. In the past three years, Ngong Ping 360 achieved an overall reliability of over 99.7%.

Recent Incidents of Ngong Ping 360

10. A summary of the four service suspension incidents occurred in December 2011 and January 2012 is as follows:

Date	Stoppage Duration	Reason
8 December 2011	16:35 – 16:51 (16 minutes) Cable car operation was stopped to carry out maintenance and testing. 16:51 – 17:21 (30 minutes) Passenger boarding was stopped. The ropeway still continued to operate until all passengers were alighted. Cable car service resumed on the next day.	Partial wear on the haul rope sheave lining in the Ngong Ping Terminal. After examination, deformation of the surface of the lining in contact with the sheave was found. The acceptance criteria of lining thickness recommended by the manufacturer appeared not sufficient to prevent failure of the lining, and has affected timely replacement.

Date	Stoppage Duration	Reason
18 December 2011	<p>14:22 – 15:16 (54 minutes) Passenger boarding was stopped. The ropeway still continued to operate until all passengers were alighted.</p> <p>15:16- 16:15 (59 minutes) Cable car operation was stopped to carry out maintenance and testing.</p> <p>16:15 Cable car service resumed to normal.</p>	<p>Fault occurred at a small scale roller bearing of the cabin transportation system in Tung Chung Terminal.</p> <p>After examination, damage was found on a bearing of the roller. Possible causes could be inherent bearing defects or unsatisfactory installation.</p> <p>The roller bearing was replaced overnight as relatively simple procedures and equipment were involved in the replacement work.</p>
22 December 2011	<p>16:40 – 16:53 (13 minutes) Cable car operation was stopped to carry out checking and maintenance.</p> <p>16:53 - 18:07 (1 hour 14 minutes) Passenger boarding was stopped. The ropeway still continued to operate until all passengers were alighted.</p> <p>Cable car service resumed on the next day.</p>	<p>Fault occurred at the cabin spacer of the Ngong Ping Terminal.</p> <p>After examination, metal particles were found at the planetary gearbox and lubricant oil level was found low.</p>

Date	Stoppage Duration	Reason
25 January 2012	<p>14:49 – 15:22 (33 minutes) Cable car operation was stopped to carry out checking and maintenance.</p> <p>15:22 - 16:53 (1 hour 31 minutes) Passenger boarding was stopped. The ropeway still continued to operate until all passengers were alighted.</p> <p>That night, after initial assessment of the maintenance time needed, cable car service was suspended for 10 days to conduct investigation and replacement works.</p>	<p>Noise originated from the bearing of a haul rope sheave at the Airport Island Angle Station, requiring a detailed checking and repair.</p> <p>After examination, wear was found on the surface of the haul rope sheave bearing.</p>

11. Regarding the three incidents occurred in December last year, Ngong Ping 360 had finished inspections and replaced the concerned components. In addition, Ngong Ping 360 had strengthened surveillance by operational personnel during the operation of the ropeway, as well as tightened the inspection criteria for associated components and shortened their replacement cycles. After scrutinising the incident reports from Ngong Ping 360, the EMSD instructed Ngong Ping 360 on 23 December 2011 to implement the following measures to enhance the service reliability of the ropeway:

- (1) To enhance daily routine inspection of the ropeway immediately;
- (2) To examine the entire cable car system; and
- (3) To conduct a comprehensive review of the maintenance regime of the cable car installations.

12. For the incident of 25 January 2012, the Ngong Ping 360 Limited and the EMSD, after preliminary investigation, considered that while the safety of the ropeway had not been affected, the service reliability might be affected by the wear found at the haul rope sheave bearing. The EMSD therefore agreed to Ngong Ping 360's announcement of 3 February on the extension of the suspension of cable car service for two months in order to replace the bearings of all seven sets of bullwheels of the ropeway system and advance the annual examination for this year.

Follow-up Actions for the Incident of 25 January

13. On reviewing the incident that occurred in the afternoon of 25 January 2012, after the Ngong Ping 360 Limited had activated its notification mechanism, the EMSD, FSD and the Police immediately sent their staff to the site to provide advice and support. The Commissioner for Tourism and relevant officers in the TC had kept in touch with the EMSD and the Ngong Ping 360 management to monitor the situation and provide advice. On the following day, the Secretary for Commerce and Economic Development, together with the Director of Electrical and Mechanical Services and the Acting Commissioner for Tourism, immediately met the Ngong Ping 360 management to gain further understanding of, as well as to review, the incident.

14. The EMSD is currently conducting an independent in-depth investigation of the incident. Experts were engaged for the examination and analysis of the worn bearing to identify the possible causes of the wear. Officers of the EMSD were deployed on-site to examine the operation records, maintenance procedures and logs, as well as the arrangement of maintenance works, etc. The investigation work aims to find out the causes of the incident and draw up necessary remedial measures. The EMSD will release the results after completion of investigation. The EMSD will closely monitor the bearing replacement works, annual survey and examination performed by the Ngong Ping 360, to ensure the safe operation of the ropeway before permitting the resumption of cable car service.

15. As regards the handling of emergency situations and taking care of visitors' needs, the TC considered that Ngong Ping 360's contingency measures for the incident of 25 January were unsatisfactory. After the incident, the TC has instructed the company management to make improvements, including substituting the broadcast of recorded messages with live broadcasts. The Ngong Ping 360 management has also been asked to disseminate information regarding incidents expeditiously to the media and visitors; and to ensure that notification to alert visitors heading for the cable car ride of suspension of

service would not be delivered through print alone. In addition, the TC has lined up relevant government departments, including the EMSD, TD, FSD and the Police etc, to supervise and assist the Ngong Ping 360 management in conducting a comprehensive review in the light of this experience on its contingency measures, communication mechanism, rescue plan and transportation arrangements. Such work is targetted for completion before the resumption of the operation of the ropeway.

Conclusion

16. We will continue with enhancing the tourism appeal of Hong Kong. We will also closely monitor and assist the Ngong Ping 360, in the aftermath of the incident on 25 January, to implement thorough examination and tests, complete replacement of the concerned components, and introduce improvements to the contingency and communication arrangements, in order to restore the confidence of visitors. Handling and following up the incident prudently has demonstrated the Government and the company management's commitment to making service safety and reliability a top priority. We are making the best endeavours to ensure the reliability of the cable car system before the resumption of operation. We consider that the Ngong Ping 360 incident will not affect the reputation and development of the Hong Kong tourism industry in the long run.

Tourism Commission, Commerce and Economic Development Bureau
Electrical and Mechanical Services Department

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