For discussion
on 1 February 2005

LegCo Panel on Food Safety and Environmental Hygiene

Anti-mosquito Efforts in 2004 and Anti-mosquito Campaign in 2005

Purpose

This paper reports the findings of the dengue vector surveillance programme and anti-mosquito actions in 2004, outlines the strategic plans to enhance control of Japanese encephalitis (JE) vectors, as well as updates Members on the implementation plan of the 2005 Anti-mosquito Campaign.

Background

2. The Food and Environmental Hygiene Department (FEHD) takes the stewardship in organizing territory-wide anti-mosquito campaign annually to heighten public awareness of the potential risk of mosquito-borne diseases, notably dengue fever and to forge partnership of the community and government departments concerned in anti-mosquito work.

Findings of the Dengue Vector Surveillance Programme in 2004

3. Since 2000, FEHD has put in place a dengue vector surveillance programme to monitor the distribution of *Aedes albopictus* at selected locations and provide surveillance information for making timely adjustments to our mosquito control strategies and measures. In 2003, the programme was enhanced with an additional objective of evaluating the effectiveness of mosquito prevention and control work carried out by various parties. Under the surveillance programme, two different indices, namely, Area Ovitrap Index (AOI) and Monthly Ovitrap Index (MOI) are recorded for 38 selected areas. AOI indicates the extensiveness of the distribution of Aedine mosquitoes in the surveyed area while the MOI is the average of all AOIs of the same month, which reflects the distribution and activity of *Aedes albopictus* in the whole territory. The AOIs, once available, are provided to

the relevant government departments so that mosquito control actions can be taken promptly according to the value of the ovitrap index recorded. The indices are also announced each month through FEHD's website and press release to arouse public awareness of the situation of mosquito breeding in respective districts and to enlist community participation in mosquito control work.

4. The MOIs and AOIs recorded in 2004 are shown in **Appendix 1**. It can be seen that the MOIs made an early surge in May 2004. MOI reached the highest of 31.6% in May, with AOIs in five locations exceeding 50%. With concerted efforts of various government departments and the public at large (details at paragraph 6 to 7 below), the situation improved. As a result, the MOIs for the rest of the year were much lower than that of 2000-2003 (**Appendix 2**). The latest ovitrap index recorded in December was 0.2%, with none of the locations surveyed in the month recorded an AOI exceeding 2%.

5. The dengue vector surveillance programme was extended in 2004 to cover all major port areas. A Port Monthly Ovitrap Index (PMOI) is enumerated to indicate the overall situation of mosquito breeding in the seven groups of port areas, namely, Airport, Public Cargo Working Areas, Private Cargo Handling Areas, Cross Boundary Ferry Piers, Cross Boundary Check Points on Land, Container Terminals and Rail Cargo Handling Areas. The PMOI is released monthly together with the MOI and AOIs. The PMOIs throughout the whole year of 2004 was not high and ranged from the lowest of 0.1% at the beginning of 2004 to the highest of 6.8% in June (**Appendix 3**). The highest POI of 32.5% was recorded in Cross Boundary Check Points on Land in the month of May, which gradually decreased to 0% in December. The POIs of Hong Kong International Airport and Cross Boundary Ferry Piers remained below 5% throughout the whole year.

Anti-mosquito Efforts in 2004

6. In view of the high ovitrap index recorded in May 2004, the Administration has adopted a series of measures to tackle the mosquito breeding problem more effectively. Various departments have intensified their anti-mosquito efforts with special anti-mosquito operations mounted in key areas, including more frequent inspection at housing estates, commercial

properties and construction sites. All 18 districts have established a district anti-mosquito task force mechanism led by District Officers. Through the mechanism, inter-departmental co-ordination has been strengthened; community participation has also been enhanced. Separately, the Home Affairs Department (HAD) has conducted, under its minor works programme, improvement works for anti-mosquito purposes. Those directly related to mosquito control include grass cutting and desilting. From June to December 2004, more than 4,300 grass cutting and desilting operations were conducted. There were projects which have turned unpaved areas with potential mosquito breeding problem to sitting out areas as well. To sustain community participation, HAD has also organized 160 community education talks from June to December 2004. For FEHD, it has conducted over 500,000 inspections and eliminated over 55,000 mosquito breeding places during regular and special anti-mosquito operations including thematic mosquito control operations against village houses, old tenement buildings, passenger and container terminals and problematic spots. Lands Department has conducted over 2,500 grass cuttings in government land and black spots and has undertaken more than 250 clearance/investigations related to 174 illegal cultivation sites to eliminate mosquito breeding grounds. Six offenders of illegal excavation/cultivation were prosecuted. Agriculture, Fisheries and Conservation Department (AFCD) has conducted over 11,000 inspections of livestock farms and fish ponds and requested the concerned parties to take mosquito prevention and control actions. Housing Department (HD) has increased its daily inspection in housing estates, especially those located in districts where the respective AOIs were confirmed to have exceeded 20%. It has conducted over 5,700 inspections, arranged larviciding at more than 44,000 potential mosquito breeding grounds, and sped up the clearance of choked drains by carrying out nearly 500 desilting operations. Estate tenants have also been encouraged to report mosquito black spots through HD's hotline. Photos showing some of the anti-mosquito projects are at **Appendix 4**.

7. Apart from conducting anti-mosquito work, we have disseminated the anti-mosquito message widely to the community through talks, seminars, exhibitions, Announcement of Public Interests and distribution of educational leaflets and materials. District Officers have, through the task force mechanism mentioned in paragraph 6, enlisted the support of the public

including community leaders and District Councillors to promote the message and eliminate mosquito problem in districts. Under the concerted efforts of all parties concerned, the overall situation on mosquito control has improved.

8. With increasing awareness of the local population on dengue fever and concerted anti-mosquito actions of all parties, there were 31 imported dengue fever cases reported in 2004, compared with 49 dengue fever cases (including one local case) reported in 2003. However, the increase of JE cases from one in 2003 to five in 2004 raised much concern to both the Administration and the public. The increase, due partially to a heightened surveillance programme, suggested that the local JE situation might be less rare than previously recognized.

Control and Prevention of JE

9. JE is a mosquito-borne viral disease which is one of the major public health problems in eastern Asia. Transmission is usually seasonal, following the prevalence of disease-transmitting mosquitoes. An epizootic cycle involving pigs, mosquitoes and certain migratory birds has been well documented in South East Asia. Human is the dead end host of the virus and the transmission to human is considered as incidental infection. Laboratory and field studies indicate that *Culex tritaeniorhynchus* is the principal vector of JE virus. However, some other mosquito species, e.g. *Culex gelidus, Culex fuscocephala and Culex pseudovishnui* have also been recognized by the World Health Organization as proven or suspected vectors of JE in different areas. These mosquitoes breed in waterlogged fields, water pools, streams with marginal vegetation and irrigation ditches. In Hong Kong, JE vectors are usually found in the New Territories where there are also pig farms or roosting sites for migratory birds. However, recent JE human case investigations revealed that the JE vectors were also present in illegal cultivation sites in urban areas such as Lam Tin, Sham Shui Po and Tsing Yi.

10. With the reports of an increase of local human JE cases in 2004, further enhancement on the JE vector prevention and control work is

warranted. A multi-pronged approach covering the following areas is adopted –

(a) enhanced JE vector surveillance and information dissemination;
(b) mosquito control;
(c) publicity and public education;
(d) community participation;
(e) law enforcement ; and
(f) vaccination.

JE Vector Surveillance and Information Dissemination

11. A better understanding of the distribution of JE vectors provides the scientific basis for strategic control of the vectors. FEHD commenced a one year survey in October 2004 to map out the distribution of local JE vectors and identify risky areas where transmission of JE is likely to happen once the virus is introduced. As birds and pigs are known reservoir and amplifying host of the disease respectively, the study would concentrate in areas within 2-km radius of aggregations of pigs and birds, particularly migratory birds. The survey would also cover areas where illegal cultivation are found, as well as vacant land sites of the whole territory. In rural areas, adult trapping using light traps will be the main mode of survey methodology, while larval survey will be conducted in urban areas as light trapping is not likely to produce fruitful results in urban settings. Adult mosquitoes collected will be sent for virological examination for the presence of JE virus.

12. Whenever JE vectors are identified, the information will be disseminated to relevant departments for immediate actions to abate source of mosquito breeding. FEHD will also strengthen mosquito control actions in areas surrounding pig farms and localities where the vector mosquitoes are collected and provide technical support to departments/organizations concerned. Relevant information will be conveyed to the public through the media.

Mosquito Control

13. As there is no specific treatment for JE at the moment, the main objective of the control measure is to reduce the breeding of vector mosquito

by environmental management and source reduction. Relevant government departments are tasked to strengthen inspection of and undertake anti-mosquito operations at areas under their purview, in particular around pig farms and sites with gathering of migratory birds. We will also enhance the publicity and educational programme to specific audience and the general public.

Publicity and Public Education

14. Dissemination of relevant information and message on JE vector prevention and control and enhanced community participation will be incorporated into the Anti-mosquito Campaign 2005 as described below in paragraphs 18 to 20.

Community Participation

15. District Offices will continue to seek cooperation and active participation of the community, which are vital to the successful control of vector-borne diseases. Volunteers will also be recruited for District Hygiene Squads and high priority will be accorded to eliminating mosquito breeding ground in the routine inspection during the rainy season.

Enforcement

16. FEHD will continue its enforcement action against premises known to be susceptible to mosquito infestation, in particular, construction sites. Other departments, for example, AFCD will take enforcement action against pig farms with mosquito breeding grounds. As a new initiative, HD will take enforcement action under the Marking Scheme against households where stagnant water is found containing mosquito larvae. Legislative proposals will also be considered to provide the legal basis for strengthening existing enforcement actions against mosquito breeding or potential mosquito breeding places.

Vaccination

17. Department of Health and AFCD are exploring a trial JE vaccination programme for pigs in local farms so as to reduce the risk of the virus threatening public health. Consultation with pig farmers will be made before implementation of the programme.

Anti-mosquito Campaign 2005

18. To heighten public awareness and encourage community participation, the Anti-mosquito Campaign 2005 will be implemented in three phases as follows:

Phase 1: from 21 February 2005 to 2 April 2005, lasting for a period of six weeks
Phase 2: from 23 May 2005 to 2 July 2005, lasting for a period of six weeks
Phase 3: from 15 August 2005 to 8 October 2005, lasting for a period of eight weeks

19. Control measures and publicity efforts will be stepped up during the campaign period, supplementing the regular inspection and enforcement works carried out by district pest control staff.

20. Anti-mosquito messages, particularly on JE and dengue fever vector prevention and control, will be promulgated through different channels including Announcement of Public Interests on radio and television, VCD, exhibitions, talks, and publicity materials, e.g. posters, leaflets, banners, etc. Relevant government departments will also play an active role in the campaign through eliminating mosquito problems in places under their charge, stepping up with inspection and patrolling of potential mosquito breeding grounds, reminding staff, contractors and relevant parties to upkeep mosquito control measures, and soliciting community support for the campaign through their networks. District Councils will also be invited to participate in the Campaign and large-scale thematic operations.

Advice Sought

21. Members are invited to note and comment on -

(a) the findings of the dengue vector surveillance programme in 2004 (paragraphs 3 to 5);

(b) anti-mosquito efforts in 2004 (paragraphs 6 to 8);

(c) the implementation of the control and prevention of JE vector programme (paragraphs 9 to 17); and

(d) the Anti-mosquito Campaign 2005 (paragraphs 18 to 20).

Health, Welfare and Food Bureau
Food and Environmental Hygiene Department
January 2005

Appendix 1

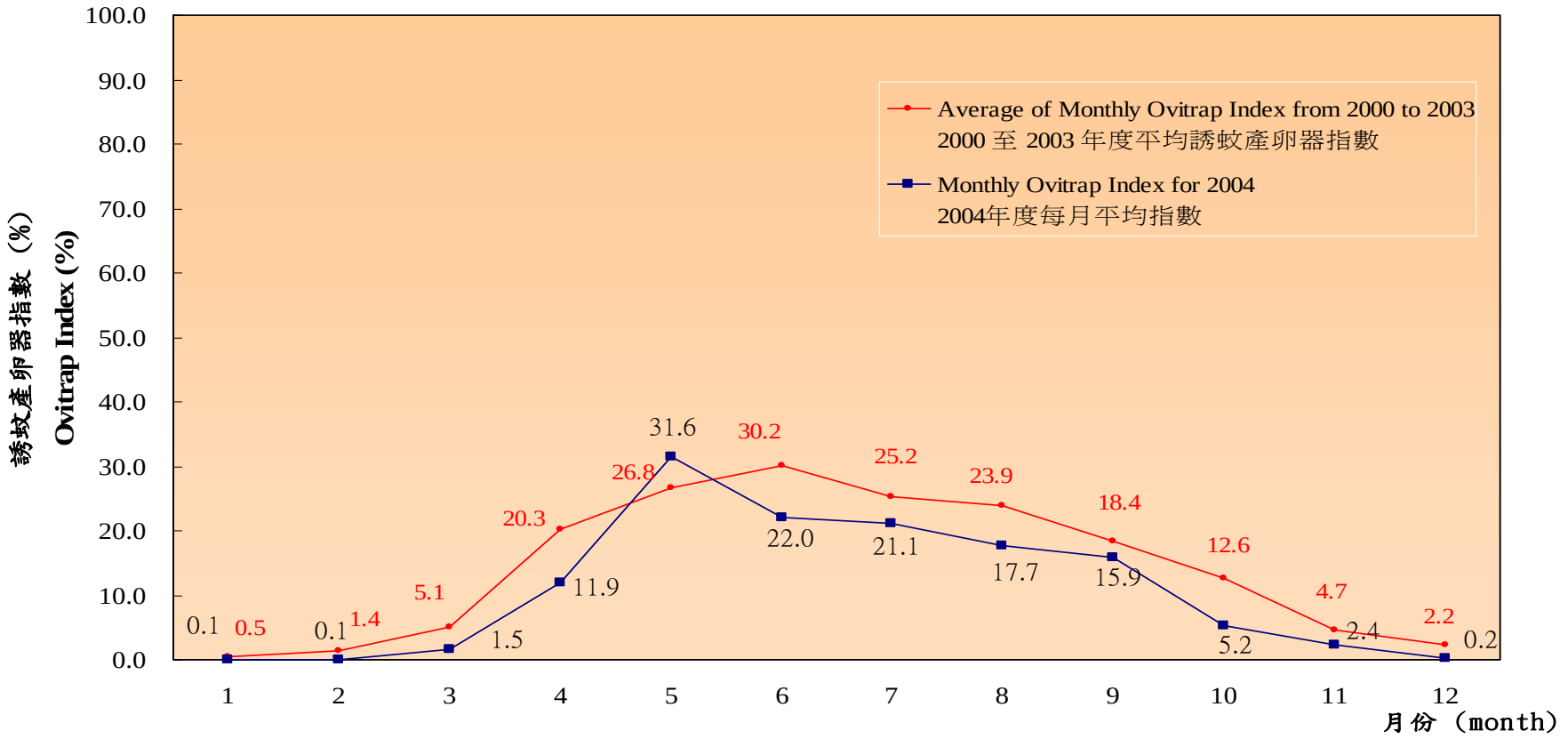
Monthly Area Ovitrap Index in 2004

	Locations	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Hong Kong Island &Outside Islands	Chai Wan West	2.1%	0.0%	0.0%	1.9%	22.9%	9.8%	16.0%	7.5%	5.9%	1.9%	0.0%	0.0%
	Wan Chai North	0.0%	0.0%	0.0%	0.0%	4.3%	11.8%	28.8%	17.3%	19.6%	2.0%	7.5%	2.0%
	Happy Valley	0.0%	0.0%	1.9%	1.9%	39.6%	19.2%	21.8%	17.6%	13.2%	0.0%	0.0%	0.0%
	Sheung Wan	0.0%	0.0%	0.0%	0.0%	32.1%	36.0%	24.5%	28.3%	27.8%	5.9%	3.7%	2.0%
	Kennedy Town	0.0%	0.0%	0.0%	18.8%	43.1%	12.2%	26.4%	11.1%	9.4%	7.3%	3.7%	0.0%
	North Point	0.0%	0.0%	0.0%	6.0%	19.6%	20.4%	15.7%	7.7%	10.4%	3.9%	0.0%	0.0%
	Aberdeen	0.0%	2.2%	0.0%	44.7%	11.8%	6.8%	5.6%	18.4%	0.0%	2.0%	0.0%	0.0%
	Pokfulam	0.0%	0.0%	3.6%	34.0%	39.6%	16.7%	5.5%	13.5%	5.7%	0.0%	0.0%	0.0%
	Cheung Chau	0.0%	0.0%	0.0%	0.0%	22.2%	33.3%	15.6%	5.9%	2.9%	0.0%	0.0%	0.0%
	Tung Chung	0.0%	0.0%	0.0%	9.4%	28.6%	14.3%	14.7%	38.9%	13.9%	5.7%	3.0%	0.0%
Kowloon	Tsim Sha Tsui	0.0%	0.0%	0.0%	0.0%	6.3%	6.5%	16.3%	9.6%	17.6%	5.9%	0.0%	0.0%
	Yau Ma Tei	0.0%	0.0%	1.9%	0.0%	12.5%	9.8%	29.1%	13.7%	18.5%	9.6%	9.8%	1.9%
	Lai Chi Kok	0.0%	0.0%	0.0%	3.8%	32.1%	15.7%	16.7%	5.6%	3.8%	1.9%	0.0%	0.0%
	Sham Shui Po East	0.0%	0.0%	0.0%	0.0%	13.5%	43.1%	38.3%	29.6%	20.8%	1.9%	5.8%	0.0%
	Cheung Sha Wan	2.0%	0.0%	6.7%	13.5%	31.5%	23.5%	21.6%	23.5%	26.9%	3.6%	3.8%	0.0%
	Kowloon City North	0.0%	0.0%	0.0%	0.0%	27.8%	16.0%	14.8%	14.8%	24.5%	5.8%	0.0%	0.0%
	Ho Man Tin	0.0%	0.0%	0.0%	0.0%	16.0%	27.1%	24.5%	32.7%	29.4%	15.7%	2.0%	0.0%
	Wong Tai Sin Central	0.0%	0.0%	1.7%	16.7%	49.2%	23.3%	13.3%	32.2%	11.7%	9.8%	1.6%	1.6%
	Diamond Hill	0.0%	0.0%	0.0%	6.0%	30.8%	55.1%	42.3%	14.8%	25.9%	13.5%	4.0%	0.0%
	Kwun Tong Central	0.0%	0.0%	3.6%	44.8%	32.1%	13.2%	15.1%	3.6%	5.6%	5.6%	0.0%	0.0%
	Lam Tin	0.0%	0.0%	0.0%	34.7%	50.0%	13.5%	29.4%	13.2%	14.8%	9.6%	0.0%	0.0%

New Territories East	Tseung Kwan O	0.0%	0.0%	0.0%	44.8%	16.1%	16.4%	18.5%	11.1%	8.8%	0.0%	0.0%	0.0%
	Ma On Shan	0.0%	0.0%	2.0%	17.0%	51.9%	32.7%	11.1%	18.9%	9.4%	0.0%	0.0%	0.0%
	Lek Yuen	0.0%	0.0%	3.8%	7.4%	32.0%	20.4%	5.5%	13.0%	11.3%	3.8%	0.0%	0.0%
	Tai Wai	0.0%	0.0%	0.0%	12.0%	61.8%	51.0%	23.6%	18.5%	18.9%	0.0%	3.7%	0.0%
	Tai Po North	0.0%	0.0%	0.0%	0.0%	46.3%	26.2%	36.0%	30.8%	29.4%	7.5%	5.6%	0.0%
	Fanling	0.0%	0.0%	0.0%	1.9%	55.1%	18.5%	39.2%	26.9%	28.8%	15.4%	8.7%	0.0%
	Sheung Shui	0.0%	0.0%	0.0%	0.0%	43.1%	20.8%	25.5%	4.2%	16.0%	1.8%	0.0%	0.0%
New Territories West	Tin Shui Wai	0.0%	0.0%	0.0%	12.0%	23.1%	15.0%	18.5%	13.5%	13.5%	3.8%	0.0%	0.0%
	Yuen Kong	0.0%	0.0%	0.0%	0.0%	50.0%	45.8%	8.3%	8.0%	16.0%	0.0%	0.0%	0.0%
	Yuen Long Town	0.0%	0.0%	3.8%	30.4%	31.4%	22.9%	10.9%	6.4%	18.2%	0.0%	0.0%	0.0%
	Tuen Mun (S)	0.0%	0.0%	22.0%	26.9%	26.4%	9.4%	21.2%	27.3%	25.0%	1.9%	9.4%	0.0%
	Tuen Mun (N)	0.0%	0.0%	0.0%	3.6%	33.3%	16.7%	13.2%	5.7%	3.7%	1.9%	0.0%	0.0%
	Tsuen Wan Town	0.0%	0.0%	0.0%	35.2%	29.1%	17.5%	5.3%	24.1%	7.8%	0.0%	0.0%	0.0%
	Ma Wan	0.0%	0.0%	0.0%	0.0%	44.0%	16.0%	37.5%	16.0%	4.3%	7.8%	4.2%	0.0%
	Kwai Chung	0.0%	0.0%	0.0%	0.0%	23.1%	24.5%	38.0%	33.3%	17.0%	14.0%	5.8%	0.0%
	Lai King	0.0%	0.0%	5.9%	5.5%	33.3%	47.2%	24.5%	31.5%	33.3%	13.2%	9.3%	0.0%
	Tsing Yi	0.0%	0.0%	0.0%	1.8%	38.5%	18.5%	32.7%	18.9%	21.8%	13.5%	0.0%	0.0%
Monthly Ovitrap Index (MOI)		**0.1%**	**0.1%**	**1.5%**	**11.9%**	**31.6%**	**22.0%**	**21.1%**	**17.7%**	**15.9%**	**5.2%**	**2.4%**	**0.2%**

Appendix 2

2000-03年與2004年白紋伊蚊誘蚊產卵器指數比較
Comparison of Monthly Average Ovitrap Index (2000-03 and 2004)



Appendix 3

Port Ovitrap Index 2004

Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Hong Kong International Airport	0%	0%	0%	0.6%	1.2%	4.8%	1.5%	1.7%	1.9%	0.2%	0.2%	0.2%
Railway Cargoes Handling Areas	0%	0%	0%	3.3%	16.7%	18.3%	16.7%	18.3%	21.7%	3.3%	0%	0%
Cross Boundary Check Points on Land	0%	2.5%	0%	5.0%	32.5%	26.3%	23.0%	23.8%	21.3%	6.3%	0%	0%
Cross Boundary Ferry Piers	1.6%	0.0%	0%	0%	2.0%	0%	0%	0%	0%	0%	0%	0%
Container Terminals	0%	0.0%	0.6%	2.3%	5.0%	1.1%	2.2%	2.2%	1.1%	0.6%	0%	0%
Public Cargoes Working Areas	0%	1.3%	0%	1.9%	13.2%	10.9%	12.5%	11.7%	12.0%	5.0%	1.9%	0%
Private Cargoes Working Areas	0%	0%	0%	1.8%	1.7%	3.3%	1.7%	6.7%	6.7%	3.3%	1.7%	0%
Port Monthly Ovitrap Index	0.1%	0.3%	0.1%	1.5%	6.1%	6.8%	5.0%	5.4%	5.5%	1.5%	0.4%	0.1%

附錄 4
Appendix 4

滅蚊行動計劃圖片
Photos of anti-mosquito projects

沙田頭新村
Sha Tin Tau New Village

清理前
Before operation

清理後
After operation

沙田多石村
To Shek Village, Shatin

清理前
Before operation

清理後
After operation

元朗元崗村
Yuen Kong Tsuen, Yuen Long

清理前
Before operation

清理後
After operation

荃灣川龍村
Chuen Lung Village, Tsuen Wan

清理前
Before operation

清理後
After operation

屯門麒麟圍
Kei Lun Wai, Tuen Mun

清渠及剪草前
Before desilting & grassing cutting

清渠及剪草後
After desilting & grass cutting

西貢白沙灣窩尾
Pak Sha Wan Wo Mei, Sai Kung

改善工程前
Before Improvement works

改善工程後
After Improvement works