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Panel on Economic Development
Meeting on 27 February 2012

**Background brief on the incidents of
breakdown of Ngong Ping 360 ropeway**

Purpose

This paper sets out the background to the development of the Ngong Ping 360 ropeway and the incidents of service interruption of the ropeway in recent years from 2006 up to January 2012. It also summarizes Members' views and concerns expressed on these incidents.

Background

Development of the Ngong Ping 360 ropeway

2. In 1998, the Financial Secretary announced the Government's decision to construct a cable car project linking Tung Chung and Ngong Ping on Lantau Island as a tourist attraction. According to the framework of implementation, the Government would grant a 30-year franchise for the financing, design, construction, operation and maintenance of the Tung Chung Cable Car System on a Build-Operate-Transfer basis.

3. In July 2002, the Government entered into a Provisional Agreement with the MTR Corporation Limited ("MTRCL") to allow the latter to commence preparatory work on the project before the grant of the franchise. The Tung Chung Cable Car Ordinance (Cap 577) was enacted on 28 May 2003 following scrutiny by a bills committee of the Legislative Council ("LegCo") which had examined the operation and safety standards of the ropeway and also the financial penalties on the franchisee in the event of persistent failure to comply with the statutory requirements.

4. In November 2003, the Government entered into a Project Agreement with MTRCL for a 30-year franchise of operating the Ngong Ping 360 ropeway, and granted it a 30-year land lease for the development of complementary tourist facilities in the form of a themed village at Ngong Ping ("the Village"). MTRCL appointed the Skyrail-ITM (Hong Kong) Limited ("Skyrail") to operate and manage the whole project.

5. On 2 November 2005, the Tung Chung Cable Car Bylaw was made under section 22 of the Tung Chung Cable Car Ordinance, providing safety precautions to passengers on the Ngong Ping 360 ropeway and people in nearby area. The Ngong Ping 360 ropeway was officially opened to the public on 18 September 2006.

Transfer of management

6. Subsequent to the cabin dislodgement incident occurring in June 2007 (for details, see paragraphs 13 to 21 below), MTRCL decided to take over the management and operation of the Ngong Ping 360 ropeway through the acquisition of Skyrail. On 27 September 2007, MTRCL announced the new management of Ngong Ping 360 Limited ("NP 360 Ltd") which was a subsidiary of MTRCL and comprised local engineers and experienced cable car professionals from overseas.

Incident reporting mechanism

7. According to the current notification mechanism, NP 360 Ltd will inform the public through the electronic media if cable car service is expected to be delayed or suspended for 30 minutes or more. It will also inform passengers through the announcement system inside the cable car cabins and notify the tour groups that have made bookings. MTRCL will also broadcast the message at the Hong Kong, Lai King and Tung Chung stations as well as putting up notices in various MTR stations. According to the requirements as stipulated in the Aerial Ropeways (Operation and Maintenance) Regulations (Cap 211 sub. leg. A) ("the Regulations"), the controller of the ropeway shall report to the Electrical and Mechanical Services Department ("EMSD"), which is responsible for monitoring the safety of the cable car systems, any major incident happened within the site of the ropeway, e.g. incident involving the death of or injury to any person occurring within the site of ropeway, failure of the main drive, etc.

8. According to the reporting mechanism established with EMSD, NP 360 Ltd is required to, within 30 minutes of occurrence, inform EMSD verbally of any incident stipulated in the Regulations, as well as other incidents due to equipment breakdown that may affect the safe operation of the ropeway system,

including breakdown of rescue carrier. The verbal report should be followed by a written report within 24 hours.

9. Major incidents of service interruption of the Ngong Ping 360 ropeway since 2006 are set out in paragraphs 10 to 25 below.

Service interruption incident in June 2006

10. During a trial run on 17 June 2006, a service interruption incident occurred leading to some passengers being stranded in the cable cars. The then operator, Skyrail, and the cable car manufacturer, Leitner GmbH, subsequently made adjustments to the system and conducted reliability tests. A new series of trial run resumed from 30 August 2006 onwards involving more than 8 000 people.

Concerns expressed by LegCo Members about the incident

Council meetings

11. At the Council meeting on 28 June 2006, Hon James TIEN asked an oral question about the operation of the Ngong Ping 360 ropeway under strong wind and contingency measures to deal with service suspension. According to the Administration's reply, there would be temporary suspensions of the ropeway in the circumstances of adverse weather conditions, including strong winds, i.e. wind speed of 90 kilometres per hour persistent wind and 135 kilometres per hour gust wind. Under the Aerial Ropeways (Safety) Ordinance, the operator had the power to suspend the operation of the cable car system having regard to a host of factors, including wind speed, safety and comfort of the passengers.

Panel discussions

12. Following the service interruption incident during the trial run in June 2006, the former Panel on Economic Services¹ ("the Panel") discussed with the Administration, MTRCL and Skyrail improvement measures at the special meeting on 18 July 2006. Panel members urged Skyrail to strengthen contingency measures in the event of suspension of the ropeway, including crisis handling and crowd control procedures, communication with the operational staff at the terminals/angle stations, the passengers inside the cable cars as well as the media. They also called upon Skyrail to enhance the transport

¹ The Panel on Economic Services was renamed as the Panel on Economic Development from the 2007-2008 session.

arrangements for visitors during the evacuation process and step up efforts in promoting the cable car service in order to restore public confidence.

Cabin dislodgement incident in June 2007

13. In accordance with the Aerial Ropeways (Safety) Ordinance (Cap 211), Skyrail, the then ropeway operator, commenced a week-long annual ropeway survey on 7 June 2007 after the service hours of the ropeway to test different system components. On 11 June 2007 in the course of conducting a brake test, a cabin dislodged from the ropeway and fell through about 50 metres before collapsing on the ground next to Tower 2B. EMSD immediately ordered MTRCL to close the ropeway. The Government appointed an Expert Panel² to conduct detailed investigation into the incident; review the design, operation, maintenance and management of the ropeway; and recommend prerequisite requirements for re-opening of the ropeway for use by the public.

Investigation of the incident

14. The Expert Panel was of the opinion that the incident was caused by improper operation of the service brakes, and the brake test conducted (which was to simulate the failure of modulation of both groups of service brakes³) during annual examination on 11 June 2007 was not necessary and should not be allowed in any circumstances. According to the Expert Panel, the design of the Ngong Ping 360 ropeway was in line with the prevailing international standards and practices. The Expert Panel proposed the following remedial measures to prevent recurrence of similar incident:

- (a) provide refresher training course for ropeway operators and maintenance staff;
- (b) prepare properly documented procedures and necessary work instructions for annual examination;

² The Expert Panel was chaired by Prof. Dr. Gábor Oplatka, past President and Honourary Member of the International Organisation for the Study of the Endurance of Wire Ropes of the International Organisation for Transportation by Cables, with Prof. Dr. Josef Nejez, Chairman of the Austrian Standards Committee on Ropeways, as Deputy.

³ The brake test conducted was to simulate the failure of modulation of both groups of service brakes, the possibility of which is extremely remote during normal operation of the ropeway. According to the ropeway manufacturer, there has not been any occurrence of simultaneous failure of both groups of service brakes in over 130 similar ropeway systems, either mono-cable or bi-cable systems having the same service brake configuration, installed between 2003 and 2006 by them.

- (c) introduce a quality management system;
- (d) conduct visual check of possible cabin derailment before system restarting wherever the ropeway experienced excessive deceleration;
- (e) monitor visually the entire ropeway line during brake tests; and
- (f) provide interlock for the operation which must not be carried out at the same time.

15. In parallel, the Government conducted a criminal investigation into the incident which revealed that the assistant manager, the managing director and Skyrail had contravened section 23A of the Aerial Ropeways (Safety) Ordinance. The case was taken to court. The company pleaded guilty and was fined \$5,000 on 10 January 2008. After reviewing the case, the Director of Public Prosecutors concluded that since the company had accepted full responsibility, it was no longer in the public interest to proceed with the prosecution of the managing director and the assistant manager. As such, the actions taken against them were terminated in March 2009.

16. After being taken over by the new management of NP 360 Ltd and having passed the assessment of EMSD, the Ngong Ping 360 ropeway was officially re-opened on 31 December 2007.

Concerns expressed by LegCo Members about the incident in 2007

Council meetings

17. At the Council meeting on 11 July 2007, Hon Jeffrey LAM raised an oral question on the cabin crash incident. Members expressed grave concern about repeated suspension of the Ngong Ping 360 ropeway and considered the incident further revealed the poor performance of Skyrail in operating the ropeway service. There was a strong call for the Administration to order MTRCL to terminate the service contract with Skyrail with a view to restoring public confidence on the ropeway.

18. Hon Jeffrey LAM raised a question at the Council meeting on 14 May 2008 on the operation of the Ngong Ping 360 ropeway. He expressed concern whether NP 360 Ltd had fully implemented the measures for improving the operational safety of the cable car system as recommended by the Expert Panel in its report on the cabin dislodgement incident. According to the Administration, NP 360 Ltd had complied with all prerequisites before the cable

car service was re-opened to the public in end 2007. EMSD would continue to closely monitor the operation of the cable car system and ensure that the company would continuously and effectively implement all improvement measures.

Panel discussions

19. The Panel held a special meeting on 15 June 2007 with the Administration, MTRCL and Skyrail to follow up the cabin dislodgement incident. Acknowledging the top priority of ensuring the safety of the ropeway, Panel members supported the immediate suspension of cable car service until the cause of the incident was identified and remedial actions taken. They also welcomed the appointment of the Expert Panel to conduct a full investigation into the incident. Given the negative impact of the incident on Hong Kong's tourism, Panel members stressed the needs for the Administration to strengthen promotion on Hong Kong's multi-faceted appeal to tourists, to continue attracting visitors to the Village, as well as to help Village tenants.

20. On 18 September 2007, the Panel received the report on the findings of the investigation into the incident. Panel members in general welcomed MTRCL's decision to change the cable car management and hoped that the new management would deploy professional experts to run the ropeway. They also called upon the Administration to take note that overseas companies were unable to meet public expectations and manage public relations, while local company should have more understanding in local practices and customers' needs. Panel members urged the Administration and MTRCL to step up their effort in monitoring the cable car operation to ensure the safety of passengers. In response to members' call for helping Village tenants tide over the difficult period, MTRCL undertook to make its best effort to assist them.

21. On 26 November 2007, the Administration briefed the Panel on the transfer of management and re-launching of the Ngong Ping 360 ropeway. As the Expert Panel had earlier pointed out that there was a lack of alertness of the previous management to issues relating to the daily operation of the ropeway, a Panel member expressed concern about the capability of the new management in responding to cable car incidents. MTRCL assured members that the new management, comprising local engineers who were well-versed with the management, operation and maintenance of rail operation, as well as the European cable car professionals with over 20 years' experience in ropeway services, would give prompt response to problems identified and take follow-up actions as appropriate.

Incident in November 2009

22. During a rescue drill on 18 November 2009, a rescue carrier of the Ngong Ping 360 ropeway was damaged after colliding with the tower of the ropeway system. NP 360 Ltd informed EMSD of the incident on 20 November 2009, i.e. two days after the incident, instead of within 30 minutes of occurrence as stipulated in the Regulations. In view of NP 360 Ltd's failure to follow the established reporting mechanism, EMSD issued a warning letter to the company reiterating the need to comply with the established reporting mechanism, and requested MTRCL to strengthen the monitoring of NP 360 Ltd.

Concerns expressed by LegCo Members about the incident

23. At the meeting of the Panel on Economic Development on 22 February 2010, members expressed much concern that NP 360 Ltd had failed to report the incident related to the damage of the rescue carrier of the ropeway system on 18 November 2009 to EMSD until after two days. NP 360 Ltd explained that its understanding of the Regulations was for the controller of an aerial ropeway to notify any major incidents happened within the site of the ropeway, e.g. incidents involving death of or injury to any person, failure of the main drive, etc. Nevertheless, the Director of Electrical and Mechanical Services had, consequent to the incident on 18 November 2009, clearly spelt out the scope and timing of the reporting requirements in a written guideline and there should be no question of ambiguity. NP 360 Ltd undertook to pay full regard to and comply with all statutory requirements at all times.

Recent incidents of service interruption in 2011 and 2012

24. As reported by the media, the following incidents which led to service interruption of the Ngong Ping 360 ropeway took place in less than two months from December 2011 and January 2012 –

- (a) on 8 December 2011, more than 100 passengers were stranded in cable cars for about 20 minutes during a service suspension. Investigation revealed that one rubber lining piece in a cable pulley was damaged and worn out;
- (b) on 18 December 2011, the service suspended for more than two hours after strange noise was heard from the equipment at the Tung Chung Terminal. About 600 passengers were stranded for about six minutes during the incident. Investigation found that the cause of the strange noise was likely to be mechanical;

- (c) on 22 December 2011, the automatic monitoring system halted the ropeway after detecting the distance between the cable cars was less than allowed. About 400 passengers were stranded for about 13 minutes. Investigation showed that a section of belt in the power mechanism was not moving normally; and
- (d) on 25 January 2012 (a Chinese new year holiday), an automatic monitoring system halted the ropeway and some 800 passengers were stranded in cable cars for up to two hours under a temperature of three degree Celsius. The disruption to cable car service was caused by a faulty bearing in a bullwheel on Airport Island Angle Station. NP 360 Ltd immediately announced the suspension of the cable car service for the following 10 days. On 3 February 2012, NP 360 Ltd announced further findings which revealed the irregular wear on the surface of the inner ring of the bearing concerned. It announced that the Ngong Ping 360 ropeway would be closed for about two months to facilitate replacement of all bearings on the six other bullwheels in the system, and advancement of its annual servicing inspection and examination.

Concerns expressed by LegCo Members in 2012

25. Hon LAM Tai-fai raised a question at the Council meeting on 8 February 2012 on the operation of the Ngong Ping 360 ropeway. He expressed concern about the various incidents and suspension of service that had occurred frequently and that the situation remained the same after the management of the ropeway had been changed. Members were also gravely concerned about the mechanism on communicating with stranded passengers and the ticketing arrangements during service suspension, the repeated incidents on the image of the tourism industry, and the performance of the management of NP 360 Ltd. The Administration replied that NP 360 Ltd was reviewing ways to enhance internal communication and foster effective co-ordination in handling emergencies. It was also reviewing its current maintenance programme and actively exploring ways to increase the frequency for regular maintenance and improve the maintenance practices. The Administration considered that the incidents would not cause any long term impact on tourism.

Latest position

26. The Administration has been invited to brief the Panel on Economic Development on the recent service interruptions of the Ngong Ping 360 ropeway at the meeting on 27 February 2012.

References

27. A list of the relevant papers is in the **Appendix**.

Council Business Division 1
Legislative Council Secretariat
21 February 2012

Background brief on operation of Ngong Ping 360 ropeway

List of relevant papers

| Panel/Committee | Date | Paper |
|---|------------------|--|
| Panel on Economic Services Panel ("ES Panel") | 3 July 2002 | Legislative Council brief on Tung Chung Cable Car (File Ref.: ESB CR 6/2091/98 (02) Pt. 24) http://www.legco.gov.hk/yr01-02/english/panels/es/papers/esb_cr_6_2091_98_02_pt24.pdf Minutes of the meeting (LC Paper No. CB(1)2428/01-02) http://www.legco.gov.hk/yr01-02/english/panels/es/minutes/es020703.pdf |
| ES Panel | 25 November 2002 | Administration's information on the Tung Chung Cable Car Bill http://www.legco.gov.hk/yr02-03/english/panels/es/papers/es1125cb1-327-3e.pdf Minutes of the meeting (LC Paper No. CB(1)658/02-03) http://www.legco.gov.hk/yr02-03/english/panels/es/minutes/es021125.pdf |
| Bills Committee on Tung Chung Cable Car Bill | | Legislative Council brief on the Tung Chung Cable Car Bill http://www.legco.gov.hk/yr02-03/english/bills/brief/b29_brf.pdf Report of the Bills Committee to the House Committee (LC Paper No. CB(1)1681/02-03) http://www.legco.gov.hk/yr02-03/english/hc/papers/hc0516cb1-1681.pdf |
| Subcommittee on Proposed Resolution under Section 22 of the Tung Chung Cable Car Ordinance (Cap. 577) | | Proposed resolution on the Tung Chung Cable Car Bylaw http://www.legco.gov.hk/yr04-05/english/subleg/positive/sc10-04-e.pdf Report of the Subcommittee to the House Committee (LC Paper No. CB(1)32/05-06) http://www.legco.gov.hk/yr05-06/english/hc/papers/hc1014cb1-32-e.pdf |

| Panel/Committee | Date | Paper |
|-----------------|-----------------|---|
| ES Panel | 24 April 2006 | <p>Administration's paper on the update on the Ngong Ping 360 Project (LC Paper No. CB(1)1303/05-06(05)) http://www.legco.gov.hk/yr05-06/english/panels/es/papers/es0424cb1-1303-5e.pdf</p> <p>Minutes of the meeting (LC Paper No. CB(1)1496/05-06) http://www.legco.gov.hk/yr05-06/english/panels/es/minutes/es060424.pdf</p> |
| Council meeting | 28 June 2006 | <p>Hon James TIEN raised an oral question on the operation of Ngong Ping Skyrail http://www.legco.gov.hk/yr05-06/chinese/counmtg/floor/cm0628ti-confirm-c.pdf</p> |
| ES Panel | 18 July 2006 | <p>Administration's paper on the update on the Ngong Ping 360 Project (LC Paper No. CB(1)1972/05-06(01)) http://www.legco.gov.hk/yr05-06/english/panels/es/papers/es0718cb1-1972-1e.pdf</p> <p>Background brief (LC Paper No. CB(1)1973/05-06) http://www.legco.gov.hk/yr05-06/english/panels/es/papers/es0718cb1-1973-e.pdf</p> <p>Minutes of the meeting (LC Paper No. CB(1)2298/05-06) http://www.legco.gov.hk/yr05-06/english/panels/es/minutes/es060718.pdf</p> |
| ES Panel | 23 October 2006 | <p>Administration's paper on update on Ngong Ping 360 (LC Paper No. CB(1)121//06-07(03)) http://www.legco.gov.hk/yr06-07/english/panels/es/papers/es1023cb1-121-3-e.pdf</p> <p>Background brief (LC Paper No. CB(1) 121/06-07(04)) http://www.legco.gov.hk/yr06-07/english/panels/es/papers/es1023cb1-121-4-e.pdf</p> <p>Minutes of the meeting (LC Paper No. CB(1)345/06-07) http://www.legco.gov.hk/yr06-07/english/panels/es/minutes/es061023.pdf</p> |

| Panel/Committee | Date | Paper |
|-----------------|-------------------|--|
| ES Panel | | Administration's information paper on update on Ngong Ping 360 (LC Paper No. CB(1)1496/06-07(01)) http://www.legco.gov.hk/yr06-07/english/panels/es/papers/escb1-1496-1-e.pdf |
| Press release | | Press release on "EMSD investigates into the fall of cable car cabin" http://www.info.gov.hk/gia/general/200706/11/P200706110288.htm |
| ES Panel | 15 June 2007 | Administration's paper on the incident of the falling of a cabin of Ngong Ping Skyrail (LC Paper No. CB(1)1906/06-07(01)) http://www.legco.gov.hk/yr06-07/english/panels/es/papers/es0615cb1-1906-1-e.pdf Submission from Liberal Party regarding on agenda item "The incident of the falling of a cabin of Ngong Ping 360" (Chinese version only) (LC Paper No. CB(1)1923/06-07(01)) (15 June 2007) http://www.legco.gov.hk/yr06-07/chinese/panels/es/papers/es0615cb1-1923-1-c.pdf Powerpoint presentation material on "Background on the incident of 11 June 2007" http://www.legco.gov.hk/yr06-07/english/panels/es/papers/es0615cb1-1923-2-e.pdf Minutes of the meeting (LC Paper No. CB(1)2342/06-07) http://www.legco.gov.hk/yr06-07/english/panels/es/minutes/es070615.pdf |
| Council meeting | 11 July 2007 | Hon Jeffrey LAM raised an oral question on the cabin crash incident of Ngong Ping Skyrail (Hansard p.79 to 85) http://www.legco.gov.hk/yr06-07/chinese/counmtg/floor/cm0711-confirm-ec.pdf |
| ES Panel | 18 September 2007 | Background brief (LC Paper No. CB(1) 2366/06-07(01)) http://www.legco.gov.hk/yr06-07/english/panels/es/papers/es0918cb1-2366-1-e.pdf Information paper provided by the Administration on "Report on Ngong Ping Skyrail Cabin Dislodgement Incident" (follow-up paper) (LC Paper No. CB(1)2376/06-07(01)) http://www.legco.gov.hk/yr06-07/english/panels/es/papers/es0918cb1-2376-1-e.pdf |

| Panel/Committee | Date | Paper |
|-----------------|------------------|--|
| | | <p>Administration's response to the letter dated 21 September 2007 from Hon Fred LI Wah-ming (follow-up paper) (LC Paper No. CB(1)2435/06-07(02)) http://www.legco.gov.hk/yr06-07/english/panels/es/papers/es0918cb1-2435-2-e.pdf</p> <p>Minutes of the meeting (LC Paper No. CB(1) 289/07-08) http://www.legco.gov.hk/yr06-07/english/panels/es/minutes/es070918.pdf</p> |
| ES Panel | 26 November 2007 | <p>Information paper on re-launching Ngong Ping 360 provided by the Administration (LC Paper No. CB(1)76/07-08(03)) http://www.legco.gov.hk/yr07-08/english/panels/es/papers/edev1022cb1-76-3-e.pdf</p> <p>Information paper on MTR Corporation's arrangement with Skyrail provided by the MTR Corporation (LC Paper No. CB(1)76/07-08(04)) http://www.legco.gov.hk/yr07-08/english/panels/es/papers/edev1022cb1-76-4-e.pdf</p> <p>Administration's paper on the liability of parties for possible claims arising from the transfer of management of Ngong Ping 360 (follow-up paper) (LC Paper No. CB(1)737/07-08(01)) http://www.legco.gov.hk/yr07-08/english/panels/es/papers/edev1126cb1-737-1-e.pdf</p> <p>Supplementary information on the liability of parties for possible claims arising from the transfer of management of Ngong Ping 360 provided by the Administration (follow-up paper) (LC Paper No. CB(1)1172/08-09(01)) http://www.legco.gov.hk/yr07-08/english/panels/es/papers/edev1126cb1-1172-1-e.pdf</p> <p>An abstract of the Report on The incident of the falling of a cabin of Ngong Ping 360 provided by the Administration (follow-up paper) (LC Paper No. CB(1)988/08-09(01)) http://www.legco.gov.hk/yr06-07/english/panels/es/papers/edevcb1-988-1-e.pdf</p> <p>Minutes of the meeting (LC Paper No. CB(1)551/07-08) http://www.legco.gov.hk/yr07-08/english/panels/es/minutes/ev071126.pdf</p> |

| Panel/Committee | Date | Paper |
|--|------------------|--|
| Council meeting | 14 May 2008 | Hon Jeffrey LAM raised a question on operation of Ngong Ping 360 (Hansard p.63 to 68) http://www.legco.gov.hk/yr07-08/english/counmtg/hansard/cm0514-translate-e.pdf |
| Panel on Economic Development ("EDEV Panel") | | Administration's paper on reporting mechanism of the Ngong Ping 360 ropeway (LC Paper No. CB(1)779/09-10(02)) http://www.legco.gov.hk/yr09-10/english/panels/eDEV/papers/eDEVcb1-779-2-e.pdf |
| EDEV Panel | 22 February 2010 | Administration's paper on issues relating to the operation of the Ngong Ping ropeway (LC Paper No. CB(1)1146/09-10(04)) http://www.legco.gov.hk/yr09-10/english/panels/eDEV/papers/eDEV0222cb1-1146-4-e.pdf Background brief (LC Paper No. CB(1)1146/09-10(05)) http://www.legco.gov.hk/yr09-10/english/panels/eDEV/papers/eDEV0222cb1-1146-5-e.pdf Minutes of the meeting (LC Paper No. CB(1)1435/09-10) http://www.legco.gov.hk/yr09-10/english/panels/eDEV/minutes/eDEV20100222.pdf |
| Council meeting | 8 February 2012 | Hon LAM Tai-fai raised a question on the operation of Ngong Ping 360 http://www.info.gov.hk/gia/general/201202/08/P201202080222.htm |