

**For discussion
on 24 June 2008**

Legislative Council Panel on Development
Flood Prevention and Contingency Measures

PURPOSE

This paper briefs Members on the Administration's flood prevention and contingency measures.

FLOOD PREVENTION MEASURES

2. Owing to continuous development and expansion of built up areas in both urban areas and the New Territories, the size of paved areas has increased and rainwater can no longer infiltrate readily into the ground. Surface runoffs have increased as a result and can enter into the drainage systems within a shorter time period. This has added to the loading of our drainage systems. Furthermore, some existing drainage systems were built many years ago and do not meet the current flood protection standards. The current design standards of the drainage systems are given in Annex 1.

3. To address the problem, we have implemented in the past years a number of drainage improvement projects of total value exceeding \$10 billions to raise the capacity and standard of the drainage systems. In the New Territories, for example, we carried out major river training works for Shenzhen River, Ng Tung River and Kam Tin River. We also implemented flood protection schemes through the provision of bunds and construction of pumping stations to protect low-lying villages. Following completion of these drainage improvement projects, the flooding problem in various parts of the New Territories has been substantially alleviated. For the urban areas, apart from upgrading the existing drainage systems, we also constructed a flood storage reservoir in Tai Hang Tung to retain stormwater flow from upland catchment. The scheme has been effective in resolving the flooding problem in West Kowloon area in general.

4. We will continue to invest in our infrastructure to raise the flood protection capacity of the drainage systems. We started the construction works for the strategic Hong Kong West drainage tunnel and the Tsuen Wan drainage tunnel in late 2007 at a cost of \$3 billion and \$1.3 billion respectively. These two tunnels will divert the upstream surface runoff directly to the sea. The construction of a drainage tunnel in Lai Chi Kok is also planned to start later this year at a project estimate of \$1.8 billion. Upon completion of these three strategic drainage tunnels, the flooding risk in the downstream urbanized areas will be greatly reduced. Besides, several other drainage improvement projects are in the pipeline for commencement progressively between the latter half of 2008 and 2009. A list of these projects, at a total estimated cost of about \$1.3 billion, is at **Annex 2**.

FLOOD INCIDENTS

5. Despite our endeavour, we cannot eliminate the risk of flooding in total. There are many factors contributing to flood occurrence, the major ones being -

- ◆ extreme rainfall and tidal conditions
- ◆ landslips
- ◆ blockage of drainage inlets by debris

6. We are aware that it is impracticable to design our drainage systems to cater for extreme rainfall and tidal conditions. That said, we will continue to invest and press ahead the planned drainage improvement projects to ensure that the flood protection level in various parts of the territory will be raised to meet the current design standards.

7. Landslip could be another cause of flooding. During very heavy rainstorms, mud and sediments arising from landslips could be carried downstream by the rapid runoff and accumulate at drainage inlets, causing blockage to the drainage systems. As a result, flooding and ponding occur in low-lying areas or localized low areas. Reducing landslip risk could help prevent flooding.

8. Over the past 30 years, we have concentrated our efforts to improving the stability of man-made slopes in the territory. It is expected that by 2010, the improvement works to all high-risk man-made slopes will be completed. In December 2007, we have announced the long term “Landslip Prevention and Mitigation Programme” which will deal with the landslide risk from the remaining man-made slopes and vulnerable natural hillsides. Natural hillsides adjacent to

existing buildings aside, high priority will also be accorded to natural hillsides adjoining major transport corridors to avoid the latter being disrupted during heavy rainstorms.

9. Objects and debris from other than landslips may also accumulate at drainage inlets hence obstructing runoff from entering the drainage systems swiftly. Apart from regular maintenance of the drainage systems, Drainage Services Department send out emergency teams on site to clear debris to ensure that the drainage systems are functioning effectively.

CONTINGENCY MEASURES

10. Government has already put in place an emergency system to deal with natural disasters including severe weather conditions. In accordance with the current Contingency Plan for Natural Disaster, the Government's Emergency Monitoring and Support Centre (EMSC) will be activated if a Tropical Cyclone Warning Signal No. 8 or higher, a Black Rainstorm Warning Signal or Tsunami Warning is issued. In addition, it will also be activated in the event of any major incidents that will seriously affect public safety and security. The primary functions of the EMSC are to monitor and provide support to emergency services in rescue and search of life and injuries. Relevant departments will also activate their individual emergency control centres to provide support to the EMSC where necessary. Upon the completion of the rescue phase, relevant departments will follow up necessary actions for recovery and restoration ensuring that those affected community and areas are properly attended to.

11. Turning to the aftermath of natural disasters including severe weather conditions, we will strengthen our actions to help community restore their normal lives as soon as possible. We will continue to work closely with the District Offices and focus particularly on pooling of resources, enhancement of communication, setting works priority, monitoring of operations of relevant works departments and ensuring co-ordination of works in a timely manner.

ADVICE SOUGHT

12. Members are invited to give views on the paper.

**Development Bureau
Drainage Services Department
June 2008**

Design Standards

In the design of drainage systems, the standards we adopt take into consideration factors such as land use, social and economic consequences of flooding, the effectiveness of flood mitigation measures and international practices. The current standards, which are comparable to that of other countries, are as follows -

Type of Drains	Return Period¹
Intensively used agricultural land	2-5 years
Village drainage	10 years
Main rural drainage channels	50 years
Urban branch drains	50 years
Urban trunk drains	200 years

¹ “Return period” means the average number of years during which flooding of the particular severity will occur once, statistically. An event of longer return period means that it is more severe in scale but has a lower chance of occurrence.

Major Flood Control Projects to Start in Latter Half of 2008 and 2009

Item No.	Project Title	Estimated Cost (\$M)	Planned Start Date	Planned Completion Date	Brief Description
4118CD	Drainage improvement in Northern New Territories – package B	280	2008	2010	Construction of drainage channels in Kwu Tung, Ma Tsao Lung, Fu Tei Au and San Tin South (about 9 km)
4104CD (part)	Drainage improvement on Northern Hong Kong Island – western lower catchment works	300	2008	2012	Construction of 4.3 km long stormwater drains and box culvert
4119CD	Drainage improvement in Northern New Territories – package C (remaining works)	130	2009	2012	Construction of about 2 km of drainage channels in Ping Che
4109CD	Drainage improvement works in Shuen Wan, Tai Po	250	2009	2011	Construction of stormwater drains, pumping station and drainage channels (about 1.5 km)
4108CD	West Kowloon drainage improvement – inter-reservoirs transfer scheme	300	2009	2012	Construction of 3 km long tunnel to transfer water from Kowloon group of reservoirs to Lower Shing Mun River
	Total	1,260			