

**For discussion  
on 5 June 2018**

**Legislative Council Panel on Security**

**Government's preparedness for the approach of typhoon season and related natural disasters and emergency response**

**Purpose**

This paper briefs Members on key developments in the Government's preparedness and emergency response as we enter the typhoon seasons.

**Background**

2. Hong Kong's geographical position makes it susceptible to weather-related threats such as tropical cyclone (TC), heavy rainstorm and storm surge. Such threats are expected to increase in frequency and severity as extreme weather becomes more likely as a result of climate change. In 2017, five TCs necessitated the issuance of signal No. 8 or above, with Super Typhoon HATO ultimately leading to the issuance of signal No. 10. HATO and Severe Tropical Storm PAKHAR came back-to-back within a week's time in August 2017, causing high winds and serious storm surge in Hong Kong and the neighbouring regions. HATO hit Macao and neighbouring coastal areas of Guangdong particularly badly, causing serious flooding on its streets. Ten people in Macao and 13 in Guangdong lost their lives. If Super Typhoon HATO had

taken on a track closer to Hong Kong, its impact could have been much greater.

### **Government's Contingency Plan**

3. The Government maintains a Contingency Plan for Natural Disasters (CPND), which sets out the Government's alert system and organisational framework for responding to natural disasters including TCs, as well as the functions and responsibilities of Government departments and other organisations. We consider that the weather warning system, response and delineation of responsibilities as laid out in the CPND are generally satisfactory. The response procedures are well defined, ensuring prompt activation of departmental actions. The weather forecast and warning systems are scientifically and effectively administered. Departments and auxiliary services responsible for emergency rescue and relief have been professional and effective in discharging their duties.

4. That said, following the 2017 TCs, we have also identified some areas for further improvement to better prepare Hong Kong to deal with threats of future natural disasters (particularly TCs) that may be of greater severity and higher frequency. The key areas identified include:-

- *Standardizing and strengthening pre-TC risk assessment and preparation;*

- *Enhancing inter-departmental collaboration and information sharing;*
- *Strengthening response in tackling storm surge inundation, and impact of TCs;*
- *Formalizing the roles of Certain Non-Government Organisations (NGOs) in the Contingency Plan; and*
- *Enhancing communication with the public.*

## **Standardizing and strengthening pre-TC risk assessment and preparation**

### *Annual pre-TC season stock-taking*

5. With the introduction of the concept of “Prior Risk Assessment” for TCs, SB will take the lead in regularly stock-taking and reviewing relevant departments’ assessments and readiness for TCs, and efforts to minimize impact on the community and major infrastructures prior to the TC season from this year onward. Special attention will be given to the following aspects:

- Response Plans of emergency departments;
- Protective Measures for Critical Infrastructures by works departments;
- Information Flow between the bureaux/departments and public announcement;
- Procedures for handling incidents involving trees;

- Logistic Support; and
- Monitoring and Coordination.

6. In reviewing the above aspects of work of departments, departments will have due regard to the experience of previous TCs and of our neighbouring regions, as well as the possibility of the impact of future TCs being more severe due to climate change. We will also pay particular attention to areas where inter-agency cooperation and coordination could be strengthened to increase the effectiveness of our contingency response.

7. An inter-departmental meeting was held on 27 April 2018 to kick-start the stock-taking and review process this year. The relevant departments and agencies reported their pre-TC risk assessment and reduction work, as well as preparedness programme including in-house drills and briefings for staff, review of departmental contingency plans, liaison with partner departments, precautionary works programmes against flooding, surprise check on supplies and so forth.

*Inter-departmental table-top exercise*

8. On 21 May 2018, we held for the first time an inter-departmental table-top exercise to prepare for the approach of the TC season. A number of extreme weather conditions under TC situation were simulated to ensure that departments and agencies understood the roles and responsibilities of their own and of one another, heighten their sense of preparedness, and enhance inter-departmental communication and collaboration.

## **Enhancing inter-departmental collaboration and information sharing**

### *A New Information Technology (IT) Platform for Natural Disaster-related Information Sharing*

9. The Civil Engineering and Development Department (CEDD) is developing a new electronic platform called the “Common Operational Picture (COP)” as a common Geographic Information System (GIS) platform for the real-time sharing by departments of “incident information” (i.e. landslides, flooding due to heavy rain, storm surge inundation and major road incidents) and “supporting information” (e.g. weather and traffic information, mapping data, etc.) in relation to natural disasters. This system is to complement and enhance the existing effort among bureaux and departments to share emergency information. The COP will be accessible through mobile and desktop applications in a reliable and secure manner by using cloud technology. The Police, Fire Services Department (FSD), HKO, Hospital Authority, Civil Aid Service (CAS), Government Flying Service (GFS), Auxiliary Medical Service (AMS) and Lands Department (LandsD) will contribute input to the databank of “supporting information” in the COP during natural disasters such as TCs, to facilitate the planning and coordination of response actions and enable the departments to have closer monitoring of incidents. In fact, HKO has all along been providing storm surge and tide level prediction information for certain low-lying areas. Accurate mapping data presented in high resolution territory-wide maps, especially in the coastal regions, would be very useful for the relevant departments to better assess the possible impact of storm surge inundation and the vulnerable areas. With the COP, better informed and more detailed maps of the territory can be made available to facilitate effective emergency responses and

decision making and to promote cooperation among departments by establishing a dialogue or knowledge-sharing mechanism. A proof-of-concept prototype of the COP has been developed and it will be tested out in several departments in the coming typhoon season. The full COP, is under development, is expected to be operational for trial run in early 2019.

### **Strengthening response in tackling storm surge inundation due to impact of TCs**

10. One major impact of Super Typhoon HATO on Hong Kong was the storm surge coupled with astronomical high tide, resulting in serious inundation in low-lying areas such as Kowloon East, the eastern part of Hong Kong, northwestern part of the New Territories and Tai O. A recent study by HKO reveals that, if HATO had taken on a track closer to Hong Kong, the sea level could exceed 4.5 metres above Chart Datum inside the Victoria Harbour, leading to more serious inundation in the coastal areas.

11. Various departments have measures in place to respond to serious inundation in low-lying areas. After the Severe Typhoon Hagupit in 2008, the Government has identified six locations vulnerable to sea flooding during typhoon, including Luen On San Tsuen, Kar Wo Lei, Sham Tseng San Tsuen, Lei Yue Mun Praya Road, Nam Wai and Tai O. For the first five locations, DSD, HKO and HAD have jointly established an early alert system to alleviate the impact of flooding on the local residents. DSD has formulated action plans for them and carry out the works as described in the plans. Action plans mainly involve deployment of contractors to handle flooding, provision of temporary

pumping facilities and carrying out ad hoc flood-proofing measures. These plans have been reviewed after Super Typhoon HATO and enhanced as necessary.

12. At the central level, DSD's Emergency Control Centre will be activated when TC signal no. 8 or above is issued in order to handle flooding incidents and disseminate flooding information within the Government. When HKO makes an advance announcement of the lowering of TC signal no. 8, DSD will arrange inspection and urgent clearance of drainage system at selected locations.

13. The Islands District Office (IsDO) of HAD has developed an "Operation Manual for Serious Flooding in Tai O" in 2009, setting out the roles and responsibilities of the relevant departments and agencies in (i) alerting departments and locals when sea level is forecast to reach or has actually reached a certain level; (ii) evacuation and rescue exercise; and (iii) emergency relief. When alerted, DSD will erect flood barriers at certain locations and deploy staff to inspect the drainage system and clear blockage as precautionary measures in the particular spots in outlying areas. In the light of the experience of HATO, CEDD will assist with the construction of rubble mound structures along the seashore near the Tai O Heritage Hotel. HAD will also explore to erect concrete walls on certain sections of the coastal pavement on the other side of Tai O (leading to Yi O) to enhance protection of the nearby areas against waves during typhoon. DSD has also enhanced the flood prevention facilities for the existing flood abatement scheme. In particular, the upgrading works of Wing On Street Pumping Station will be completed by 2019.

14. Taking into account of the experiences of Tai O, the Kwun Tong

District Office is developing an Operation Manual for Lei Yue Mun, comprising the early alert, evacuation and rescue and emergency relief components. Meanwhile, CEDD has introduced some improvement works in Lei Yue Mun including construction of rock-armoured bund and gabion walls at suitable locations along the seafront. DSD has also installed water-stop boards and staff gauges at several locations. In addition, HAD has initiated a works project under the District Minor Works Programme for construction of gabion walls or concrete walls at several suitable sections of footpaths along Lei Yue Mun seafront. This project is scheduled to be completed by August 2018. In Kar Wo Lei, the flood wall along the embankment of So Kwun Wat River has been extended further upstream.

15. HKO has also reinforced and elevated some of the facilities of the tide gauge network to enhance its resilience in providing real-time sea level data to support storm surge monitoring and prediction. Further enhancement of the resilience of Tai Po Kau tide gauge station by elevating the whole station would be pursued with the assistance of CEDD.

### **Formalizing the roles of Certain NGOs in the Contingency Plan**

16. The CPND currently does not feature any NGOs. In practice, the Hong Kong Red Cross (HKRC) and the Hong Kong St. John Ambulance (HKSJ) have been offering emergency relief and assistance to people affected by major incidents in the past decades. They also provide other supporting services to frontline departments on request. For example, the HKRC provided disaster relief and psychological counselling services after an old building collapsed in Ma Tau Wai in



2010. The HKSJ provided ambulance support at major events as requested by FSD. It can provide as many as 15 ambulances and a maximum of about 100 staff / volunteers to support the Government's emergency response. We believe that it is useful to formally specify their roles and responsibilities in our Contingency Plan, and invite them to participate in future exercises based on the plan, which they would welcome. This would also enhance communication and cooperation among these NGOs and the relevant government departments in actual operations.

### **Enhancing communication with the public**

#### *Review of TC Precautionary Broadcasting Messages from HKO*

17. HKO has reviewed its precautionary messages to the public for different TC warning signals. Content such as the possibility of inundation in low-lying areas due to storm surge, and that members of the public should stay on the alert, will be enhanced. The revised messages will be deployed in this TC season.

18. HKO makes use of mobile app "MyObservatory" and HKO website to deliver weather warnings and related precautionary messages to the public. In 2017, HKO's mobile app and website set a new record high of over 160 billion page views. The number of downloads of the mobile app exceeded 7.1 million in April 2018, making it by far the most popular government mobile app.

### *Raising public awareness on tropical cyclone hazards*

19. HKO has produced public educational videos on TC hazards including the impact of HATO to raise public awareness on natural disaster preparedness and prevention, especially the cause and impact of storm surge. The videos were shown on HKO's Youtube channel and local TV channels. In March 2018, HKO also launched its Facebook page. HKO will continue to produce public educational videos to raise public awareness on TC and other weather hazards, and will promulgate such information through conventional and social media channels.

### *Wider use of social media and mobile applications*

20. In 2016, SB launched its own mobile apps "Safeguard HK" as a platform to disseminate safety-related information of various natures such as travel and hiking, as well as instant notifications on public safety from law enforcement departments and auxiliary services. It has attracted more than 140,000 downloads so far. We will devise suitable messages on what to do and not to do during TC times for incorporation into this mobile app to make full use of its instantaneity and readership. The social media platforms of other relevant departments such as the Facebook page of the Police can also be suitably used to disseminate precautionary and instant messages to the public.

21. The SB has published a booklet entitled "Simple Guidelines in the Event of Major Mishaps" to provide the public with some simple and effective precautions against natural disasters and serious accidents, and advice on how to reduce risks and protect lives and properties from mishaps. The content is being updated and we plan to include the

message in the above electronic platforms.

## **Conclusion**

22. While our emergency response mechanism and capability for natural disasters including TCs are satisfactory on many fronts, we will continue to keep our contingency plans and operational arrangements under constant review, taking into account new factors such as the impact of climate change. The relevant government departments will continue to closely communicate and co-ordinate with each other to implement prompt and essential response measures during natural disasters. They will also continue to strengthen public education to raise the safety awareness of the public.

**Security Bureau**  
**June 2018**