

LegCo Panel on Transport

Contingency arrangements for handling major traffic and transport incidents

Purpose

The purpose of this paper is to brief Members on the contingency arrangements for handling major traffic and transport incidents and to report on the Cross Harbour Tunnel incident on 26 November 2001.

Emergency Traffic and Transport Arrangements

Types of Emergency

2. In general, we may group the emergency incidents into three main types :

- (a) Natural Disaster Emergency –
This includes rainstorms, flooding, landslips and tropical cyclones.
- (b) Public Transport Emergency –
This includes disruption or breakdown of public transport services. Such emergency may also arise due to other factors such as severe road congestion or obstruction affecting the normal operation of the public transport services.
- (c) Major Road Obstruction –
This includes severe road congestion or obstruction due to road collapse, accidents/incidents on strategic roads/tunnels/bridges, landslip, protest actions, etc.

Responsibilities of Transport Department (TD)

3. Different parties are involved in handling an emergency transport situation. The role of TD is :

- (a) to monitor traffic and transport situation in an emergency;
- (b) to disseminate information to public transport operators, toll road operators, and to road users and public transport passengers on road closures and any contingency public

transport arrangements;

- (c) to liaise with other departments and agencies on traffic diversion or provision of relief transport services where necessary; and
- (d) to assist the Emergency Management and Support Centre (EMSC) of Security Bureau in handling traffic and transport matters when the Centre is activated.

Responsibilities of Other Departments and Agencies

3. To deal with problems on the ground, other government departments (e.g. Police, Highways Department, Water Supplies Department, Leisure and Cultural Services Department, etc.), utilities companies and major public transport operators all have their respective role to play. Such action includes system recovery, directing traffic on the ground, provision of relief transport services and clearance of fallen trees or other obstacles on the road.

4. In an emergency necessitating the provision of relief transport services, it is the responsibility of the source operator (i.e. the operator experiencing a problem with his service) to put this request to other operators immediately having regard to the available transport contingency plans, and to inform TD. Other operators will respond directly to such request as soon as practicable and TD's role is to monitor and to check that the relief transport services provided are appropriate and adequate in the circumstances and to provide assistance as necessary.

Alert System

5. When an incident occurs, the source operator will make an evaluation of the possible duration of the disruption and issue alert messages to other affected parties for activation of their respective contingency measures as soon as possible. To facilitate messages to be passed to multi-parties efficiently, transport operators, toll road operators and government departments involved in handling emergencies have adopted a multi-fax system which enables emergency messages to be faxed to parties concerned at the same time.

6. In addition, major public transport operators and toll road operators have installed private wire telephones in their Control Rooms to enable speedy communication with TD's Emergency Transport Co-ordination Centre (ETCC), Police's Traffic Consoles and Fire Services Department's Control Rooms.

TD's Operational Arrangement in handling Transport Emergencies

7. TD has established a 24-hour first contact point to receive alert messages from other departments or operators. Upon receipt of alert messages, the staff in the Control Room would pass the message to relevant officers for follow-up actions. To improve efficiency and effectiveness in handling transport incidents, a Transport Incident Management Section (TIMS) was set up in May 2000. Officers serving in TIMS each carry a mobile phone and can be contacted 24 hours daily. They will contact more senior officers for guidance as necessary, and other staff will be mobilized as appropriate.

8. After major incidents, TD will conduct a review on the operational arrangements and consider whether further improvements are required. Such reviews are sometimes conducted together with other departments and agencies aiming to improve understanding and co-ordination in handling similar incidents in future.

Transport Contingency Plans and Emergency Exercises

9. Contingency plans are developed by TD for strategic roads or specific incidents (such as typhoon, labour dispute affecting public transport services, fireworks display, etc). Major transport operators and toll road operators also maintain their specific plans for handling incidents under their respective control areas. These contingency plans provide the broad framework and as the nature of every incident varies, contingency measures have to be adapted in an actual incident taking account of the established plans and the circumstances of the incident.

10. TD conducts annual exercises with other departments and agencies, to get parties concerned familiar with their respective operational procedures and the associated emergency plan. Tunnel operators are required to conduct fire exercises to drill the emergency procedures and their staff at least once a year.

Cross-Harbour Tunnel (CHT) Incident on 26 November 2001

12. The CHT is a government tunnel and its management and operation has been contracted out to a private company (the CHT operator) since 1999. Under the management contract, the Government is responsible for major maintenance works of the tunnel.

13. To facilitate road re-surfacing works inside the tunnel tube by Highways Department (HyD), the Kowloon bound tube of CHT is scheduled

to be closed between 1.00 a.m. and 6.30 a.m. every Monday, Wednesday and Friday from 24 October 2001 to 25 January 2002. The Hong Kong bound tube was re-surfaced under similar arrangements early this year without any problems.

The Incident

14. On 26 November, at 5.05 am, when work for the day was nearing completion, the oil pipe of the paver burst. The leaked oil made the carriageway very slippery and a 3.5m by 3.3m section of the newly excavated area in the slow lane was flooded with oil.

Highways Department and their contractor

15. HyD's contractor took immediate action to remove the oil and the excavated area was then re-laid with bituminous material and a trial run was conducted at 6.40 am. Unfortunately, the trial run was unsuccessful. At this juncture, HyD's contractor and site staff estimated that after cooling down of the newly laid material, the tunnel tube could be re-opened at around 7.30 am.

16. At 7.20 am, HyD site staff found that the newly laid material at the slow lane was still soft and was unsafe to be opened to traffic. It is believed that during the oil leak some of the spilt oil had seeped into the paved road, and from there back into the newly laid surface, contaminating it. A decision was then made to replace the contaminated material. At this time, the grab lorry which had left the site was recalled from the Ferry Street depot. The tunnel operator made arrangements to open up the fast lane for Kowloon bound traffic, and issued an alert to concerned parties at 7.40 am.

17. Under this operation, the traffic capacity for Hong Kong bound traffic was more or less the same as a normal weekday. However, as a result of the 50% reduction in the capacity of the Kowloon bound tube, there was wide-spread traffic congestion on the tunnel approach roads on Hong Kong Island after 8.00 a.m.

18. The slow lane was re-opened to traffic at 9.46 am upon completion of the remedial works. The traffic congestion gradually dissipated after the slow lane of the Kowloon bound tube was re-opened.

The Cross Harbour Tunnel Operator

19. When the CHT Operator's Controller was informed at 5:45 am that the Kowloon bound tube could not be reopened as scheduled, he should have immediately activated an alert, as prescribed in the management contract, which would have notified concerned departments (including the tunnel

monitoring team in TD) and transport operators of the incident, and raised the level of staff involved at the tunnel.

20. However, the Controller did not do so as based on past figures, traffic could reasonably be accommodated up to about 7.30 am by a single tube. He also wanted to have a better assessment of the situation closer to the critical time, ie 7:30 am. He did so because he believed, after consulting the Highways Department contractor, that the repair work could be completed in good time before the traffic would build up around 7:30 am, and because he was concerned that a premature alert might result in fewer public transport arriving at the tunnel, which in turn would lead to an over spill of bus passengers at the bus stops in the tunnel plaza area from the pavement onto the road.

21. The Controller raised the level of staff involved by reporting the incident to the Chief Controller and the Deputy Tunnel Manager/Engineering Manager but not the Tunnel Manager.

22. The CHT operator issued an alert at 7:40 am, when only one lane of the affected tube could be opened to traffic.

Transport Department

23. TD's Transport Incident Management Section learned of the incident at about 5:45 am, when TD called the operator to ensure that the tunnel was ready for opening. TD was assured that the problem could be overcome in good time. In the absence of further reports from the operator and while monitoring the traffic situation, TD called again about an hour later, to be informed that the tunnel would reopen by 7:30 am. Since this was very close to the critical time at which one tube operation could not accommodate the traffic flow, TD issued a press release at 7:15 am to warn motorists of congestion in the area and also warned the bus companies of the problem.

24. After the formal alert issued by the tunnel operator at 7:40 am, TD issued further press releases at 7:50 am, 9:30 am and after the Kowloon bound tube was reopened.

25. A summary of events and major actions taken during the incident is at the **Annex**.

Assessments

26. HyD and TD have conducted a review of the incident together with the Police, bus operators and the tunnel operator.

27. This was a rare accident caused by the unexpected bursting of an oil pipe of the paver. Overall, the parties concerned had responded and reacted to the incident with a view to minimizing the impact. Immediate repair action was carried out, and all concerned firmly believed that the necessary repair work could be completed in good time. However, the first attempt turned out to be unsuccessful and further remedial work was necessary by removal of contaminated material and re-paving with new material, thus requiring more time to complete the repairs. Other options such as decking over the affected area by using steel plates were considered to be unsafe given the high volume of traffic using the tunnel in the following hours of the day.

(a) Works Arrangements

28. The problem arose because of the unexpected discharge of lubricating oil, and the time taken to remedy the road surface. Although the standard arrangements provided contingency time between the planned opening of the tube at 6:30 am and the critical traffic time commencing at about 7:30am, that time did not prove adequate in the present case. It is therefore necessary to devise improved contingency arrangements to ensure **early detection** of any problem, **maximum speed** in addressing any problem, **more contingency time** should work overrun, and **improved monitoring**.

(b) Alert systems

29. A second aspect of the contingency arrangements is alerting parties concerned to problems or potential problems so that they can take action to minimize the adverse impact. On this, the CHT operator as explained in para 20 decided not to issue a level 2 alert¹ at the earliest opportunity. While the CHT operator could adjust their actions as the situation developed, their decision meant that other involved parties were not adequately alerted to the problem.

30. In the absence of a level 2 alert, which would have ensured the involvement of more senior staff, it appears that various parties were insufficiently prepared for the eventuality that the repair work, which seemed relatively straightforward to complete, might not be completed in time. In addition to the points made in para. 28 above concerning the works aspect, the

¹ Level 2 alert refers to incidents which would have a serious impact on normal tunnel operation and this includes closure of one tube

CHT operator might have been able to react more quickly to issue an alert once it learned at 7:20 am that full opening would not be possible. Although TD took the initiative to issue a press release and warn the transport operators at 7:15 am, that might have been done somewhat earlier, with more regular updates, if TD had been better alerted to the problem. This could have given more road users time to change their travel plans. The incident, on a strategic road, was handled by frontline officers of TD and HyD who had not called for additional help nor escalated it to a senior level at the earliest opportunity during a time when preventive measures may still be taken.

(c) Dissemination of information

31. During a major incident it is necessary to ensure that information is released on a regular basis to road users.

32. In particular, more consideration needs to be given to public transport passengers. With adequate warning of potential problems bus passengers may be able to make alternative arrangements, eg to travel across the harbour by MTR or ferry. However, if warnings are given and the problem does not actually happen, those who have changed their plans at some inconvenience to themselves may well feel aggrieved. Giving such warnings must therefore be considered carefully in the light of each incident.

(d) Franchised bus operators

33. During the partial closure of the Kowloon bound tube, franchised bus operators maintained their services and tried to make up for the lost trips by short-working some trips and by sending spare buses to the highest demand stops. We are satisfied that this arrangement was appropriate as diversionary routes to other cross harbour tunnels were congested and changing the bus routes at short notice would have caused undue inconvenience to those passengers who needed to interchange with the East Rail service or other cross harbour bus routes at the Cross Harbour Tunnel portal bus stop.

Improvement Measures

34. Following review meetings with concerned parties, the following improvement measures have been identified :

(a) Better Works Arrangement

- (i) To ensure **early detection** of any problem, HyD will ensure that progress of works is assessed regularly. If there is indication that works could not be completed in time, an assessment would be made on the magnitude of the problem and remedial measures introduced as soon as possible. Steel plates and other materials such as instant-

fill will be made available on site from now on, instead of at the depot previously. However, the suitability of using such materials will depend on the circumstances of each case.

- (ii) To ensure **maximum speed** in addressing any problem, instead of the existing practice of allowing the plant to leave the site after completion of the concerned operation, HyD has now required a complete set of plant including paver, roller, cold milling machine, road sweeper, grab lorry and breakers to remain on site until full completion of work on each morning. HyD will seek assistance from the Police and tunnel operator to escort delivery of labour, plant and material if necessary.

HyD contractor is required to maintain all plant in good working conditions and to carry out a thorough examination before commencement of works including regular weekly detailed checking in the workshop.

- (iii) To ensure **more contingency time** should work overrun, since the incident on 26 November, the closure time for maintenance works has been reduced by 30 minutes so that tunnel opening time is advanced from 6.30 a.m. to 6.00 a.m. This will slightly increase the time to respond to an emergency. Repair works have also been re-programmed to avoid the small hours on Monday morning so that any unforeseen incidents would not affect commuter traffic which is normally heavier in a Monday morning peak.
- (iv) To ensure **better monitoring**, the CHT operator will also take part in monitoring works inside the tunnel and will report direct to TD on problems detected, and on a regular basis during an incident. There will also be direct communication between TD and HyD staff and the problem will be escalated to a senior level as circumstances require. As for HyD, emergency procedures in dealing with incidents on important routes that require emergency action to be carried out by HyD will be observed. Such action will be co-ordinated by the Regional Highways Engineer or the Chief Highways Engineer depending on the nature of the incident.

(b) Alert systems

All concerned must strictly adhere to prescribed alert systems, which have been designed to ensure that every party is promptly and properly alerted to incidents. Prompt information dissemination during an emergency is critical to ensure that relevant parties are alerted and that

each will be ready to respond to the consequences of a delay in the opening of an important tunnel. TD and HyD will ensure that arrangements to keep senior staff informed of incidents of this nature are observed.

(c) Improvement in dissemination of information

In advising the public of road and tunnel incidents, TD will try to ensure that the message will be repeated frequently and be updated from time to time. In addition to radio/TV broadcasts, other tunnel operators will also be asked to include broadcasts of serious obstructions to give early advice to motorists. Bus operators will assist in information dissemination through variable message signs installed at termini, display of temporary notices or announcements by regulators. As congestion will affect road based public transport services and commuters may decide to switch to the railway, public advice will provide as much information as possible for commuters to plan their journeys. But the decision to give such advice will have to be taken carefully, in light of the circumstances associated with each incident.

Roadside indicators will also provide better guidance to motorists. In May this year, the Panel was consulted on a scheme to provide journey time indicators on the major approaches on Hong Kong Island to the three cross harbour tunnels. These indicators erected at critical locations will give advice to motorists on the journey time needed to reach the tunnel portal and will capture incidents affecting normal flow. Funding has been approved and tender for the system will be invited early next year for completion in a year's time.

Advice Sought

35. Members are requested to note the above report.

Transport Department

December 2001

Cross-Harbour Tunnel (CHT) incident on 26 November 2001**Sequence of Events**

Time (Hours)	Action Taken by	Event/Actions
0100 - 0504	HyD, CHT	HyD's contractor carried out the re-surfacing works. Both HyD and CHT had staff on site to monitor the works.
0505	HyD	The oil pipe of a paver burst resulting in lubrication oil splashed over the works area. HyD's contractor carried out immediate remedial work.
0520	HyD	Informed CHT of the incident.
0545	HyD, CHT, TD	HyD informed CHT that there would be delay in the re-opening of the Kowloon bound tube. Meanwhile, TD called CHT and the message from HyD was relayed to TD.
0652	HyD, CHT	HyD informed CHT that the Kowloon bound tube could only be re-opened at 0730.
0657	TD	TD called CHT again and was informed that the tunnel tube could only be re-opened at 0730.
0715-0730	TD	TD issued a press release advising that one-tube-two-way was still being implemented in the tunnel. There was severe congestion in the approaches to the tunnel and motorists were advised to use other cross harbour tunnels. TD also informed bus operators of the incidents. TD passed information to the operator of Aberdeen Tunnel and paging companies for their onward dissemination to their users.
0720	HyD	Informed CHT that the tube could not be opened at 0730.
0730	TD, CHT	TD was informed that only the fast lane of the Kowloon bound tube was ready to be re-opened. The slow lane remained to be closed for further remedial work for safety reasons.
0740	TD, CHT	Operation of two lanes for Hong Kong bound traffic and one lane for Kowloon bound traffic was implemented. CHT issued an amber alert by multi-fax to all relevant parties, including bus companies, rail companies and the Police.

Time (Hours)	Action Taken by	Event/Actions
0750	TD	TD issued a press release on the new traffic arrangements at the tunnel advising of severe congestion in the areas and recommending the use of the other cross harbour tunnels.
0750-0945	TD	Monitored the incident closely. A press release issued at around 0930 reminded the public that one Kowloon bound lane at CHT was still closed and the roads were very congested.
0946	CHT	Slow lane on Kowloon bound tube re-opened. Traffic flow turned to normal progressively.

TD = Transport Department

HyD = Highways Department

CHT = Cross Harbour Tunnel Operator