# 2 未雨綢繆

## Ready for the Rainy Days

*有了完善的防洪計劃*
*那怕它風吹雨打*

## 二〇〇一年的水浸事件

香港常受東南亞的颱風吹襲，而且不時發生暴雨。本港每年平均降雨量約2 200毫米，在太平洋沿岸地區中，屬雨量最高的城市之一。去年的全年總降雨量達3 092毫米，單在六月份的降雨量而言便刷新記錄，高達1 084毫米。本年內，當局曾發出九次紅色暴雨警告和一次黑色暴雨警告。新界及荃灣均曾發生嚴重水浸，有關事件將在專題文章中詳述。

這些水浸事件顯示，暴雨時水浸可發生於新界北部的天然洪氾平原和低窪地區，亦可發生於市區。為提高受影響地區的防洪標準，渠務署須採取排水系統改善措施。通常，把水引到大海排放是最有效紓緩水浸情況的方法。雨水溢流經收集後，會由天然或人工排水網絡排放出海。

## The Flooding Incidents in 2001

Hong Kong is on the common track of tropical cyclones in Southeast Asia and can experience very severe rainstorms at times. The average annual rainfall is about 2,200 mm, one of the highest among the cities in the Pacific Rim. Last year we experienced a total annual rainfall of 3,092 mm, and in June alone, the monthly rainfall marked a new record of as high as 1,084 mm. The Red Rainstorm Warning Signal was hoisted 9 times and the Black Rainstorm Warning Signal once in the year. Significant flooding occurred in the NT and Tsuen Wan and more details are given in the Feature Articles.

These flooding incidents illustrated that flooding can happen in the natural flood plains and low-lying areas of the northern part of the NT as well as in the urban areas during heavy rainstorms. In order to upgrade the flood protection standard to the affected areas, drainage improvement measures are necessary. Usually, collected stormwater runoff is conveyed through natural or man-made drainage networks for discharge to the sea for effective alleviation of flooding.

*已治理完成的深圳河（左圖）與原先相同位置的又窄又彎的河道（右圖）比較*
*The trained Shenzhen River (left photo) as compared with the narrow and sinuous original river at the same location (right photo)*

不過，在某些特殊情況下，我們仍須採用其他方法，如蓄洪、抽水或建造排水隧道等。這些長期改善措施通常會以其他規模較小的紓緩措施配合，以應付地區性問題。再者，排水系統須定期保養，以確保運作正常。

## 工程計劃的推展

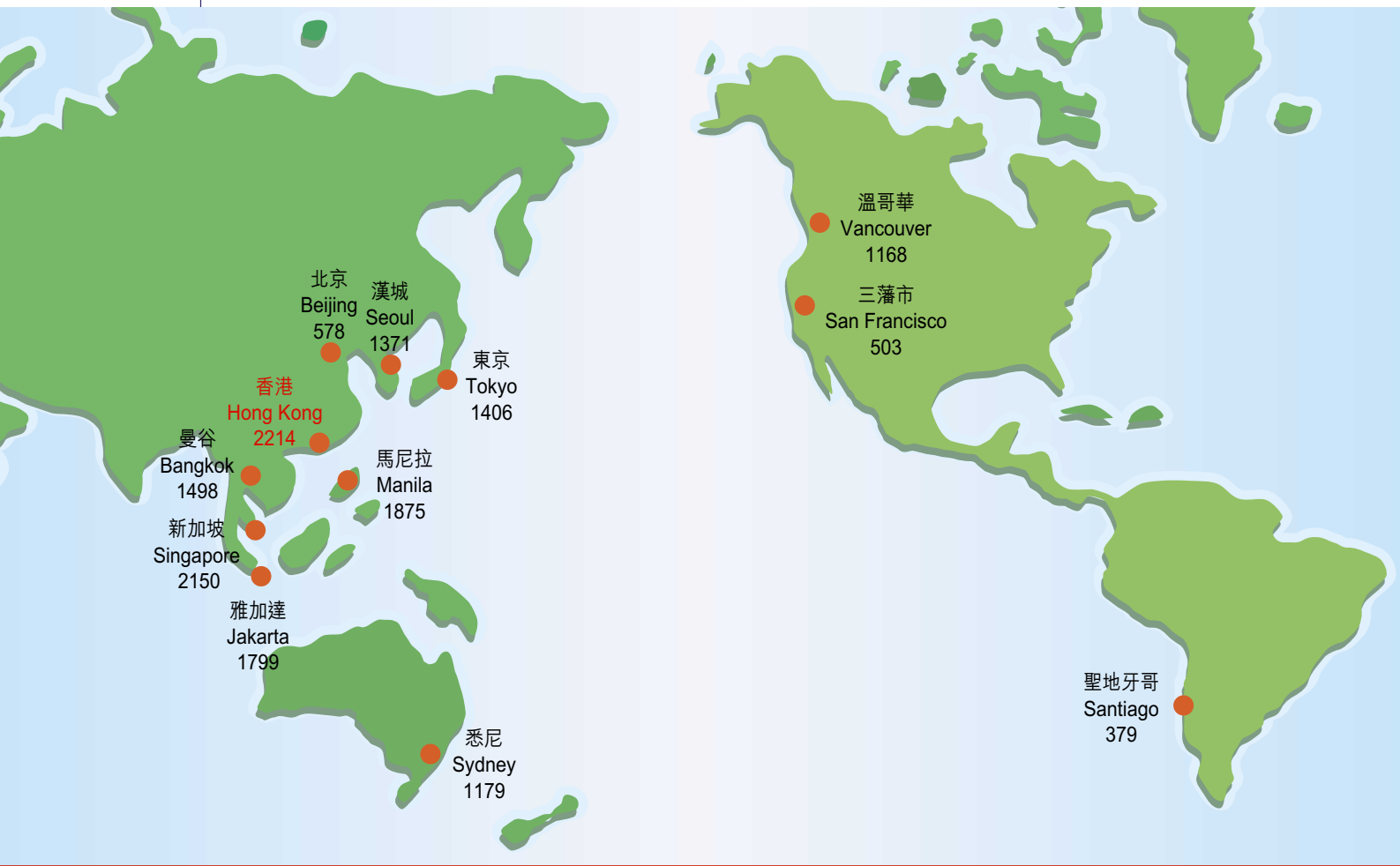
政府現正進行一連串大型排水系統改善工程計劃以解決水浸問題，在新界北部和西北部進行中的工程造價約三十二億元，而西九龍的工程造價則約三十三億元。我們亦正進行新界、西九龍及其他易受水浸影響地區如東九龍、荃灣及港島北部的排水系統改善工程的規劃和設計工作，有關工程的造價約一百億元。這些主要的防洪工程計劃載於附錄 A ，而工程計劃的地點則載於附錄 B 。

However, under some special circumstances, other methods such as flood storage, flood pumping or drainage tunnels are still required. These long-term improvement measures are often coupled simultaneously with other smaller mitigation measures to tackle local problems. Of course, regular maintenance is always required to ensure proper functioning of the drainage system.

## Delivery of Our Projects

The Government is now constructing a series of major drainage improvement works to tackle the flooding problems, with active construction contracts costing about $3.2 billion for the Northern and Northwestern NT and about $3.3 billion for West Kowloon. A further $10 billion of drainage improvement projects in the NT, West Kowloon and other flood prone areas such as East Kowloon, Tsuen Wan, Northern Hong Kong Island, is under planning or design. These major flood control projects are listed in Appendix A, whereas locations of the projects are shown in Appendix B.

*世界各地降雨量(毫米)的比較*
*Rainfall (mm) in major Pacific Rim cities*



*粉嶺附近剛完成的石上河河道*
*Recently completed drainage channel of River Sutlej, near Fanling*

## 新界區的防洪工程計劃

新界區的防洪工程計劃可大致分為兩大類，即收集洪水和把洪水排放出海的排水渠工程，以及保護位於洪氾平原低地的鄉村防洪抽水計劃。

渠務署會負責執行上述大部分工程，而拓展署亦參與進行有關新市鎮發展計劃的排水系統改善工程。二〇〇一至〇二年度，約值九億元的防洪工程計劃大致完成。這些工程包括元朗墈圍的鄉村防洪抽水計劃，以及為改善錦田河背河及北區梧桐河、雙魚河及石上河而建造的 15 公里長的新排水渠。梧桐河中游、牛潭尾河、上錦田河及竹園村和下新圍村的鄉村防洪抽水計劃的建造工程亦已進入後期階段。

除了正在進行的建造工程外，治理深圳河計劃第三階段建造工程、上錦田河支流工程、元朗及天水圍的市區排水系統改善工程和馬田村及水邊圍兩項鄉村防洪抽水計劃的新工程合約亦於去年批出。此外，我們去年亦就沙田及大埔和屯門及深井兩項雨水排放整體計劃研究中建議的排水系統改善工程展開詳細設計工作。

## Flood Prevention Projects in the NT

Flood prevention projects in the NT can broadly be classified into two main types, namely drainage channels to collect and convey floodwater to the sea and village flood pumping schemes to protect the low-lying villages in flood plain areas.

While DSD is assigned to implement the majority of these projects, the Territory Development Department (TDD) also takes part in the implementation of drainage improvement works in connection with new town development projects. In 2001/02, about $0.9 billion of flood prevention projects have been substantially completed. These include a village flood pumping scheme at Pok Wai in Yuen Long and 15 km of new drainage channels to improve Ho Pui River in Kam Tin and River Indus, River Beas and River Sutlej in the North District. Work is also at an advanced stage in the construction of Middle River Indus, Ngau Tam Mei River, Upper Kam Tin River and the village flood pumping scheme at Chuk Yuen Tsuen and Ha San Wai.

Apart from the on-going construction works, new works contracts were awarded last year for the construction of the Stage III works under the Shenzhen River Regulation Project, tributary channels at Upper Kam Tin River and Pok Wai, urban drainage improvement works in Yuen Long and Tin Shui Wai, and two village flood pumping schemes at Ma Tin Tsuen and Shui Pin Wai. Moreover, we commenced last year the detailed design for the drainage improvement works recommended under the two Drainage Master Plan Studies covering Sha Tin and Tai Po as well as Tuen Mun and Sham Tseng.

*坑頭大布附近剛完成雙魚河上游的河道*
*Recently completed drainage channel of Upper River Beas, near Hang Tau Tai Po*

隨着排水渠工程陸續完成，新界的水浸情況已大有改善，特別是新界北部的羅湖、河上鄉和燕崗及新界西北部的天水圍、元朗和錦田。從前，新界的洪氾平原水浸時水深往往達1至1.5米，因為溢流會沿着又窄又彎的原有河道溢出。現時，住在這些易受水浸影響地方的數以萬計的居民所受的水浸威脅已得到解除。天平山及牛潭尾的新排水渠建造工程將於二〇〇三年竣工，而治理深圳河計劃第三階段和打鼓嶺、元朗和新田的其他新排水渠建造工程亦將於二〇〇五年竣工。屆時，新界北部和西北部的水浸情況將會進一步得到改善。

With the completion of drainage channels over recent years, the flooding situation in the NT has been significantly improved, particularly in Lo Wu, Ho Sheung Heung and Yin Kong in the Northern NT and Tin Shui Wai, Yuen Long and Kam Tin in the Northwestern NT. In the past, floodplains in the NT were often susceptible to a flood depth of 1 m to 1.5 m as overflow took place alongside the old river sections which were narrow and sinuous. Nowadays, tens of thousands of residents in these flood prone areas have been relieved of flooding risks. The flooding situations in the Northern and Northwestern NT will be further improved upon the completion of the new drainage channels in Tin Ping Shan and Ngau Tam Mei in 2003; and the completion of the Shenzhen River Regulation Project Stage III as well as the other new drainage channels in Ta Kwu Ling, Yuen Long and San Tin in 2005.

至於位於洪氾平原低地的鄉村，我們已完成20項鄉村防洪抽水計劃，以解除27條低地鄉村的水浸風險。面積超過130公頃，住有二萬名居民的低地鄉村地區現已得到保障。我們會於二〇〇五年年底前完成另外七項鄉村防洪抽水計劃，為另外12條總人口達七千人的低地鄉村提供保護。

As regards low-lying villages in the flood plain areas, we have already completed 20 village flood pumping schemes to remove the flood risks at 27 low-lying villages. Over 130 hectares of low-lying villages areas accommodating a population of 20,000 people are now being protected. We will complete 7 more village flood pumping schemes before end 2005 to extend the protection to another 12 low-lying villages with a population of 7,000 people.

*近天平山村正進行梧桐河上游之河道整治工程*
*River training works in progress at Upper River Indus, near Tin Ping Shan Tsuen*

*於旺角廣東道與弼街交界興建雨水渠*
*Construction of stormwater drains at junction of Canton Road and Bute Street, Mong Kok*

*於旺角塘尾道與荔枝角道交界進行雨水渠改善工程*
*Construction of stormwater drains at junction of Tong Mei Road and Lai Chi Kok Road, Mong Kok*

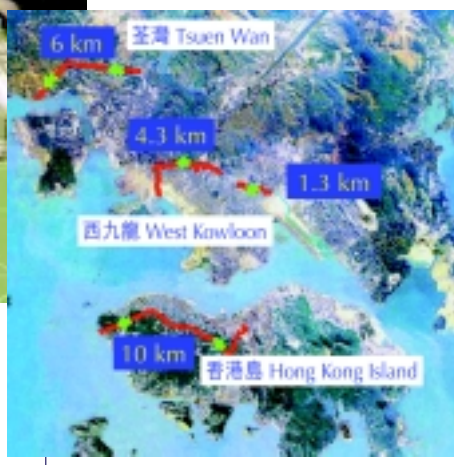
## 市區防洪工程計劃

在市區，除了採用傳統的敷設排水管方法外，渠務署亦引入新的蓄洪和雨水轉運方法，以減少開挖壕坑時對交通造成的干擾。在西九龍市區，建造費用約三十三億元的排水系統改善工程進度良好。這些工程包括建造長 43 公里的雨水渠、大坑東的一個容量達 100 000 立方米的蓄洪池和一條長 1.5 公里，把雨水由九龍塘轉運至啟德明渠的排水隧道。全部工程預計於二〇〇四至〇七年間逐步完成，以便為西九龍的 23 萬人口提供更佳的防洪保護。與一九九七及九八年的水浸情況相比，旺角區的改善情況最為顯著。此外，我們亦正進行荔枝角、長沙灣和深水埗的全長14公里的雨水渠和一條長4.2公里的排水隧道的規劃和設計工作。上述工程的總建築費用估計為十四億元。

## Flood Prevention Projects in Urban Areas

In urban areas, apart from the traditional method of laying underground drainpipes, DSD has introduced a new approach of stormwater storage and flow transfer to minimize the traffic disruption due to trench excavations. Within the urban area in West Kowloon, the construction of about $3.3 billion of drainage improvement works is in good progress. These include 43 km of stormwater drains, a 100,000 $m^3$ flood storage tank in Tai Hang Tung and a 1.5 km-long drainage tunnel for transferring stormwater from Kowloon Tong to the Kai Tak Nullah. All these works are scheduled to be completed progressively from 2004 to 2007 to raise the flood protection for a total population of 230,000 people in West Kowloon. The most significant improvement was seen in Mong Kok which was flooded in 1997 and 1998. In addition, the planning of 14 km of stormwater drains in Sham Shui Po district including Lai chi Kok and Cheung Sha Wan areas and a 4.2 km long drainage tunnel in Lai Chi Kok, amounting to an estimated total construction cost of $1.4 billion, are underway.

*於石峽尾的大坑東遊樂場地下興建蓄洪池*
*Construction of the underground flood storage tank in progress at Tai Hang Tung Playground, Shek Kip Mei*




*於規劃中的雨水截流隧道的構圖*
*Proposed stormwater drainage tunnels under planning*

至於港島北部、荃灣、葵涌及東九龍一些易受水浸影響的地區，約值三十七億元的排水系統改善工程計劃已在設計當中。為減少在港島北部和荃灣開挖壕坑時對區內居民和道路交通造成的滋擾，我們將利用雨水排放隧道，把洪水從現有排洪能力不足的排水系統中引走。

For the flood prone urban areas in the Northern Hong Kong Island, Tsuen Wan, Kwai Chung and East Kowloon, drainage improvement projects costing about $3.7 billion have been planned. In order to minimize the disturbance to the local residents and road traffic due to trench excavations in the Northern Hong Kong Island and Tsuen Wan, we would adopt the use of stormwater drainage tunnels to divert the flood flow from the existing drainage systems which are under capacity.

*大坑東遊樂場地下蓄洪池*
*Tai Hang Tung Underground Flood Storage Tank*

## 排水系統的操作和保養

二〇〇一年，由渠務署負責保養的雨水排放系統範圍擴展至包括長 160 公里的人工河道、長 2 250 公里的雨水渠和暗渠，以及 20 項鄉村防洪抽水計劃。為確保排水系統正常操作，我們繼續進行預防性保養計劃，定期檢查、清理和維修排水系統，尤其著重屬於水浸黑點的地區。

過去一年，我們檢查過共長1 620公里的排水渠、人工河道、暗渠和水道，其中 450 公里須予清理，清除的淤泥共102 890立方米，費用約一億二千四百萬元。我們亦與食物環境衛生署和路政署保持密切聯繫，確保路旁的集水溝和集水井運作良好。

自一九九四年起，渠務署確定了超過 100 個水浸黑點。我們密切監察所有黑點，並已採取改善措施消除水浸風險。直至目前為止，我們已清除了 37 個水浸黑點。

## Operations and Maintenance of the Drainage System

In 2001, the stormwater drainage system maintained by DSD has increased to comprise 160 km of engineered drainage channels, 2,250 km of stormwater drains and culverts and 20 village flood pumping schemes. To ensure the proper operation and functioning of the drainage system, we continue to implement a preventive maintenance programme which includes regular inspection, desilting and repair of the drainage system, particularly at locations categorized as flooding blackspots.

In the past year, 1,620 km of drains, engineered channels, culverts and watercourses were inspected and 450 km of them were cleansed with 102,890 $m^3$ of silt removed at a cost of about $124 million. We have also maintained a close connection with the Food and Environmental Hygiene Department and Highways Department to ensure that roadside gullies and drainage catchpits are in good working condition.

Since 1994, DSD has identified more than a hundred flooding blackspots. All of the blackspots are under close surveillance and improvement measures have been taken to eradicate the flood risk. Up to now, more than 37 flooding blackspots have been eliminated.

*工程前*
*Before works*

*工程後*
*After works*

*在新田石湖圍進行的地區排水改善工程*
*Local drainage improvement works at Shek Wu Wai, San Tin*

在大雨和天氣惡劣時，渠務署亦須應付緊急情況。有關工作包括監察所有主要防洪設施的運作、就水浸投訴即時展開調查和採取緊急補救行動等。我們亦安排視察所有水浸黑點，以確保淤塞或損毀的排水渠及雨水入口可及時得到改善。

我們亦進行地區排水改善工程，以即時紓緩水浸問題。例如在西九龍的大型排水改善工程進行其間，我們亦剛已完成奶路臣街的地區改善工程。這區的雨水排放系統的排水容量不足，以致成為人所共知的水浸黑點。藉着建造排水繞道和新的路旁集水溝等短期措施，這個屬於全港其中一個人口最密集地區和主要購物點的地方水浸風險得以消除。二○○一年六月，荃灣麗城花園發業里曾發生數宗嚴重水浸事件，原因是礫石被沖到排水系統中。現時，該處的地區排水改善工程亦已經完成。

過往預防水浸之操作及維修工作載於附錄C。

At times of heavy rainfall and severe weather conditions, DSD is also committed to dealing with emergency situations. These include monitoring the operation of all major flood control facilities, conducting immediate investigations of flooding complaints, and carrying out urgent remedial actions. Arrangements have also been made to inspect all flooding blackspots to ensure that any blockages or damage to drains and stormwater inlets are rectified in a timely manner.

We have also carried out local drainage improvement works to provide immediate relief of flooding problems. For example, while the major drainage improvement works in West Kowloon are still underway, we have recently completed local improvement works at Nelson Street - a well-known flooding blackspot mainly because of the inadequate capacity of the existing stormwater drainage system. With the construction of bypass drains and new roadside gullies as short-term measures, the flood risk has been alleviated at this location which is renowned as one of the most densely populated zones and a major shopping area. Local drainage improvement works have also been completed at Fat Yip Lane, near Belvedere Garden in Tsuen Wan where several serious flooding incidents took place in June 2001 as boulders were washed into the drainage system.

The operations and maintenance works carried out in the past years on flood prevention are shown in Appendix C.

*於荃灣麗城花園發業里對上明渠興建防洪牆，以改善該處的排水情況*
*Flood wall constructed as local drainage improvement works alongside the open channel above Fat Yip Lane, near Belvedere Garden, Tsuen Wan*

*特區行政長官董建華先生與多名高級官員正進行會議探討多宗水浸事件的解決方案*
*Chief Executive Mr. TUNG Chee-hwa and senior government officals in the meeting after the flooding incidents*

*上水天平山村水浸一景*
*Flooding at Tin Ping Shan, Sheung Shui*

## 二〇〇一年的嚴重水浸事件

二〇〇一年較正常多雨，六月份1 084毫米的總降雨量更刷新了這個月份的紀錄。而二〇〇一年六月七日至十一日期間的豪雨，便導致新界和荃灣嚴重水浸。至於二〇〇一年六月十二日、二十三日及二十七日的大雨，亦再引致荃灣發生嚴重水浸事件。

受影響的地區主要是沿現有河道一帶的低窪而易受水浸影響的地方。部分地區位於渠務署和拓展署轄下政府渠務工程計劃的建造地盤附近。這些地方包括上水天平山及石湖新村、牛潭尾圍仔村及攸潭尾村、錦田七星崗及大江埔和新田墾圍。

香港特區政府對水浸事件深表關注，並成立了一個由工務局局長領導的專責小組，負責檢討防洪計劃的實施，以及找出進一步改善排水系統的方法。專責小組亦委派了渠務署署長就水浸成因進行獨立調查，查看地盤的建造工程有否令水浸問題更為嚴重。

## Significant Floods in 2001

The year 2001 was wetter than usual. In June 2001, the total rainfall of 1084 mm set a new record for the month and the torrential rainfall in the period from 7.6.2001 to 11.6.2001 resulted in significant flooding in the NT and Tsuen Wan. Significant flooding incidents also occurred in Tsuen Wan due to the rainfall on 12.6.2001, 23.6.2001 and 27.6.2001.

Areas affected were mainly low-lying flood prone areas alongside existing river channels. Some were in the vicinity of construction sites of government drainage projects under the management of DSD and TDD. These areas included Tin Ping Shan and Shek Wu San Tsuen in Sheung Shui, Wai Tsai Tsuen and Yau Tam Mei Tsuen in Ngau Tam Mei, Tsat Sing Kong and Tai Kong Po in Kam Tin and Pok Wai in San Tin.

The HKSAR Government was deeply concerned about the flooding incidents and a Task Force led by the Secretary for Works was set up to review the flood prevention implementation programme and to identify ways to further enhance the improvement of the drainage systems. The Task Force also appointed the Director of Drainage Services to conduct an independent investigation on the causes of the flooding and to assess whether or not the construction works on site had aggravated the flooding incidents.

調查報告於二〇〇一年九月完成。報告指出低地地形、現有河道排水量不足、持續暴雨和漲潮均為導致新界北部水浸的主要原因。即使沒有建造工程在進行，大雨加上潮漲亦會引致嚴重水浸。

自從二〇〇一年六月發生嚴重水浸事件後，渠務署和拓展署即審慎檢討各項已展開的渠務工程計劃的實施計劃，並加強地盤監管，以確保河道和溪澗水流暢順，尤其是在惡劣天氣時更為重要。兩個部門均致力加緊完成有關工程計劃的關鍵部分，以便在二〇〇二年雨季來臨前盡早消除水浸風險。至於臨時措施方面，承辦商接獲指示增加備用資源，以應付天氣惡劣時的緊急情況。

上水、錦田和牛潭尾的各項河道整治工程於二〇〇三年竣工後，相應的排水系統將會大為改善，而有關地區雖然仍然屬於低窪地區，但不會再受水浸影響。在壆圍，鄉村防洪抽水站計劃已經完成，並使該區達到所要求的防洪水平。在九龍坑，當局正計劃進行一項防洪計劃，以改善現有的公共排水系統。至於麗城花園，礫石被沖入排水系統所造成的水浸風險已因進行地區排水改善工程而暫時得以減低，而當局亦正計劃長遠改善措施，以進一步減低水浸風險。

The investigation report was completed in September 2001. It concluded that low-lying topography, inadequate drainage capacities of existing river channels, prolonged heavy rainstorms and high tide had been the principal causes of the flooding in the Northern NT. Heavy rainfall with the rising tide would have caused severe flooding even if no construction activities were taking place.

Since the flooding incidents in June 2001, DSD and TDD had critically reviewed the implementation programme of the respective drainage projects already under construction and stepped up the site supervision to ensure smooth flow of river channels and stream courses, particularly under inclement weather. Both departments have strived to expedite and complete the critical sections in the relevant projects to provide early relief to the flooding before the 2002 wet season. As an interim measure, the contractors were instructed to strengthen their standby resources to deal with emergency situations arising from inclement weather.

*於錦田七星崗倒塌的臨時橋*
*Collapse of temporary pipe bridge at Tsat Sing Kong, Kam Tin*

Upon completion in 2003 of the various river training works in Sheung Shui, Kam Tin and Ngau Tam Mei, the corresponding drainage systems will be significantly improved and the concerned areas, although still low-lying, will no longer be flood prone. In Pok Wai, the village flood pumping scheme has already been completed to provide the required flood protection level. In Kau Lung Hang, the planning of a flood prevention programme is now underway to improve the existing public drainage system. At Belvedere Garden, the flood risk due to boulders being washed into the drainage system has been reduced in the interim by means of local drainage improvement works while long-term improvements to further reduce the risk are being planned.

*上水天平山村水浸照片*
*Flooding at Tin Ping Shan, Sheung Shui*

*私家車在大雨時被冲至大埔九龍坑的麻笏河，司機與乘客都安全逃離危險*
*A car was washed into Ma Wat River near Kau Lung Hang, Tai Po. Both the driver and the passenger had escaped safely*

*牛潭尾的水浸情況*
*Flooding at Ngau Tam Mei*

*荃灣發業里上游天然溪澗滿溢時的情況*
*Overflow from the natural stream at upstream of Fat Yip Lane, Tsuen Wan*

## 荃灣麗城花園水浸事件

二〇〇一年六月大雨期間，大量含沙泥的溪水沿着鄰近荃灣麗城花園高地集水區的天然河道流下。大量礫石和泥石從河道沖下，使發業里排水道的進水口淤塞。大部分水流溢出河道和排水道的進水口，把麗城花園對面的一段青山道浸沒，然後洪水沿麗志路流下，繼而把海安路部分路面浸沒。

水浸發生後，本署立即進行地區排水系統改善工程，以作為紓緩排水問題的臨時措施。這些工程包括清理河道內鬆散的礫石和泥石、為位於屯門公路與發業里之間受侵蝕河道噴漿、在排水渠的進水口加設格柵、沿着河道和排水道進水口上游的瀑布加建實心護牆，以及在發業里、青山道、麗志路及海安路建造截流渠。上述臨時措施旨在防止礫石和泥石從受侵蝕的河道沖下；對受侵蝕的河道起穩定作用；把水流限制在河堤內；在上游隔掉泥石，以防止發業里的進水口淤塞；以及加強阻截地面徑流。

## Flooding at Belvedere Garden, Tsuen Wan

During the heavy rainfalls in June 2001, large quantities of muddy water flowed down along a natural stream course at the upland catchment near Belvedere Garden, Tsuen Wan. Large amount of boulders and debris were washed down from the stream course and blocked the drainage intake at Fat Yip Lane. The majority of the flow overshot the stream course as well as the drainage intake and flooded the section of Castle Peak Road opposite Belvedere Garden. As the floodwater found the way down Lai Chi Road, a section of Hoi On Road was also flooded.

After the flooding incidents, the department has immediately carried out local drainage improvement works as interim measures to alleviate the drainage problem. These works included the clearance of loose boulders and debris from the stream course, shotcreting of the eroded stream course between Tuen Mun Highway and Fat Yip Lane, installation of additional bar screens at the drainage intake, construction of a solid parapet wall alongside the stream course as well as the cascade immediately upstream of the drainage intake, and construction of flow interceptors at Fat Yip Lane, Castle Peak Road, Lai Chi Road and Hoi On Road. The interim measures aimed at preventing the wash down of the boulders and debris from the eroded stream course, stabilizing the eroded stream course, confining the flow within banks, trapping the debris at the upstream to prevent the blockage of the intake at Fat Yip Lane, and enhancing the interception of the surface runoff.

*荃灣青山道及麗志路交界的水浸情況*
*Flooding at junction of Castle Peak Road and Lai Chi Road, Tsuen Wan*

*於青山道的截流渠是臨時改善措施的其中部分*
*Flow interceptor at Castle Peak Road as one of the interim improvement measures*

*荃灣發業里及青山道的水浸情況*
*Flooding at Fat Yip Lane and Castle Peak Road, Tsuen Wan*

在有關地區排水系統改善工程竣工之後，該處在二〇〇一年七、八月大雨期間並無水浸發生，證明上述臨時措施已經收效。此外，本署亦聘請了顧問公司研究和設計長遠的排水系統改善措施。有關改善工程將包括敷設更多排水渠和加設礫石隔濾設施，使現有系統更為鞏固。這些工程完成後，將可進一步減低麗城花園水浸的風險。同時，本署亦定期檢查和監察排水道進水口及公共排水系統的運作情況，以確保其運作正常。

After completion of the local drainage improvement works, no flooding incidents were recorded in the vicinity during the subsequent heavy rains in July and August 2001. The interim measures proved to be effective. Furthermore, the department has also employed a consultant to investigate and design the long-term drainage improvement measures. The improvement works will include the provision of additional drains and boulder traps to enhance the robustness of the existing system. Completion of these works would further reduce the flooding risks at Belvedere Garden. In the meantime, regular inspection and monitoring of the performance of the drainage intake and the public drainage system are being conducted to ensure they are functioning properly.

*塱圍鄉村防洪抽水站及蓄洪池*
*Pok Wai village flood pumping station and floodwater storage pond*

## 完成塱圍鄉村防洪抽水計劃

對於位於新界西北部低窪地區的鄉村而言，洪水無法有效地流入就近的河道，因此有需要實施鄉村防洪抽水計劃。位於元朗低地洪氾平原的塱圍村，便是其中一條在颱風暴雨時易受水浸影響的鄉村。該處過去經常發生水浸，導致經濟損失，交通和社區活動受阻，並危及當地居民的生命安全。於塱圍村進行的防洪抽水計劃所涵蓋的範圍約五公頃，乃屬於政府新界西北部整體防洪工程計劃的一部分。

二〇〇二年四月，塱圍鄉村防洪抽水計劃完成建造並投入運作。塱圍村的防洪能力，已由過去抵禦少於兩年一遇的大雨，提高至可抵禦二百年一遇的大雨。

## Completion of Pok Wai Village Flood Pumping Scheme

For the low-lying villages in Northwestern NT where floodwater cannot be effectively drained by gravity to the adjacent river channels, village flood pumping schemes are necessary. Pok Wai in the low-lying flood plains of Yuen Long was one of such villages prone to flooding during typhoons and heavy rainstorms. Frequent flooding incidents in the past had caused economic losses, disruption to transport and social activities, and created a threat to life to the local people. The scheme for Pok Wai village, which covers an area of about 5 hectares, forms part of the Government's overall flood control programme for the Northwestern NT.

In April 2002, the village flood pumping scheme for Pok Wai was completed and put into operation. The flood protection level for the areas in Pok Wai Village has been raised from the previous less than 1 in 2 years to presently 1 in 200 years.

根據這項計劃，為免堅圍村發生水浸，我們首先圍繞堅圍村設置防洪基堤和圍牆。防洪基堤和圍牆可防止村外的洪水流入村內。同時，我們又為該村提供內部雨水排放系統，以收集村內的雨水，並把雨水引入蓄洪池。當蓄洪池的水位升至預先設定的水位，螺旋泵會把蓄洪池內的水抽到防洪基堤外現有的溪澗去。此外，這項計劃亦包括把現有溪澗擴闊、挖深和拉直的工程，以增加其容納洪水的容量。

一九九九年十月，這項計劃的建造工程合約展開，有關的設施亦已於二〇〇二年四月竣工並投入運作。工程所需費用接近九千萬元，由此可見，香港特區政府在解決新界西北部水浸問題方面，又向前踏出了一步。

The scheme protects the village at Pok Wai from being flooded by firstly forming a flood protection embankment and walls around the village. The embankment and walls will prevent external floodwater from entering into the village. Secondly, the scheme provides an internal stormwater drainage system to collect rainwater within the village and to convey the water to a floodwater from storage pond. Screw pumps are provided to pump out the water collected in the pond to the existing streams outside the embankment when the water level inside the floodwater storage pond reaches preset levels. In addition, the project includes widening, deepening and straightening of the existing stream in order to increase its capacity to convey the floodwater.

Construction of the scheme commenced through the implementation of a major civil engineering contract in October 1999. The essential works of the scheme were completed and put into operation in April 2002. With a cost approaching $90 million, it represents another step forward in the HKSAR Government's plan to solve the flooding problem in the Northwestern NT.

*堅圍村於暴雨後的水浸情況，攝於鄉村防洪抽水計劃完成前*
*Flooding at Pok Wai during a historic flooding event before the completion of the village flood pumping scheme*

*堅圍村防洪抽水計劃*
*Pok Wai Village Flood Pumping Scheme*