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Panel on Economic Development
Meeting on 23 April 2012

**Background brief on the incidents of
breakdown of Ngong Ping 360 ropeway occurring
in December 2011 and January 2012**

Purpose

This paper sets out the background to the incidents of service interruption of the Ngong Ping 360 ropeway occurring in December 2011 and January 2012, and summarizes Members' views and concerns expressed on these incidents.

Background

Management of the ropeway

2. The Ngong Ping 360 ropeway was officially opened to the public on 18 September 2006. Based on a Project Agreement signed with the Government in November 2003, the MTR Corporation Limited ("MTRCL") has a 30-year franchise of operating the Ngong Ping 360 ropeway and 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 initially appointed the Skyrail-ITM (Hong Kong) Limited ("Skyrail") to operate and manage the whole project.

3. In June 2007, MTRCL acquired Skyrail and took over the management and operation of the Ngong Ping 360 ropeway. In September 2007, MTRCL announced the new management of Ngong Ping 360 Limited ("NP 360 Ltd") which was a subsidiary of MTRCL.

Previous incidents of service interruption

4. During a trial run on 17 June 2006 prior to the opening of the Ngong

Ping 360 ropeway, 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 had been conducted before the ropeway was officially opened to the public on 18 September 2006.

5. On 11 June 2007, in the course of conducting a brake test during an annual ropeway survey, a cabin dislodged from the ropeway and fell through about 50 metres before collapsing on the ground next to Tower 2B. The ropeway was immediately closed. The Expert Panel appointed by the Government to conduct detailed investigation into the incident found that the incident was caused by improper operation of the service brakes during the brake test. The Expert Panel recommended a number of remedial measures in respect of the operation, maintenance and management of the ropeway to prevent recurrence of similar incident. The ropeway was re-opened on 31 December 2007.

6. 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 the Electrical and Mechanical Services Department ("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 Aerial Ropeways (Operation and Maintenance) Regulations (Cap 211 sub. leg. A) ("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.

7. Further details of the above incidents and relevant Members' concerns can be found in the background brief prepared by the Secretariat [LC Paper No. CB(1)1111/11-12(09)] for the meeting of the Panel on Economic Development ("the Panel") on 27 February 2012.

Incident reporting mechanism

8. 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 Regulations, the controller of the ropeway shall report to 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.

9. Also, according to the reporting mechanism established with EMSD before the ropeway commenced service in September 2006, 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.

Incidents of service interruption in December 2011 and January 2012

10. The service of Ngong Ping 360 ropeway was suspended on 8, 18 and 22 December 2011 due to various mechanical faults. The latest suspension happened on 25 January 2012 (a Chinese New Year holiday). Some 800 passengers were stranded in cabins for up to two hours under a temperature of three degree Celsius. Stranded passengers criticized NP 360 Ltd for failing to explain the reason for the suspension in the announcement made to cabins and to provide communication facility in cable cars to allow contact with station staff. In response to the spate of incidents, the ropeway was closed for more than two months to facilitate replacement of all bearings on all bullwheels in the system and advancement of annual servicing inspection and examination.

11. An investigation into the cause of the service disruption has been carried out jointly by independent cable car experts, Ngong Ping 360 engineers and the cable car system manufacturer, and the report has been submitted to EMSD. The report of EMSD's relevant investigation was issued to members vide LC Paper No. CB(1)1518/11-12 on 10 April 2012.

Cause of the incident on 25 January 2012

12. According to EMSD's investigation report, the incident on 25 January 2012 was caused by irregular spalling on the surface of the inner ring of a bullwheel bearing at the Airport Island Angle Station. The grease sample obtained from the incident bullwheel bearing contained higher than normal water content. The excess water reduced the effectiveness of the lubrication which, over time, led to irregular spalling of the incident bearing. This caused uneven wearing of the bullwheel lining, which in turn led to vibration on the haul rope, thus triggering a stoppage by the automatic monitoring system.

13. EMSD's investigation revealed that NP 360 Ltd had not taken sufficient precautions to preserve the unused grease against the moisture of ambient environment. The measuring interval currently adopted for vibration monitoring was not adequate to ensure early identification of defects on the bearings and their timely replacement.

Remedial actions

14. To prevent recurrence of similar incidents, NP 360 Ltd had implemented the following remedial and enhancement measures recommended by EMSD before the resumption of cable car operation:

- (a) replace all bullwheel bearings;
- (b) enhance the vibration monitoring system of all bullwheels bearings to capture data on an on-going basis and examine the collected data every two weeks;
- (c) conduct monthly grease analysis to monitor the moisture and metal content of the lubricating grease and step up the re-greasing frequency according to the result;
- (d) store and handle lubricating grease properly to prevent ingress of moisture;
- (e) check and re-grease all bearings of the ropeway system; and
- (f) review and tighten the procedure for inspection and replacement of the bullwheel linings.

15. To enhance communication with and assistance to stranded passengers, NP 360 Ltd had installed live broadcast capabilities in cabins. Hotline had also been displayed in all cabins and manning of the hotline would be enhanced during incidents. It had also upgraded in-cabin emergency packs to include blankets and warm pads during cold-weather periods.

Concerns expressed by Members about the incidents of serious interruptions

Council questions

16. Hon LAM Tai-fai raised a question at the Council meeting on 8 February 2012 on the recent spate of incidents of the Ngong Ping 360 ropeway.

He expressed concern about the recurrence of incidents 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.

17. At the Council meeting on 21 March 2012, Hon Jeffrey LAM raised a question on the operation of the Ngong Ping 360 ropeway. He was concerned whether the frequency of incidents of the ropeway was on the high side compared with cable car systems internationally. According to the Administration, Ngong Ping 360 ropeway was regulated by the Aerial Ropeways (Safety) Ordinance (Cap 211) which stipulated the technical requirements that conformed to the international standards for similar ropeway systems. To address the concern on the losses suffered by the commercial tenants of the Village due to repeated service suspensions, NP 360 Ltd had disbursed special allowances to subsidize the operation costs of the Village shops and enable them to continue normal operation during the suspension of ropeway service. Various promotional offers had also been introduced to attract visitors to the Village during service suspension. The Administration considered that the ropeway incidents would not affect the reputation of Hong Kong's tourism industry in the long run.

Panel discussions

18. The Administration briefed the Panel on the recent ropeway incidents at the meeting on 27 February 2012. Panel members noted that the incident bullwheel bearing was designed with a lifespan of 90 000 hours but it had only been used for some 25 000 hours at the time of the incident. Members expressed doubt about the cause of the irregular wear on the bearing concerned and considered it necessary to conduct a thorough investigation into the quality of the mechanical components of the ropeway system to ensure operational safety.

19. Panel members also urged NP 360 Ltd to study the feasibility of effecting two-way in-cabin communication and to provide further details on the rescue plan for rescuing in-cabin guests, in particular details on the relevant reporting mechanism and the co-ordination among NP 360 Ltd and relevant Government departments. The Panel considered it necessary to revisit the issue when the relevant investigation report covering the causes of the incidents and recommendations on remedial measures was available.

Latest position

20. The Ngong Ping 360 ropeway reopened on 5 April 2012 following the completion of all engineering and maintenance works undertaken and a full testing of the system. The Administration will brief the Panel on the investigation report on the service interruption incidents of the ropeway and give an update on its resumption of service at the meeting on 23 April 2012.

References

21. Information in respect of previous major incidents of service interruption of the Ngong Ping 360 ropeway (from 2006 to 2010) and Members' concerns can be found in the background brief [LC Paper No. CB(1)1111/11-12(09)] prepared for the Panel meeting on 27 February 2012.

22. A list of papers on the operation of the Ngong Ping 360 ropeway is in the **Appendix**.

Council Business Division 1
Legislative Council Secretariat
19 April 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 (Hansard p. 8 to 17) http://www.legco.gov.hk/yr05-06/english/counmtg/hansard/cm0628-translate-e.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 (Hansard p. 102 to 113) http://www.legco.gov.hk/yr11-12/english/counmtg/hansard/cm0208-translate-e.pdf
EDEV Panel	27 February 2012	Administration's paper on the regulatory regime for the Ngong Ping 360 ropeway and the investigation and follow-up work related to the recent incidents (LC Paper No. CB(1)1111/11-12(07)) http://www.legco.gov.hk/yr11-12/english/panels/eDEV/papers/eDEV0227cb1-1111-7-e.pdf Ngong Ping 360 Limited's paper on breakdown of Ngong Ping 360 ropeway occurring in December 2011 and January 2012 (LC Paper No. CB(1)1111/11-12(08)) http://www.legco.gov.hk/yr11-12/english/panels/eDEV/papers/eDEV0227cb1-1111-8-e.pdf

Panel/Committee	Date	Paper
		<p>Administration's information paper on breakdown of Ngong Ping 360 ropeway occurring in December 2011 and January 2012 (follow-up paper) (LC Paper No. CB(1)1388/11-12(01)) http://www.legco.gov.hk/yr11-12/english/panels/eDEV/papers/eDEV0227cb1-1388-1-e.pdf</p> <p>Administration's investigation report on the breakdown of Ngong Ping 360 ropeway occurring in December 2011 and January 2012 (follow-up paper) (LC Paper No. CB(1)1518/11-12(01)) http://www.legco.gov.hk/yr11-12/english/panels/eDEV/papers/eDEV0227cb1-1518-1-e.pdf</p> <p>Background brief (LC Paper No. CB(1)1111/11-12(09)) http://www.legco.gov.hk/yr11-12/english/panels/eDEV/papers/eDEV0227cb1-1111-9-e.pdf</p>
Council meeting	21 March 2012	Hon Jeffrey LAM raised a question on the operation of Ngong Ping 360 http://www.info.gov.hk/gia/general/201203/21/P201203210280.htm