

EPD - Beach Water Quality

Beach Water Quality in Hong Kong 2010

Our Mission:

To safeguard the health and welfare of the community and meet conservation goals by working to achieve and maintain the Water Quality Objective for bathing beaches

[Photo: Hong Kong beaches are popular for both the local community and overseas tourists]

Introduction

Hong Kong is surrounded by sea with many beautiful beaches due to its long coastline. These beaches provide recreational space and attract millions of visitors each year.

[Photo: Kids enjoying summer fun at Shek O Beach]

The objective of the EPD's Beach Water Quality Monitoring Programme is to monitor beach water quality and protect the health of the bathers. The background and details of EPD's monitoring activities can be found on [the EPD's Homepage \(http://www.epd.gov.hk\)](http://www.epd.gov.hk) or its newly launched [thematic website \(http://www.beachwq.gov.hk\)](http://www.beachwq.gov.hk).

[Photo: Blue sky, bright sunlight and clean water greet swimmers at Shek O Beach]

This report summarises the beach monitoring data collected in 2010, the gradings of the beaches and their compliance with the Water Quality Objective (WQO). It also highlights the water quality improvement observed over the last 25 years since the monitoring programme was implemented in 1986. In 2010, the EPD monitored 41 gazetted beaches and three non-gazetted beaches located in different parts of the territory. The gazetted beaches were monitored weekly during the bathing season from March to October, and the EPD staff made field observations and collected samples for laboratory analyses of E. coli bacteria. The EPD staff also took measurements of dissolved oxygen, pH, salinity, temperature and turbidity of beach waters.

[Photo: EPD inspectors monitor water quality at Deep Water Bay Beach]

[Photo: Bacterial testing of beach water at EPD's laboratory]

Hong Kong's beaches are assessed using a dual system: annual ranking and weekly grading based on the E. coli level in beach water, which indicates potential health risks associated with swimming. The annual ranking reflects the overall water quality of the beach over the entire bathing season, while the weekly grading denotes the recent water quality of the beach. Under the dual rating system, beaches are categorised into "Good", "Fair", "Poor" and "Very Poor", and those ranked "Good" and "Fair" meet the WQO for bathing waters.

Annual Beach Ranking in 2010

In 2010, all 41 gazetted beaches in Hong Kong complied with the WQO. It is the first occasion which records 100% compliance with the WQO, since the monitoring programme began in 1986. This represents a noticeable improvement in compliance rate from the 93% recorded last year (2009) or the 83% recorded during the earlier six years (2003 to 2008). Twenty-three (or 56%) out of 41 gazetted beaches were ranked as “Good”, same as last year. Eighteen other beaches (44%) were ranked as “Fair”, and none as “Poor” or “Very Poor”.

[Photo: The scenic Clearwater Bay First Beach]

[Photo: Fun for all ages at Clearwater Bay Second Beach]

The beaches with “Good” water quality ranking were mainly located in the Southern District (Hong Kong Island South), Sai Kung area, and Outlying Islands. Nine out of 12 beaches in the Southern District were ranked as “Good” in 2010, Big Wave Bay, Hairpin and Rocky Bay Beaches were ranked as “Fair”. Of the nine beaches monitored on the Outlying Islands, eight were “Good” while Silver Mine Bay Beach was rated as “Fair”. In the Sai Kung area, five of the six beaches were “Good”. Among them, Hap Mun Bay Beach on Sharp Island was the cleanest gazetted beach in Hong Kong in 2010 in terms of overall E. coli levels. Only Silverstrand Beach was rated as “Fair”. On the western side, all six beaches along the Tuen Mun coast received a “Fair” ranking in 2010. In the Tsuen Wan area, Ma Wan Tung Wan Beach was ranked as “Good” in 2010 and was the only beach in the area open to swimmers. The water quality of the seven closed Tsuen Wan beaches has markedly improved in 2010 upon the full commissioning of the Advance Disinfection Facilities (ADF) in March 2010, which are designed to disinfect the treated effluent from the Stonecutters Island Sewage Treatment Works. Since all seven closed beaches had achieved “Fair” water quality ranking, the Government has planned to re-open four of these beaches to the public for swimming in 2011.

[Photo: An impressive view of the Ting Kau and Tsing Ma Bridges from Approach Beach]

The EPD also monitored three non-gazetted beaches in Hong Kong: Discovery Bay (a popular beach on Lantau Island), a sandy beach adjacent to Kiu Tsui Beach in Sai Kung, and a planned artificial beach in Lung Mei, Tai Po. Discovery Bay and the beach adjacent to Kiu Tsui Beach continued to be ranked “Good” in 2010. Lung Mei has dropped from “Fair” ranking in 2009 to “Poor” ranking in 2010. Public sewerage network is being extended to villages in the Lung Mei area, and planned drainage diversion and other pollution control measures will be implemented to improve the water quality in Lung Mei area in the next few years.

In summary, the rankings of gazetted beaches have improved in 2010: the compliance of bathing WQO has achieved a full (100%) compliance in 2010, compared with 93% in 2009 and 83% in the earlier six years (2003 to 2008). The improved compliance rate also indicated that the continued upgrading of the sewerage infrastructure and enforcement of environmental legislation have brought about gradual and sustained improvement of beach water quality in Hong Kong.

Weekly Beach Grading in 2010

The EPD issues weekly gradings of gazetted beaches which are open for swimming. The information is disseminated to the public through [weekly press releases](#), [the EPD's website](#), the beach hotline and beach noticeboards.

[Photo: A typical water quality board at beach]

In 2010, the water quality of Southern District beaches was largely satisfactory. All ten gazetted beaches received mostly “Good” or “Fair” gradings in the bathing season, except for Big Wave Bay which was rated as “Poor” or “Very Poor” on several occasions after heavy rainstorms. South Bay, St. Stephen’s and Chung Hom Kok Beaches had the best water quality, achieving “Good” gradings on all rating occasions. The water quality of Sai Kung beaches was generally good. Hap Mun Bay and Trio Beaches achieved “Good” gradings over 90% of the rating occasions, while the other beaches were mostly “Good” or “Fair”. The water quality of the beaches in the Tuen Mun area was generally fine and nearly all graded as “Good” or “Fair”, except Castle Peak Beach which was rated as Grade 3 or Grade 4 on several occasions. The water quality of Ma Wan Tung Wan Beach in Tsuen Wan had shown positive signs of improvement, its gradings were all maintained at “Good” or “Fair”. The beaches on the Outlying Islands were generally ideal for swimming, with Hung Shing Yeh, Lo So Shing and Tong Fuk Beaches achieving 100% “Good” gradings. Cheung Chau Tung Wan and Upper Cheung Sha Beaches achieved “Good” gradings over 90% of the rating occasions.

[Photo: Hong Kong beaches offer respite from hustle and bustle of city life]

Water quality improvement measures for Tsuen Wan Beaches

All seven gazetted beaches in Tsuen Wan were closed to swimmers since 2003 due to poor and unstable water quality. They were Anglers’, Approach, Casam, Gemini, Hoi Mei Wan, Lido and Ting Kau Beaches. The poor and unstable water quality was due to pollution sources in the unsewered hinterlands and the fluctuating background bacterial levels in the marine waters off Tsuen Wan coast.

[Map showing location of the seven closed beaches and Sham Tseng Sewage Treatment Works]

The water quality improvement in recent years has been brought about through Government’s effort to provide sewerage along the coastal strip between Tsing Lung Tau and Ting Kau areas in phases. The successful full operation of the Sham Tseng Sewage Treatment Works in early 2005 marked an important milestone. Since 2003, the Government has progressively installed new public sewers in the beach hinterlands along Castle Peak Road at Tsing Lung Tau, Sham Tseng and Ting Kau areas. Through the completion of the sewerage improvement works along the Castle Peak Road in early 2010, and enforcement of environmental legislation, improvement of water quality of these closed beaches has become more discernable in the last couple of years, as reflected by the gradual improvement of the annual ranking over the last six years.

[Photo: Sham Tseng Sewage Treatment Works]

To further improve the water quality of Tsuen Wan beaches, the Government has been implementing the next stage of the Harbour Area Treatment Scheme ([HATS Stage 2A](#)), and successfully commissioned the Advance Disinfection Facilities on 1st March 2010 to disinfect the treated effluent from the Stonecutters Island Sewage Treatment Works. Coupled with the implementation of the sewerage improvement works and continuous pollution control efforts, the water quality in the area has shown clear signs of improvement in the 2010's bathing season. As a result, the water quality of all seven closed Tsuen Wan beaches further improved and achieved "Fair" annual ranking in 2010.

[Photo: Full commissioning of Advance Disinfection Facilities at Stonecutters Island Sewage Treatment Works in March 2010]

The Government has striven to sustain improvement of the water quality of Tsuen Wan beaches. In 2011, four closed beaches, namely Approach, Casam, Hoi Mei Wan and Lido Beaches, will be re-opened to the public for swimming. When the beach facilities of the other three closed beaches: Anglers', Gemini and Ting Kau Beaches, are upgraded, they could also be re-opened in the near future.

[Figure: Water quality trend lines of Approach and Lido Beaches annotated with milestones of some sewerage projects]

Progress and water quality trend in the last 25 years

The beach water quality monitoring programme was implemented in 1986, and significant development over the last 25 years is summarized in the table below.

Milestone of the Beach Water Quality Monitoring Programme
1986
Establishment of the Environmental Protection Department (EPD)
Implementation of EPD's beach monitoring programme.
Bathing water quality standard of a median of 1,000 <i>E. coli</i> counts per 100 mL was adopted.
An annual ranking system based on the Hong Kong standards and the WHO guidelines was introduced.
Commencement of the epidemiological studies at local beaches.
1987
Establishment of a Microbiology Laboratory at EPD
Bacteriological analysis of beach samples carried out by EPD's Microbiology Laboratory.
EPD adopted an improved Membrane Filtration method to replace the Multiple Tube method for <i>E. coli</i> analysis.
Launching of Beach Grading System
Beaches were classified into 3 grades according to the running median <i>E. coli</i> level of the 5 most recent sampling occasions.
EPD issued biweekly press release on beach water quality
1988
Revision of the Annual Ranking System
The annual ranking system was revised on the basis of the epidemiological study findings, and beaches were classified

into 4 ranks according to the geometric mean *E. coli* level of all the samples collected during a bathing season.

The revised ranking system adopted the risk assessment approach based on the relationship between *E. coli* level and swimming-associated illness rates.

1990

Revision of the Beach Grading System

The bi-weekly beach grading system was revised on the basis of the epidemiological study findings, and beaches are classified into 4 grades according to the geometric mean *E. coli* level of the 5 most recent sampling occasions.

The revised grading system adopted the risk assessment approach based on the relationship between *E. coli* level and swimming-associated illness rates.

Re-opening of closed beach

Silver Mine Bay Beach was re-opened after its water quality showed sustained improvement.

1992

Establishment of the Water Quality Objective (WQO) for Bathing Water

The WQO (a geometric mean of 180 *E. coli* counts per 100 mL) for bathing water in Hong Kong is established.

Same description of water quality is adopted for both the ranking and grading systems, *i.e.* Good, Fair, Poor and Very Poor.

1996 – 2000

Revision of the Beach Monitoring Programme

EPD developed and adopted an improved and more rapid method for *E. coli* analysis to shorten the reporting time to 1.5 days.

EPD introduced a trigger level which classified beaches as Grade 4 (the worst grade) whenever the latest *E. coli* reading exceeded a high figure.

Enhancement of dissemination of beach information

Launching of webpage and telephone hotline on beach water quality.

Beach management authority started to disseminate beach gradings on noticeboards and to erect rainfall warning signs at beaches

EPD started to issue press releases on the beach grading on a weekly basis.

Re-opening of closed beach

Cafeteria Old Beach was re-opened after its water quality showed gradual and sustained improvement.

2001 – 2005

Enhancement of the Beach Monitoring Programme

EPD adopted a sampling regime based on random sampling approach, and conducted sampling also during weekends and public holidays, and the location and number of sampling points were refined to provide more comprehensive and representative information.

EPD conducting monitoring during winter months for 4 beaches which were open all year round.

Re-opening of closed beach

Castle Peak Beach was re-opened after its water quality showed gradual and sustained improvement.

2006 – 2010

Enhancement of the Beach Monitoring Programme

Monitoring procedures were further streamlined. Information on sudden deterioration of beach water quality leading to Grade 4 was disseminated to the public within 24 hours after sampling.

The beach website was further enhanced to provide more comprehensive information in a user-friendly manner.

Re-opening of closed beach

All 7 beaches in Tsuen Wan complied with the WQO for bathing water, and 4 beaches were planned to be re-opened in 2011.

There has been an overall improvement trend of beach water quality in Hong Kong. The percentage of beaches complying with the WQO has changed from 74% in 1986 (29 of 39 beaches) to 63% (26 of 41 beaches) in 1997, and 100% in 2010 (all 41 beaches).

Annual beach ranking of 1986, 1997 and 2010 compared

Year	WQO Compliant		WQO Non-compliant	
	Good	Fair	Poor	Very Poor
1986	23.1%(9)	51.3%(20)	17.9%(7)	7.7%(3)
1997	24.4% (10)	39.0% (16)	29.3% (12)	7.3% (3)
2010	56.1%(23)	43.9%(18)	-	-

() No. of beaches

Note: Two Beaches degazetted in 1995 were excluded from the calculation.

There was a drop in compliance rate in the mid-1990s due to population growth particularly in the new town areas. Since then, there has been progressive improvement in the last decade as a result of enforcement of environmental legislation, extension of the sewerage network and provision of new sewage treatment facilities across the territory including the beach hinterland. Major improvement measures implemented in the past 25 years are summarized in the following table.

Major improvement measures for the beaches over the past 25 years	
1986 – 1990	
Implementation of the Livestock Waste Control Scheme under the Waste Disposal (Livestock Waste) Regulation.	Most beaches, particularly Silvermine Bay Beach
Declaration of the Southern Water Control Zone (WCZ) under the Water Pollution Control Ordinance (WPCO) and legislative enforcement.	Southern beaches
Interception and diversion of polluted storm drains at beaches in Southern District.	Southern beaches
1991- 1995	
Implementation of chemical waste control	All beaches
Declaration of the North Western WCZ under WPCO and legislative enforcement	Tuen Mun beaches
Diversion of polluted storm water drains away from Castle Peak Beach	
Provision of public sewers for So Kwun Wat and Sam Shing Estate.	
Commissioning of Stanley Sewage Treatment Works (STW)	Southern beaches
1996 - 2000	
Full implementation of WPCO in all WCZs.	All beaches
Commissioning of the Shek O Sewage Screening Plant and diversion of polluted storm water drains at Shek O Village	Southern beaches
Completion of all major works under Southern Sewerage Master Plan	
Commissioning of the new 2 km long Pillar Point sewage submarine outfall	Tuen Mun beaches
2001 - 2005	
Completion of HATS Stage 1	Big Wave Bay, Shek O, Rocky Bay Beaches
Provision of public sewers in Silverstrand area	Silverstrand Beach
Full operation of the Sham Tseng STW	Beaches along the Tsuen Wan coast
2006 - 2010	
Commissioning of the Advance Disinfection Facilities at Stonecutters Island STW	All Tsuen Wan beaches
Extension of the public sewerage network to the beach hinterland along Castle Peak Road	Beaches along the Tsuen Wan coast

As a result of these measures, the percentage of beaches ranked ‘Good’ has more than doubled over the period, rising from just 23% in 1986 to 56% in 2010. Since 1999, the WQO compliance rate has been maintained at over 80%, a clear indication of sustained improvement in water quality. Between 1997 and 2010, out of the 41 gazetted beaches, those complying with the WQO have increased from 26 to 41 (63% to 100%). In the same period, the number of “Good” beaches has more than doubled from 10 to 23.

Annual beach ranking in 1997 and the marked improvement

over the last 3 years (2008, 2009 and 2010)

Year	WQO Compliant		WQO Non-compliant	
	Good	Fair	Poor	Very Poor
1997	24.4% (10)	39.0% (16)	29.3% (12)	7.3% (3)
2008	28.5(24)	24.4% (10)	17.1% (7)	-
2009	56.1%(23)	36.6%(15)	7.3%(3)	-
2010	56.1%(23)	43.9%(18)	-	-

() No. of beaches

The improvements made at various district in the last 25 years are significant, as illustrated in the story boxes in the next few pages. Silvermine Bay, Castle Peak, Repulse Bay Beaches were most remarkable as they have consistently complied with the WQO in recent years. All seven closed Tsuen Wan beaches met the WQO in 2010, compared to their non-compliance a few years ago. Back in the 1980s, many beaches were either closed (e.g. Cafeteria Old, Castle Peak and Silver Mine Bay Beaches) or on the verge of being closed (e.g. Middle Bay and Repulse Bay Beaches) because of their poor water quality. Through continuous effort of the Government to implement pollution abatement measures over the past 25 years, all Hong Kong's beaches have now achieved the required standard for bathing waters.

Water quality trend lines of individual beaches over the last 25 years are included in this report to show the changes over the years. Fuller background and details of the beach monitoring programme are available at [the EPD's Homepage \(http://www.epd.gov.hk\)](http://www.epd.gov.hk) or [the thematic website \(http://www.beachwq.gov.hk\)](http://www.beachwq.gov.hk), which provides user-friendly access to the annual beach reports published since 2000.

Four Story boxes

1. Marked improvement in water quality of beaches in Southern District:

Back in the 1980s, many of the 12 gazetted beaches in Southern District were not in good shape. Middle Bay and Repulse Bay Beaches could not meet the water quality objective (WQO) for bathing beaches and were on the verge of closing.

Government's actions:-

- Implemented pollution control legislation.
- Diverted polluting stormwater channels away from beaches.
- Built new sewage treatment facilities.
- Implemented public sewer connection programme in beach hinterlands.
- Now all Southern District beaches meet the bathing water quality objective.

These beaches provide good water quality and scenic environment for the public to enjoy.

2. Repulse Bay Beach:

In the late 1980s, the water quality of the beach was on the verge of closure, with annual geometric means of E. coli counts of over 400 count/100 mL, ranked as "Poor".

Remedial measures were promptly taken by the Government:-

- Enforcing the pollution control legislation.
- Implementing the Hong Kong Island South Sewerage Master Plan to divert sewage and polluted storm flow away from the beach.
- Installing Dry Weather Flow (DWF) interceptors to intercept flow from polluted storm water drains.

3. Improvement of beach water quality enabling the re-opening of Castle Peak Beach:

Improvement programmes have successfully achieved clean water and made the beach safe for the public to swim.

- Castle Peak Beach has been reopened to swimmers since 2005 and has quickly become a popular destination for the public.
- The water quality of Castle Peak Beach continues to improve after its re-opening in 2005 as shown in its weekly gradings.

4. Silver Mine Bay Beach:

- A scenic beach on Lantau Island was closed from 1987 to 1989 due to unacceptable water quality.
- Annual geometric mean E. coli level was 2400 count/100 mL in 1987.

Major pollution sources:

- Livestock farms in Mui Wo. -Unsewered villages.

Government's mitigation measures:

-Introduced Livestock Waste Control Scheme in Mui Wo in 1988 to stop illegal discharge from livestock farms.

-Commissioning of Mui Wo Sewage Treatment Works and implementing the wastewater control under the Water

Pollution Control Ordinance in 1989.

Improvement observed:

-Silver Mine Bay Beach started to comply with the Water Quality Objective in 1989.

-Generally maintained at "Fair" or above ranking since 1989.

Further improvement is expected...

Sewerage improvement works in Mui Wo area are on-going and should be completed in 2013. More houses in the hinterland will be connected to the public sewers.

Beaches monitored by the EPD

Southern District	Sai Kung District	Tsuen Wan District	Tuen Mun District	Islands District	Tai Po District
Deep Water Bay	Kiu Tsui	Ma Wan Tung Wan	Butterfly	Silver Mine Bay	Lung Mei**
Repulse Bay	Hap Mun Bay	Anglers**	Castle Peak	Pui O	
Middle Bay	Trio	Gemini*	Kadoorie	Lower Cheung Sha	
South Bay	Silverstrand	Hoi Mei Wan*	Cafeteria Old	Upper Cheung Sha	
Chung Hom Kok	Clear Water Bay First	Casam*	Cafeteria New	Tong Fuk	
St. Stephen's	Clear Water Bay Second	Lido*	Golden	Cheung Chau Tung Wan	
Stanley Main	Kiu Tsui (New)**	Ting Kau*		Kwun Yam	
Turtle Cove		Approach*		Hung Shing Yeh	
Shek O				Lo So Shing	
Big Wave Bay				Discovery Bay**	
Hairpin*					
Rocky Bay*					

* Closed beaches

** Non-gazetted beaches

Beach monitoring frequencies

Beach	Monitoring frequency per month	
	Bathing season *	Non-bathing season
Gazetted beaches open all year round**	at least 3 times	at least 3 times
Other gazetted beaches	at least 3 times	once
Non-gazetted beaches	at least 3 times	once

* March to October

** Clear Water Bay Second, Deep Water Bay, Golden and Silverstrand Beaches

[Image of overview of various stages of the Beach Monitoring Programme]

Hong Kong's annual beach ranking system

Rank	<i>E. coli</i> counts per 100 mL*	Minor illness rate** (Cases per 1,000 swimmers)	WQO Compliance
Good	≤24	Undetectable	Compliant
Fair	25-180	≤10	
Poor	181-610	11-15	Non-compliant
Very Poor	>610	>15	

* Geometric mean *E. coli* count calculated based on all data collected between March and October.

** Skin and gastrointestinal illnesses

Hong Kong's weekly beach grading system

Grade	Beach water quality	<i>E. coli</i> counts per 100 mL*	Minor illness rate ** (Cases per 1,000 swimmers)
1	Good	≤ 24	Undetectable
2	Fair	25-180	≤ 10
3	Poor	181-610	11-15
4	Very Poor	> 610 or last reading $> 1,600$	> 15

* Unless otherwise indicated, the *E. coli* count represents the geometric mean of the 5 most recent sampling occasions.

** Skin and gastrointestinal illnesses

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Hong Kong's gazetted beaches : the 2010 annual ranking

Annual Rank			
Good	Fair	Poor	Very Poor
Hap Mun Bay	Silverstrand	--	--
Lo So Shing	Butterfly		
Hung Shing Yeh	Cafeteria New		
South Bay	Silver Mine Bay		
St. Stephen's	Hairpin *		
Upper Cheung Sha	Cafeteria Old		
Tong Fuk	Golden		
Trio	Kadoorie		
Repulse Bay	Rocky Bay *		
Kwun Yam	Castle Peak		
Turtle Cove	Hoi Mei Wan *		
Chung Hom Kok	Lido *		
Deep Water Bay	Casam *		
Clear Water Bay First	Approach *		
Lower Cheung Sha	Anglers' *		
Cheung Chau Tung Wan	Gemini *		
Middle Bay	Ting Kau *		
Clear Water Bay Second	Big Wave Bay		
Kiu Tsui			
Pui O			
Ma Wan Tung Wan			
Shek O			
Stanley Main			

* Closed beach

Beach grading summary by district in 2010

District	Percentage of Weekly Gradings				Total no. of Grading Occasions
	Grade 1	Grade 2	Grade 3	Grade 4	
Southern	77%	16%	5%	2%	351
Sai Kung	79%	19%	0%	2%	205
Tsuen Wan and Tuen Mun	27%	70%	2%	1%	226
Outlying Islands	81%	18%	0%	1%	275

Ranking and grading summary - Southern District beaches

Beach	Annual Ranking	Percentage of Weekly Gradings			
		Grade 1	Grade 2	Grade 3	Grade 4
Big Wave Bay	Fair	0%	48%	40%	12%
Chung Hom Kok	Good	100%	0%	0%	0%
Deep Water Bay	Good	97%	3%	0%	0%
Hairpin *	Fair	No grading for closed beach.			
Middle Bay	Good	80%	20%	0%	0%
Repulse Bay	Good	94%	6%	0%	0%
Rocky Bay *	Fair	No grading for closed beach.			
Shek O	Good	66%	31%	0%	3%
South Bay	Good	100%	0%	0%	0%
St. Stephen's	Good	100%	0%	0%	0%
Stanley Main	Good	63%	37%	0%	0%
Turtle Cove	Good	82%	12%	3%	3%

* Beaches closed for reasons other than water quality.

Ranking and grading summary - Sai Kung beaches

Beach	Annual Ranking	Percentage of Weekly Gradings			
		Grade 1	Grade 2	Grade 3	Grade 4
Clear Water Bay First	Good	79%	21%	0%	0%
Clear Water Bay Second	Good	76%	24%	0%	0%
Hap Mun Bay	Good	91%	9%	0%	0%
Kiu Tsui	Good	74%	23%	0%	3%
Silverstrand	Fair	57%	35%	0%	8%
Trio	Good	97%	3%	0%	0%

Ranking and grading summary - Tsuen Wan and Tuen Mun beaches

District	Beach	Annual Ranking	Percentage of Weekly Gradings			
			Grade 1	Grade 2	Grade 3	Grade 4
Tsuen Wan	Anglers' *	Fair	No grading for closed beach.			
	Approach *	Fair				
	Casam *	Fair				
	Gemini *	Fair				
	Hoi Mei Wan *	Fair				
	Lido *	Fair				
	Ting Kau *	Fair				
	Ma Wan Tung Wan	Good	56%	44%	0%	0%
Tuen Mun	Butterfly	Fair	38%	62%	0%	0%
	Cafeteria New	Fair	34%	66%	0%	0%
	Cafeteria Old	Fair	34%	66%	0%	0%
	Castle Peak	Fair	3%	82%	12%	3%
	Golden	Fair	9%	91%	0%	0%
	Kadoorie	Fair	16%	81%	3%	0%

* Closed beaches

Ranking and Grading Summary - Beaches on the Outlying Islands

Beach	Annual Ranking	Percentage of Weekly Gradings			
		Grade 1	Grade 2	Grade 3	Grade 4
Cheung Chau Tung Wan	Good	92%	8%	0%	0%
Hung Shing Yeh	Good	100%	0%	0%	0%
Kwun Yam	Good	78%	18%	0%	4%
Lo So Shing	Good	100%	0%	0%	0%
Lower Cheung Sha	Good	68%	32%	0%	0%
Pui O	Good	68%	32%	0%	0%
Silver Mine Bay	Fair	41%	59%	0%	0%
Tong Fuk	Good	100%	0%	0%	0%
Upper Cheung Sha	Good	97%	3%	0%	0%

Annual beach rankings from 1997 to 2010

Year	Number of Beaches in Each Rank				Total
	Good	Fair	Poor	Very Poor	
1997	10	16	12	3	41
1998	16	16	8	1	41
1999	22	13	6	0	41
2000	21	14	6	0	41
2001	21	13	5	2	41
2002	23	10	2	6	41
2003	23	11	1	6	41
2004	25	9	5	2	41
2005	23	11	1	6	41
2006	22	12	5	2	41
2007	25	9	7	0	41
2008	24	10	7	0	41
2009	23	15	3	0	41
2010	23	18	0	0	41

Annual beach rankings of 1997 and 2010 compared

Year	WQO Compliant		WQO Non-compliant	
	Good	Fair	Poor	Very Poor
1997	24.4% (10)	39.0% (16)	29.3% (12)	7.3% (3)
2010	56.1% (23)	43.9% (18)	0% (0)	0% (0)

() No. of beaches

**Compliance with the Water Quality
Objective at gazetted beaches, 1997 - 2010**

Year	Percentage of Compliance
1997	63%
1998	78%
1999	85%
2000	85%
2001	83%
2002	80%
2003	83%
2004	83%
2005	83%
2006	83%
2007	83%
2008	83%
2009	93%
2010	100%

Annual geometric mean *E. coli* levels by district, 1997 - 2010

Year	Southern	Sai Kung	Tsuen Wan	Tuen Mun	Outlying Islands
1997	55	26	562	326	24
1998	34	17	321	125	12
1999	16	9	231	59	7
2000	16	11	219	57	8
2001	18	13	321	101	12
2002	10	12	666	70	7
2003	11	14	566	85	8
2004	9	10	405	64	5
2005	14	14	576	77	8
2006	13	11	447	122	11
2007	9	8	294	77	9
2008	11	13	247	56	12
2009	11	13	163	43	10
2010	14	10	90	39	8

Annual geometric mean *E. coli* levels (1997 - 2010)

Beach	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Southern District													
Big Wave Bay	179	114	77	98	106	23	33	26	101	50	17	31	46	149
Chung Hom Kok	22	40	14	8	15	13	14	9	13	10	9	13	14	9
Deep Water Bay	55	46	14	16	18	9	9	7	8	7	7	9	12	9
Hairpin	44	72	17	18	10	6	7	7	13#	11#	19#	10#	12#	33#
Middle Bay	40	16	11	11	8	9	14	12	20	18	9	11	12	12
Repulse Bay	23	11	8	9	13	9	12	4	8	12	7	14	11	7
Rocky Bay	399#	223#	72#	80#	118#	43#	28#	19#	30#	33#	17#	15#	13#	50#
Shek O	102	70	32	29	31	13	11	16	19	24	18	22	11	19
South Bay	17	6	4	7	5	5	11	9	7	7	5	5	4	4
St. Stephen's	40	26	11	6	7	5	9	4	12	11	6	9	6	4
Stanley Main	72	24	13	12	9	8	6	5	7	10	9	10	13	20
Turtle Cove	40	14	12	11	15	8	4	5	8	7	5	5	5	8
Sai Kung District														
Clear Water Bay First	62	41	11	16	28	28	17	9	16	20	14	11	15	10
Clear Water Bay Second	66	44	12	26	22	14	21	10	19	13	9	19	27	13
Hap Mun Bay	3	2	2	2	1	2	4	3	4	4	3	5	3	3
Kiu Tsui	5	4	4	5	5	4	5	17	14	11	6	13	16	13
Silverstrand	148	99	32	61	100	133	97	74	67	30	33	35	51	28
Trio	30	21	17	10	12	6	10	2	6	5	2	12	5	6
Tsuen Wan District														
Anglers'	691#	502#	442#	326#	621#	1169#	693#	619#	895#	772#	496#	510#	276#	134#
Approach	1009#	435#	387#	316#	411#	696#	762#	470#	663#	599#	352#	251#	208#	124#
Casam	609	239	231	209	233	741	702#	594#	716#	426#	305#	289#	144#	102#
Gemini	458	399	350	258	323	1155	875#	1102#	1042#	853#	566#	481#	410#	137#
Hoi Mei Wan	471	280	109	177	199	547	442#	287#	641#	308#	286#	271#	130#	87#
Lido	600	262	231	181	269	683	734#	523#	782#	459#	280#	296#	178#	87#
Ma Wan Tung Wan	110	92	51	39	133	201	159	101	132	171	78	53	60	17
Ting Kau	1583#	1045#	515#	593#	739#	742#	831#	412#	512#	469#	405#	258#	145#	141#
Tuen Mun District														
Butterfly	259	121	44	61	74	60	74	55	55	94	84	56	49	30
Cafeteria New	309	100	60	51	104	62	80	54	70	120	68	48	38	31
Cafeteria Old	435	138	58	57	125	74	76	61	81	150	67	45	46	34
Castle Peak	332#	199#	57#	58#	105#	58#	64#	80#	90	139	64	47	35	63
Golden Beach	352	98	44	50	87	66	84	46	62	117	87	63	42	37
Kadoorie	290	130	109	68	120	114	160	98	117	118	101	87	48	45
Outlying Islands														
Cheung Chau Tung Wan	24	19	11	12	16	17	11	12	14	37	21	15	17	12
Hung Shing Yeh	5	3	3	5	6	2	5	4	4	4	6	4	6	4
Kwun Yam	32	21	6	10	11	9	7	5	10	13	9	10	9	8
Lo So Shing	3	2	4	2	5	2	3	2	3	4	3	5	7	3
Lower Cheung Sha	85	23	10	12	22	10	14	7	12	11	12	20	13	11
Pui O	36	16	10	10	17	10	15	9	10	16	30	24	12	14
Silver Mine Bay	481	123	39	50	67	42	50	14	34	52	22	43	45	31
Tong Fuk	14	10	4	5	6	4	3	4	5	5	4	10	5	5
Upper Cheung Sha	8	3	2	3	5	3	3	3	3	4	4	7	5	4

Note:

Figure in red indicates that the beach was closed in that year

Beach visitor numbers, 2010

Beach	Daily Average		Peak Day	Peak Month	Total
	Weekdays	Weekends & Public Holidays			
Southern District					
Big Wave Bay	180	1,155	3,300	27,165	120,068
Chung Hom Kok	277	959	2,200	20,180	121,100
Deep Water Bay	954	4,465	18,000	121,500	507,600
Hairpin	107	458	850	8,905	53,530
Middle Bay	186	283	980	15,820	53,056
Repulse Bay	7,690	10,340	17,000	296,190	2,090,786
Rocky Bay	-	-	-	-	-
Shek O	1,735	4,154	26,500	167,500	613,807
South Bay	146	946	4,000	30,900	98,240
St. Stephen's	193	696	3,000	17,400	86,504
Stanley Main	614	3,850	22,500	86,520	402,880
Turtle Cove	58	351	1,220	7,600	36,970
Sai Kung District					
Clear Water Bay First	146	680	2,010	14,820	77,403
Clear Water Bay Second	2,309	7,331	26,000	269,200	957,420
Hap Mun Bay	351	1,005	5,870	43,760	137,109
Kiu Tsui	47	375	1,226	7,247	37,064
Silverstrand	87	292	2,055	10,584	37,277
Trio	349	824	3,800	31,670	122,530
Tsuen Wan District					
Anglers'	46	76	190	2,225	13,510
Approach	75	76	115	2,489	18,388
Casam	14	15	60	533	3,602
Gemini	4	6	25	223	1,176
Hoi Mei Wan	7	7	30	253	1,658
Lido	74	90	250	3,236	19,391
Ma Wan Tung Wan	422	2,119	7,778	43,418	235,842
Ting Kau	18	20	48	679	4,527
Tuen Mun District					
Butterfly	798	1,469	2,400	36,400	247,750
Cafeteria New	830	1,839	4,720	63,960	281,960
Cafeteria Old	675	1,394	3,610	38,940	221,450
Castle Peak	411	1,423	1,800	23,900	179,600
Golden	1,754	5,979	10,100	125,900	759,300
Kadoorie	506	922	1,650	30,050	156,390
Outlying Islands					
Cheung Chau Tung Wan	166	483	1,230	13,120	65,350
Hung Shing Yeh	134	625	1,500	15,470	71,060
Kwun Yam	55	180	550	5,900	23,275
Lo So Shing	42	154	420	3,610	19,010
Lower Cheung Sha	86	227	460	5,800	32,120
Pui O	175	543	1,170	13,630	71,550
Silver Mine Bay	151	453	5,000	12,140	60,610
Tong Fuk	104	232	570	7,465	35,410
Upper Cheung Sha	63	225	680	5,650	28,010

Note: Information provided by the Leisure and Cultural Services Department

Physicochemical water quality data of gazetted beaches, 2010

Beach	pH	Salinity (psu) ¹	Turbidity (NTU) ²	Temperature (°C)	Dissolved Oxygen (mg/L) (% Saturation)	
Southern District						
Big Wave Bay	8.4 (8.2 - 8.6)	29.9 (23.0 - 33.6)	3.4 (1.3 - 9.4)	25.9 (17.9 - 30.3)	6.9 (5.5 - 8.3)	96 (79 - 105)
Chung Hom Kok	8.4 (8.3 - 8.7)	30.0 (22.7 - 33.7)	4.5 (1.4 - 10.4)	25.9 (19.1 - 30.8)	6.9 (5.7 - 8.9)	98 (83 - 126)
Deep Water Bay	8.4 (8.1 - 8.7)	29.4 (21.3 - 33.8)	6.9 (2.2 - 18.1)	26.0 (19.2 - 30.9)	7.0 (5.1 - 10.0)	100 (78 - 143)
Hairpin [Closed]	8.4 (8.2 - 8.9)	29.7 (20.6 - 33.6)	4.5 (1.2 - 23.8)	26.1 (18.5 - 31.3)	7.2 (6.3 - 8.8)	100 (87 - 117)
Middle Bay	8.4 (8.2 - 8.7)	29.9 (21.0 - 33.7)	5.0 (1.6 - 13.1)	25.8 (19.2 - 30.7)	7.2 (5.1 - 10.0)	101 (75 - 143)
Repulse Bay	8.4 (8.2 - 8.7)	30.2 (23.4 - 33.8)	5.0 (1.7 - 7.9)	25.5 (18.6 - 30.5)	6.9 (5.6 - 8.5)	96 (74 - 112)
Rocky Bay [Closed]	8.3 (8.2 - 8.5)	30.3 (23.9 - 33.5)	4.3 (1.2 - 23.4)	25.4 (16.8 - 30.9)	7.0 (5.1 - 9.5)	97 (75 - 108)
Shek O	8.4 (8.2 - 8.6)	31.0 (24.7 - 33.6)	4.2 (1.1 - 11.5)	25.5 (16.7 - 31.0)	7.2 (6.3 - 10.0)	98 (87 - 109)
South Bay	8.4 (8.2 - 8.7)	29.9 (23.3 - 33.7)	3.8 (1.1 - 11.5)	25.8 (19.1 - 30.7)	6.9 (5.3 - 9.0)	97 (80 - 116)
St. Stephen's	8.4 (8.2 - 8.7)	30.1 (21.4 - 33.7)	3.4 (1.8 - 9.4)	25.8 (19.2 - 30.7)	6.8 (4.9 - 9.0)	96 (74 - 129)
Stanley Main	8.4 (8.2 - 8.8)	29.7 (21.6 - 33.2)	4.8 (1.2 - 23.7)	26.3 (18.6 - 31.4)	7.1 (5.3 - 8.6)	100 (87 - 125)
Turtle Cove	8.4 (8.2 - 8.9)	29.8 (20.8 - 33.7)	6.2 (1.3 - 25.1)	25.9 (18.5 - 31.4)	7.1 (5.7 - 8.9)	97 (80 - 110)
Sai Kung District						
Clear Water Bay First	8.4 (8.3 - 8.6)	29.9 (17.8 - 33.4)	4.8 (1.5 - 11.3)	26.3 (17.6 - 32.0)	7.0 (5.8 - 8.6)	99 (88 - 112)
Clear Water Bay Second	8.4 (8.2 - 8.6)	30.6 (23.2 - 33.5)	5.6 (1.2 - 28.1)	26.3 (16.9 - 32.0)	6.9 (5.0 - 8.6)	99 (77 - 116)
Hap Mun Bay	8.4 (8.2 - 8.6)	30.6 (24.4 - 33.2)	2.7 (1.2 - 7.3)	26.8 (18.0 - 32.0)	6.9 (5.8 - 9.3)	98 (88 - 113)
Kiu Tsui	8.5 (8.2 - 8.7)	29.6 (15.6 - 33.3)	3.2 (1.1 - 8.6)	26.8 (16.7 - 32.1)	7.2 (5.4 - 8.4)	102 (81 - 134)
Silverstrand	8.4 (8.2 - 8.7)	29.5 (17.9 - 33.0)	3.7 (1.0 - 14.3)	26.0 (17.6 - 31.7)	7.1 (6.0 - 9.9)	99 (88 - 118)
Trio	8.4 (8.2 - 8.7)	29.3 (17.2 - 33.4)	2.3 (1.2 - 8.1)	27.0 (17.0 - 32.9)	6.9 (5.1 - 9.1)	98 (76 - 119)
Tsuen Wan District						
Anglers' [Closed]	8.3 (8.0 - 9.1)	27.4 (13.1 - 33.1)	5.1 (1.8 - 8.6)	25.9 (19.4 - 31.2)	6.7 (4.9 - 9.1)	94 (72 - 133)
Approach [Closed]	8.3 (8.1 - 8.8)	26.7 (17.3 - 32.9)	5.1 (2.0 - 14.6)	25.8 (19.0 - 31.0)	6.8 (4.3 - 9.3)	95 (64 - 135)
Casam [Closed]	8.3 (8.1 - 8.8)	27.2 (17.1 - 33.0)	4.6 (1.6 - 8.1)	25.9 (19.3 - 31.0)	6.8 (4.1 - 8.8)	95 (60 - 130)
Gemini [Closed]	8.3 (8.0 - 8.9)	27.5 (14.7 - 33.2)	4.7 (1.8 - 11.0)	25.9 (19.6 - 31.3)	6.6 (5.1 - 9.1)	94 (75 - 133)
Hoi Mei Wan [Closed]	8.3 (8.0 - 8.8)	27.4 (17.4 - 33.0)	4.5 (1.6 - 21.3)	25.9 (19.3 - 31.2)	6.6 (4.2 - 8.1)	92 (61 - 119)
Lido [Closed]	8.3 (8.0 - 8.8)	27.1 (17.2 - 33.0)	5.0 (1.9 - 10.3)	25.9 (19.3 - 31.1)	6.7 (4.2 - 8.3)	94 (61 - 119)
Ma Wan Tung Wan	8.3 (8.0 - 8.6)	28.1 (20.3 - 33.0)	8.1 (3.2 - 19.5)	26.1 (19.0 - 30.0)	6.6 (4.3 - 8.2)	93 (63 - 119)
Ting Kau [Closed]	8.3 (8.1 - 8.8)	26.6 (17.3 - 33.0)	5.0 (1.6 - 18.4)	26.0 (19.4 - 30.9)	6.6 (5.1 - 9.3)	93 (75 - 135)
Tuen Mun District						
Butterfly	8.3 (8.1 - 8.9)	23.8 (10.8 - 33.1)	8.4 (2.5 - 18.1)	26.9 (19.8 - 31.2)	6.9 (5.0 - 8.2)	97 (75 - 115)
Cafeteria New	8.3 (8.1 - 8.8)	23.4 (9.8 - 32.8)	11.8 (3.4 - 45.1)	26.6 (19.5 - 30.5)	6.8 (5.6 - 8.2)	96 (83 - 111)
Cafeteria Old	8.3 (8.0 - 8.9)	23.4 (9.8 - 32.8)	10.8 (3.3 - 35.6)	26.6 (19.7 - 30.3)	6.9 (5.5 - 8.3)	96 (81 - 118)
Castle Peak	8.4 (8.0 - 8.9)	22.5 (9.4 - 32.8)	6.8 (2.2 - 14.8)	27.0 (18.5 - 31.5)	7.3 (5.7 - 10.1)	104 (85 - 157)
Golden	8.3 (8.0 - 8.8)	23.7 (9.8 - 32.7)	12.5 (3.0 - 38.5)	26.4 (19.6 - 30.5)	6.7 (5.0 - 8.6)	94 (74 - 114)
Kadoorie	8.3 (8.0 - 9.0)	23.3 (9.5 - 32.8)	8.4 (2.3 - 18.3)	26.8 (18.9 - 30.8)	6.8 (5.3 - 8.2)	95 (79 - 111)

Outlying Islands						
Cheung Chau Tung Wan	8.4 (8.2 - 8.9)	28.5 (22.5 - 33.1)	4.2 (1.5 - 9.9)	25.9 (18.0 - 31.0)	6.9 (5.9 - 8.3)	97 (85 - 115)
Hung Shing Yeh	8.3 (8.1 - 8.6)	28.6 (17.5 - 33.6)	8.2 (1.8 - 46.5)	26.0 (16.9 - 31.7)	6.8 (5.3 - 8.9)	93 (73 - 107)
Kwun Yam	8.4 (8.1 - 8.9)	28.3 (21.7 - 33.1)	3.8 (1.3 - 10.1)	25.7 (18.0 - 31.0)	6.8 (5.6 - 8.0)	96 (84 - 120)
Lo So Shing	8.4 (8.2 - 8.7)	29.3 (15.7 - 33.5)	11.1 (2.5 - 83.8)	25.8 (18.9 - 30.6)	7.1 (6.2 - 8.3)	98 (88 - 126)
Lower Cheung Sha	8.5 (8.2 - 9.1)	27.7 (17.7 - 33.3)	11.2 (3.6 - 48.4)	26.9 (18.1 - 32.5)	7.1 (6.0 - 8.4)	98 (88 - 113)
Pui O	8.4 (8.2 - 9.0)	27.7 (14.8 - 33.3)	14.3 (3.2 - 41.0)	27.4 (18.2 - 32.6)	6.7 (5.8 - 8.3)	96 (87 - 104)
Silver Mine Bay	8.4 (8.0 - 8.9)	25.2 (7.6 - 32.6)	11.6 (3.5 - 56.5)	27.5 (18.5 - 32.5)	6.6 (4.4 - 8.7)	95 (68 - 130)
Tong Fuk	8.4 (8.3 - 9.0)	28.0 (18.0 - 33.2)	6.4 (1.7 - 35.2)	26.8 (19.2 - 32.4)	7.0 (6.0 - 9.0)	98 (89 - 119)
Upper Cheung Sha	8.5 (8.3 - 9.1)	28.0 (18.0 - 33.3)	8.7 (2.3 - 34.7)	26.8 (18.1 - 32.4)	6.9 (6.2 - 8.3)	98 (80 - 122)

Note: Data presented are arithmetic means; figures in brackets are ranges.

Footnote:

1. Practical Salinity Unit

2. Nephelometric Turbidity Unit